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OF
HORTICULTURE AND FLORICULTURE

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ORCHID-CULTURE.



THE culture of Orchids is every day becoming more and more popular, and in many cases, we may add, more and more successful. Yet there is still remaining in numerous instances ample room for further improvement, and our present object is to suggest the direction whence more satisfying results are to be obtained. It is now pretty generally ceded by all good cultivators that the night-temperature of plant-houses should be lower than during the daytime. Nature all the world over cools down her temperature after sundown; and even in the tropics, near the line, there are altitudes of a few thousand feet at which, during clear nights, radiation is so great that at daybreak one's teeth chatter, and a fire is the greatest comfort one can have. My own experience of Orchids, under the most variable of conditions both abroad and at home, leads me to say that, even for the hottest of lowland East Indian and African species, a high temperature and an airless condition during night is far from being as beneficial as is by many supposed. Everyday practice has shown to me very clearly, and I doubt not but that the idea has occurred to others also, that those Orchids are most permanently robust and healthy which have been gradually and carefully inured to a wide range of temperature. That this is true of men and other animals is a well-known fact. To illustrate my meaning I will take *Phalænopsis grandiflora* as an example. In hot summer weather, when growing, the thermometer during bright sunlight may run up to 110° with advantage, provided the plants are moderately shaded; while, during winter nights, I never feel the slightest anxiety when the thermometer has not descended below 48° . In May, during hot days, the thermometer may run up to 95° or 100° ,

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and at night descend to 55° , without any damage—indeed, as I think, with advantage—and a range of 40° in twenty-four hours is a very large one. The usual plan is to keep *Phalænopsis* in a very equable temperature, never lower than 60° at night at any time during the year; and surprising as it may seem to many, it is to this uniform system of temperature that I attribute the numerous failures to cultivate *Phalænopsis grandiflora* in a really satisfactory way. It is so coddled, so enervated, so to speak, by a uniform high-pressure kind of temperature, that, just as man himself does under like conditions, it breaks down in health gradually, but none the less surely, simply for want of that bracing exercise of all its normal functions which a wide range of temperature within certain limits assuredly gives.

Air and moisture must of course be credited with their share of the work in all well-developed plant-growth, and for no plant is air more essential than for the before-mentioned *Phalænopsis*. As an instance of this, I may mention that all last summer, from May until September, I had a plant of the Javan form of *P. grandiflora*, growing and flowering like a weed, on a shelf near the glass of an intermediate Orchid-house. When I say that at times from twenty to thirty-six flowers were fully expanded on this single plant at the same time, it will be understood that the plant is by no means a tiny one. Air was left on this house night and day all the time mentioned, and special provision for airing the *Phalænopsis* was made by taking a pane out of the roof above the plant in an oblique direction, so that rain might not fall on the crown of the plant. Thus treated, the plant made three fine thick leathery leaves. A fourth leaf made its appearance. At this stage, towards the latter end of August, the autumnal rains commenced in earnest, and to save the flowers which hung under the opening in the roof, the glass was replaced, and the result was a leaf-growth larger than any of the other three, of a far fresher green colour; but owing to the want of air, the leaf never acquired its proper leathery texture, and, of all the leaves upon the plant, is the only one which became in any way blemished. Really good plants of *Phalænopsis grandiflora* are very rare when one takes into consideration the way thousands of plants are imported into Europe every year; and that they are thus rare is, I am sure, owing to a hot, equable, and comparatively airless temperature. In nearly every collection of Orchids I visited during the past autumn, I found five plants of *P. amabilis* and *P. Schilleriana*; but of *P. grandiflora* even presentable plants were very rare. From many observations, I am certain that a hot and airy day-temperature, and a cool, moist, and airy night-temperature, is most essential to the permanent wellbeing of this beautiful plant. High and dry night-temperatures for this and all other Orchids are most fatal. In its native habitat, *P. grandiflora* is exposed to winds for four or five months, the force and steadiness of which we have no idea of in our own land. Then for the same period the plants are

deluged by nightly rains. I am most anxious on this point of nightly rains, because they are so prevalent in the tropics that one may be excused for thinking them especially beneficial. The fact that Nature syringes and waters her plants most during the cool night-time is not sufficiently appreciated; but nightly rains after very hot days in the tropics are so common, that one must perforce notice them. The finest collection of *Phalænopsis* I ever saw in my life was syringed every night in accordance with Nature's plan, and air was always left in circulation during the night. I wish it to be clearly understood that I do not recommend anything like cool treatment for *Phalænopsids*. No amount of heat in the day-time will do them any harm; but heat and drought at night will do so most assuredly. These and many other tropical lowland plants must always have a high mean temperature, but a wide range is also desirable; and as I have endeavoured to show, air and moisture during the night-time are even more desirable for these plants than the hot arid atmosphere but too frequently maintained, especially during the cold winter months. Even during what is called the dry monsoon in tropical regions nightly dews are very heavy, and the plants recuperate themselves during the cool, moist night-time, "after the burden and heat of the day."

F. W. B.



HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

NO. I.

THE most profitable parts of kitchen-gardens generally are, or at all events should be, the borders near the walls—more especially those with a southern or western aspect. All alike can be put to a good use for fruit, flower, and vegetable culture; but for the present I intend to confine myself to the two latter principally, leaving the question as to what might be advantageously grown on the walls to some future date, or, better still, to some more experienced gardener. That these borders are made the most of by many practical gardeners must be admitted; at the same time, I believe I am justified in making the assertion that their value is not fairly estimated by the majority; and, judging from appearances, the designers of innumerable gardens far from realise their value. If this were otherwise, why do designers make them so narrow, and thereby stultify the efforts of those who would turn wide borders to good account? I could point to numbers of places where the borders are but little wider than the space that ought really to be given up entirely to the fruit-trees. Invariably running parallel to these borders are the principal walks in the gardens; and these, as a matter of course, lead up to the gateways, thereby rendering it almost out of the question that any improvement may be effected. But few have the courage to give these narrow borders

up to their legitimate occupants—viz., the roots of the fruit-trees; many, in fact, would not be allowed to do so by their employers, even if so inclined. They are therefore dug and cropped, and not always sufficiently manured—the consequence being, the impoverishment of the soil, and the destruction of many of the best roots by digging, thereby causing the roots to go down to the subsoil, as only those escape which have struck down into the oftentimes cold soil.

According to my ideas every border should at least be 20 feet wide, and be cropped only to within 5 feet of the walls. This would allow ample space for the roots of the fruit-trees, and also admit of that portion of the border devoted to vegetable culture occasionally being double-dug—which operation would greatly benefit both the vegetables and the trees, as the digging would be a mild form of root-pruning the latter. The main path would of course be in front of the border, but a light ungravelled path would of necessity be made as near the walls as the trees would admit. These paths, composed of the same soil as the borders, if not trampled too solidly, or much wheeled upon, do not appear to injuriously affect the trees; but where it can be managed, I should advise the use of large square paving-tiles, if for cleanliness' sake alone. They could either be laid down closely, to admit of being wheeled upon, or they may be short distances apart, in the way of "stepping-stones."

When I propose the giving up of 5 feet of the border to the trees, I do not overlook the value of the vegetable crops obtained at the foot of the walls, where so much may be done in the way of forwarding or retarding certain crops. To favour the trees, and indeed the vegetables also, I recommend the placing of a ridge of good soil, about 18 inches wide, and at least 9 inches deep, close to the walls, and above the level of the borders. These can be cropped and worked with little or no injury to the trees, and materially hasten vegetables to maturity. This not quite original idea may appear rather fanciful to some, but I have proved it to be a really good one, and consider it worthy of general adoption. In this paper I will, as briefly as possible, detail my practice with regard to cropping these ridges. Having already written upon "Early Vegetables," although principally with regard to frame-culture, repetitions in the course of my remarks may unavoidably occur. It is a generally recognised fact that a few small dishes of any choice vegetables sent in for the dining-table at a time when very scarce—that is to say, either very early or very late in the season—are more appreciated than large quantities supplied at a time when "everybody has them." Employers appreciate a dish of Early Peas, Potatoes, Cauliflowers, Beans, &c.; and a dish of either often "comes in handy," at a time when there is but little variety of vegetables presentable. If this were not the case, there would be no stimulus to this extra exertion on the part of gardeners, as the results of much labour are often, to all appearances, very meagre indeed.

Potatoes are one of the most important crops, and to these I give up about one quarter of the ridge at the foot of the south wall, and one half of that along the west wall, securing the earliest tubers from the former, and the heaviest crop from the latter. The soil used is light and open, nothing being better than old hotbed soil with a good addition of leaf-mould, or that obtained from a heap of balls of old pot-plants. In such a mixture the Potatoes mature earlier, and are of better quality than when grown in ordinary garden-soil. The time of planting ought, to a certain extent, to be regulated according to the weather and locality; but a certain amount of risk must be run. We usually plant about the first week in March, and find no better varieties for the work than either Mona's Pride or Veitch's Ashleaf. The tubers are previously sprouted, the strong central shoot only being retained, and are placed 9 inches apart in a drill at least 8 inches deep, and drawn along the centre of the ridge. To preserve the shoots, they are moulded over with the hand, afterwards levelling with a rake, and sowing Radishes thinly over part of the length, repeating the sowings of the latter at intervals of about a fortnight. Wood's Frame Radish is still one of the best for this work, the French Breakfast and the early short-topped Turnip-rooted varieties being also very suitable and good. The Potatoes are not moulded up, but require to be protected from frost, the most critical time being when the growth is pushing through the surface, as it is then very succulent and tender. Inverted flower-pots, with a clod of earth over the drainage-hole, will ward off a severe frost; and when these are too small, branches of evergreens or other contrivances are quickly and easily put over them. In this manner we secure a fairly heavy crop of good Potatoes and Radishes in time to closely follow those obtained with the help of a rough frame and mats.

Next in importance are Cauliflowers, and of these a number of very serviceable heads can be had with the help of the south and west walls; and where but few or none are grown under hand-lights or in pits, these sites ought especially to be utilised to the extent of about one-fourth of the available space. In addition to those autumn-sown plants wintered in frames, I find it a good plan to prick out a number rather closely (about 4 inches apart) at the foot of the walls, early in October. Medium-sized plants are preferred, and if these should be inclined to grow freely, they are checked by being raised with a trowel and pressed back again. Small plants this season have already withstood 10° of frost; and though last winter the stock was killed by frost, in most seasons such sturdy little plants will live in the open, and be far more suitable for early planting than are those wintered in frames—at least as these are generally treated. Early in March they are thinned out, and all gaps made good, finally disposing them about 15 inches apart, and in a single line. Should these exposed plants be killed during the winter, some of those preserved in frames are substi-

tuted, which are protected with inverted flower-pots, though only when absolutely necessary. Some of the best Walcheren Cauliflower I have seen, were grown at the foot of a south wall—in this instance in the ordinary border. Those grown on ridges, as I advise, will not often be large, but this is more than compensated for by their extra earliness. Any well-enriched soil will do for the Cauliflowers.

Although Peas are scarcely so profitable as the two preceding kinds, they will yet, with a little trouble, give a few small early dishes. For this work, Laxton's Minimum must eventually become very popular, as it is remarkably dwarf, very prolific, and of extra-good quality. Unique (Laxton), an older dwarf variety, has not met with much favour, but I find it a really profitable sort, and annually save seed for sowing the next season. Other good dwarf early varieties are Carter's Extra-early Premium Gem, and M'Lean's Blue Peter. After various experiments, I have come to the conclusion that the plan of sowing in boxes, and placing in cold frames in preference to heat, or of sowing in the open ground, is by far the best. They make sturdy growth, and readily transplant into the open border, or the ridge, as in our case; no perceptible check being given, even when the roots are shaken quite clear of the soil. We use about four ordinary bedding Pelargonium boxes, and although we sow thinly, invariably secure enough plants to make a line about 16 yards long. They are planted in a manner similar to box-edging, a deep drill being cut with a spade (6 inches from the wall), the plants laid in rather thinly, and the roots lightly covered. Stakes are at once given according to the height of the variety, and beyond that they are no further trouble. If sown early in January, they may be put out on the first favourable opportunity in March, and will give a picking a fortnight before those that may be sown or planted farther from the walls.

Lettuces are well worthy of a place at the base of a warm wall. They may be treated much the same as the Cauliflowers, as in reality they are quite hardy in the southern counties. Our greatest difficulty is to keep off rabbits, birds, and slugs. Two lines may be grown on the ridge, the back one, about 6 inches from the wall, to be a Cos variety put out 10 inches apart; and about 9 inches in front of this a line of a hardy Cabbage variety, these being 9 inches apart. A row of the latter may also be worked in in the front of the Peas.

W. IGGULDEN.



ROSES ON THEIR OWN ROOTS.

THE interest in Roses never seems to flag, except it be in new ones. The new Roses of late have been very much like new novels, attractive only in their names. Enthusiasts—and they are not few—will buy, and try, and endure disappointments, in the hope of the chance of having something good and new; but a *Maréchal Niel* or a *Madame*

Lacharme does not come every year. Yet there seems quite a glut of first-class Roses enumerated in every catalogue—there is, indeed, enough to satisfy the greatest craving for variety. Some of the oldest Roses still appear in the catalogues, and to our taste are preferable to very many of the newest. We do not refer to the Provence and Gallica Roses, but to the various Hybrid Roses. William Griffiths, Paul Ricaut, Coupe d'Hebe, Souvenir de la Malmaison, Mrs Bosanquet, Devoniensis, were familiar names almost scores of years ago, and still they are to the front. What we would like to call attention to at present, with respect to this subject of Roses, is the desirability of cultivating them on their own roots, more especially such old Roses as we have mentioned, and also some of the middle-aged ones, so to speak,—such as Victor Verdier, Paul Néron, Général Jacqueminot, Jules Margottin, and many more. These are old classics, like Curren Bells or Waverleys—names which resist time. Our taste in this matter may be peculiar. We have always pitied the poor Rose perched on a 4-foot stilt, chained like a parrot to a pole—and also the Rose, as a dwarf, grafted to the gross Manetti stock; the former seems to say buy, buy, buy—the latter, die, die, die. If any one wants to plant Roses for posterity, then plant them on their own roots. If you are a tenant at will, subject to eviction, and cannot take your Roses with you, then plant them on the Manetti, or on the Brier, which is the better of the two. Very recently we saw rather an extensive rosary entirely (or nearly so) of plants on their own roots—fine, strong bushes, and comprising many of the comparatively newer sorts. They were selected and planted by a genuine rosarian and gardener, on his own ground, for himself and his posterity. This was not accomplished in a year, but was the work of years of patience, the object kept steadily in view until it became an accomplished fact. If we had the planting of a rosary of our own to-day, we should plant nothing but Roses on their own roots. All the varieties really worth growing can now be obtained from the leading Rose-growers on their own roots, at a slight advance in price on those worked on the Manetti. With the mulching of manure which should always be on the Rose-beds in winter, there need be no fear of the hardest frosts. Dryness at the root is the greatest enemy of the Rose. Under whatever circumstances, a gravelly soil, a hot, dry situation, is, in short, starvation. You can starve your Rose on its own roots; but with cow-manure and the water-pipe, its cultivation is possible on any soil. We have never seen better Roses than those grown on pure peat, manured heavily with cow-dung on a siliceous subsoil. Roses are not obtained from cuttings like Geraniums or Gooseberries—unless it be China or Hybrids of the China Roses, of which there are many—but are with the greatest ease propagated by budding or grafting; consequently the easy plan is the most in favour, and the propagation by cuttings or layers is neglected—yet the latter process is easy and successful. The hardest-wooded Prov-

ence or Gallica Rose is easily rooted by layering. Cuttings of the harder-wooded varieties are slow to strike roots, and are extremely liable to rot or damp-off at or under the surface of the soil. This suggests that a dry airy atmosphere is the best condition in which to strike them. We have therefore been tolerably successful, by inserting cuttings round the side of small 4-inch pots, in rather stiff soil, and placing the pots, when filled, in the sun, much the same as Geranium cuttings, on gravel, at the foot of a wall, in the month of October, until the cuttings had formed the callus at their base, afterwards protecting them in a cold pit, well aired, where roots were formed in spring. By this means a pretty large percentage of cuttings will strike. Too much wet must be avoided; over-dryness at that season is not so much to be dreaded. We have also been successful, more or less, by inserting the cuttings in the open border, first making the position hard by treading, and then spreading a coat of puddle 2 inches deep over the surface, and inserting into the puddle good strong cuttings with a heel attached. In a short time the puddle stiffens, and firmly envelops the base of the cutting, excluding the air. In winter loose leaves can be spread between the rows of cuttings, to help to exclude frost. In this way we have seen more than 50 per cent struck. Much depends on the weather. The proper time to insert the cuttings is early in October. The same success would not attend the operation if a cold frame is used, because of the damp stagnant atmosphere. Marvellous as are the Rose-bushes to be seen sometimes on the Manetti or other stocks in the open border, and more so as pot-Roses, still they are as nothing compared to what they are capable of growing to on their own roots, either in the open air or under glass—Général Jacqueminot forming a bush so high that the writer could not reach the bunches of Roses.

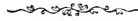
The advantages of growing Roses on their own roots are many. There is no trouble with suckers—these become an advantage; there is not the misery of daily looking on a stock which is irretrievably dying by slow degrees, and starving the poor Rose; there is no staking or tying required, strangling is avoided, and chafing by the effect of the cord. They practically defy frost; for if killed to the surface, they will spring again from the roots.

Our professional wisdom was exercised in the selection and planting of several dozen choice Standards last spring—2-foot stems, and fine heads. Spacious pits were dug; great care taken in the mixture of yellow loam and rotten manure; much grave deliberation on the planting, staking, and tying was expended; the hopes of the lady rosarian were high; watering and watching was not neglected; and woe betide a grub or a green-fly! In May the foliage was good, and the buds numerous and plump. But it proved a grievous month for the Roses! It was the daily privilege of two pet donkeys to be paraded on a walk adjoining the Roses. One morning early those sagacious and omnivorous animals undid the latch of the garden-gate, and

perpetrated the deed they had long meditated—viz., ate off the leaves of the Roses, and found them good to the taste, and themselves no doubt wiser, like our first parents. In the morning the Roses were gone, but the 2-foot stems left. Our presence was summoned. What was to be done? Why, shoot the donkeys, and plant Roses on their own roots, was the advice of

THE SQUIRE'S GARDENER.

[We thoroughly agree with every word here said of standard and dwarf grafted Roses. They are ugly and most expensive, and serve no good purpose, unless it be to produce a few extra-sized blooms for competition.—ED.]



GREENHOUSE PLANTS.

No. I.—THE AZALEA.

THE varieties of this genus in cultivation at the present time are somewhat numerous, and all gardeners are acquainted with a greater or less number of them. The brilliancy and peculiar freshness exhibited by their flowers, combined with the profuse manner in which they are produced on healthy plants, are qualities that place Azaleas in the front rank of flowering plants, and no other class of greenhouse plants can successfully compete with them in the matter of producing a brilliant and striking floral display from January to June. Then the great diversity and purity of colour exhibited in the flowers of different varieties, are points in which Azaleas excel. The flowers of some varieties are pure white, those of others, various shades of pink or rose colour; some have crimson, and others orange-scarlet coloured flowers; and again, there are varieties that have striped flowers of various shades,—so that in the matter of colour they supply a wide field to choose from. Then there is a difference in the shape or formation of the flowers produced by different varieties. Some have double or semi-double flowers, others have single flowers. Some varieties have the petals of the flowers crisped or frilled, and others have plain or smooth-petalled flowers; then there are kinds that have the petals reflexed, and others that have flowers more or less cup-shaped. Thus, in the colour and formation of the flowers, they present an amount of varied and interesting beauty that is equalled by few other classes of greenhouse plants, and not surpassed by any. Other recommendatory qualities possessed by Azaleas are that, as a rule, they are of a compact habit of growth, and, when properly treated, never fail to produce an annual crop of flowers in great abundance from the time they are 6 inches high by 6 inches through, until they reach as many feet high by the same through. Their free-flowering habit while the plants are small renders them very appropriate and useful subjects for taking part in floral decorations in the dwelling-house, where such are in request. As subjects for cutting from, they are extremely useful, their flowers being adapted both for

bouquet-making and arranging in vases. They are also amongst the hardiest of greenhouse plants, and if the wood is well ripened they will bear without injury several degrees of frost. It is better, however, not to expose them to frost if it is possible to avoid doing so. And further, Azaleas are easily forced for a supply of flowers in the winter; but the process, to be successful, must be gradual. If the plants are brought at once from the temperature of the greenhouse to a structure where the temperature is say 70° or 75° , the likelihood is that the wood-buds will burst into growth, and the flower-buds will damp off or go "blind," and thereby defeat the end in view. The proper way is to place the plants in a temperature of from 50° to 55° at first, and keep them in this temperature until the flower-buds are seen to be on the move, then a rise of 5° or 10° in the temperature will cause the flowers to expand before the wood-buds have made any great progress in growth.

The last thing I will mention in favour of Azaleas is that they are very "telling" plants at public exhibitions. A healthy well-bloomed specimen is a "strong point" in favour of the collection in which it is placed; and no collection of flowering plants at a spring show can be said to be complete that does not include a good example of some variety of the Azalea. Every one who has seen a Spring Show of the Royal Caledonian Horticultural Society must have noticed the magnificent specimen Azaleas exhibited by Mr John Paterson of Millbank, and others. These plants illustrate, in a striking manner, the profuse flowering qualities of different varieties when under the care of skilful cultivators. The only fault that, in my opinion, could be found with the examples in question is, that there is scarcely "a bit of green" to be seen about them; they are masses of flowers from top to bottom. This is due, in some measure, to the close way in which the shoots are trained; and I am of opinion that even in the case of plants intended for exhibition, it is a mistake to train the shoots in so stiff and formal a manner; and for home decoration Azaleas should have only as much training as will prevent them from having a straggling look. Still, it would be interesting to some, and useful to many readers of the 'Gardener,' if Mr Paterson would state in its pages the mode of culture by which he succeeds in laying on the colour so thick.

To produce fairly good examples of the Azalea, however, is not a difficult matter, and we will now say a few words on cultural points.

Propagation.—This is accomplished by seeds, cuttings, or grafting,—the former method with the view of producing improved varieties, the two latter with the view of perpetuating and increasing the varieties already in existence. Under favourable conditions cuttings of most varieties emit roots freely. Many varieties, however, do not grow so fast on their own roots as they do when grafted on stronger-growing kinds, and, as a consequence, grafted plants are to be preferred. Only the strongest-growing varieties should therefore be propagated by cut-

tings, and these principally with a view of supplying stocks on which to graft less free-growing kinds. September is a good time to put in the cuttings. When selecting them, choose mature shoots, of from 2 to 3 inches long, of the current season's growth. Sever them from the parent plant with a sharp knife, and trim off a few of the lower leaves from each. This done, insert them in well-drained pots or shallow pans, filled with peat and silver-sand in equal proportions, well mixed together and firmly pressed in the pots. After the cuttings are inserted give them a good watering by means of a fine-rose watering-pot, for the purpose of settling the compost firmly about them; then place the pots containing them on the bed or on a shelf in the propagating-pit, and cover them with bell-glasses: shade them from direct sunshine, and supply them with water as required until the following spring, when they will be rooted and ready for potting off into separate pots, using a compost similar to that in which they were rooted.

After the little plants are potted off place them in a temperature of about 65°. Shade them from sunshine, and maintain a close humid atmosphere about them for two or three months. Under this treatment they will grow apace, the object being to get them on as fast as possible the first year. Those plants intended to be used as stock for grafting other varieties on should not be permitted to make more than one shoot each, and if all goes right they will be strong enough to receive the grafts in eighteen months from the time they were put in as cuttings. When about to be grafted, the stocks should be placed in a temperature of about 70°, a week or two previous to the operation of grafting taking place. This will cause the sap to be moving in them at the time the scions of the desired varieties are attached to them, and thereby the union between stock and scion will more readily take place. The scions should not be more than 2 inches long, taken from the points of the shoots; and the method of grafting should be what is known as splice or whip grafting. Side-grafting is also a successful method; and both these are so well known to gardeners that I need not describe them. After the operation is complete, the plants should be placed in a close case in the propagating-pit, and kept shaded and moist until the union is complete, and afterwards treated as established plants. I would remark, however, that at the present time the propagation of Azaleas, in any way, is not much practised by private gardeners. Young plants in a flowering state can be purchased at the nurseries much cheaper than what the same sized plants could be produced for at a private place; besides, it is not at every place where the necessary accommodation is at hand for propagating Azaleas, either by cuttings or grafting.

Repotting established Plants.—This may be done at any season, but just as the plants have done flowering is perhaps the best time to do so. Before transferring the plants from smaller to larger pots, the balls of soil about their roots should be thoroughly moist. It is also important to success that the drainage be ample, and neatly arranged

in the pots, so that it may act satisfactorily at first, and continue to do so until the plants need repotting again.

A suitable compost for Azaleas consists of sandy loam or good fibry peat—but not a mixture of both—and coarse river-sand, in the proportion of four parts in bulk of loam or peat to one part of sand. When applying the compost to the roots of the plants make it as firm as possible, and do not fill the pots over full; leave plenty of room for holding water. After being repotted the plants should be placed in a temperature of 60°, shaded from sunshine, supplied with plenty of atmospheric moisture, and a moderate amount of air for six weeks or so—after which time they should get as much air as possible.

About the middle of July the plants should be placed out of doors, where they may remain till the middle of September. While standing out of doors the pots should be placed within other pots, or wrapped round with hay or straw bands, which serve the same purpose—that of protecting the roots from injury through the action of the sun or dry air on the outside of the pots.

Watering.—No rule can be laid down as to how often this should be done. The compost about their roots should not, however, be allowed to become anything like dust-dry at any season; and on the other hand, a sloppy condition of the compost must be avoided.

Insects.—Azaleas are liable to be attacked by mealy-bug, scale, green-fly, red-spider, and thrips. The two last insects give most trouble. Thrips in particular have a special liking for Azaleas, and if permitted to overrun the plants, will soon destroy them.

Placing the plants on their sides on a proper platform, and giving them a good washing with cold water by means of the water-engine now and again, will keep red-spider in check, and, at the same time, prevent thrips from making much headway.

If thrips get numerous, treat them to a strong dose of tobacco-fumes on two or three successive evenings.

J. HAMMOND.



THE FRUIT-GARDEN.

No. I.

WHAT are called the small fruits are of greater value to persons with very small gardens than are such fruits as Apples and Pears; and with such, a good supply for dessert, for cooking, and for preserving may be grown, without fail, in soil of a by no means favourable kind, and in any climate within these islands. A small piece of ground, if properly cultivated, may be made to yield a large quantity of Currants, Raspberries, Gooseberries, or Strawberries, and that in a year or two from the time of planting; whereas Apple and Pear trees require much greater space, are longer of coming into bearing, and are always precarious, even although the soil and climate may be good. We therefore advise

those whose ground does not exceed half an acre, to avoid such things, except for covering walls, when they will be at least ornamental if properly trained, and may occasionally yield fruit to pay for the rest of the ground and the labour bestowed upon them. We daresay, however, that this may fall into the hands of many who would like to produce a few Cherries, Plums, Apples, or Pears of their own growing, and out of their own garden. For these we intend to detail the best modes of cultivation known to the writer. It may also happen that some of our readers may be anxious to produce a few bunches of Grapes in their greenhouse, or that even a small vinery may be possessed by them. We are glad to see many artisans, and, in some instances, even colliers and labourers, with little bits of glass, under which Vines are grown, and grown not altogether unsuccessfully. Many tradesmen and others have also little vineries in their gardens, and for each of these classes we will give the results of years of practice in the cultivation of the Vine, and also directions whereby the greatest possible amount of produce may be secured from a given piece of ground, of what we have called the more valuable fruits.

THE GRAPE VINE.

It is only in the most favoured spots of these islands that Grapes of any kind can be grown, of even tolerable excellence, out of doors. Glass houses and artificial temperatures are absolutely necessary for growing Grapes to anything like perfection, especially in the northern counties of England, and all over Scotland; nevertheless, many good bunches of Grapes are annually ripened in very small glass structures, where very little heat is applied. Going into places where one could scarcely find an entrance, and where an upright attitude was an impossibility, except to persons much under the writer's height, we have often been astonished to see Vines, cramped for room, trained on no intelligible principle, and planted in soil by no means congenial, bearing quantities of fairly good Grapes, and this in counties having the least favourable climates. That with proper soil, proper training, and, at times, a little artificial heat, better results would be obtained, there can be no room to doubt. But the knowledge of what proper treatment is, is just what such cultivators want, and what it is our object to supply.

We do not write for those whose vineries are large and roomy, and specially put up for the cultivation of the Vine by owners of extensive gardens; for such generally employ practical men, who are, or ought to be, able to advise their employer how to carry out, or to carry out themselves, the proper operations necessary to secure the best results. And if a book, giving all the information that can be desired, be wanted, then no better treatise can be secured than W. Thomson's 'Practical Treatise on the Cultivation of the Grape-Vine,' to be had from Messrs Blackwood, Edinburgh; or D. Thomson's 'Handy-Book

of *Fruit-Culture under Glass*, from the same publishers,—both of which are the very best books of their kind to be had, and the cultivation of the subjects treated on is given even to the minutest detail. However, we will suppose that no such books are ready to hand, and will therefore give all necessary directions for the cultivation of the Vine on a small scale.

We think we cannot accomplish our object in a better way than by transcribing a letter which we wrote a year or two ago to an artisan who came to us asking for instruction. He had, in his spare time, put up a house 12 feet long, 5 feet broad, and 10 feet high. The back of the house was a stone wall, so the house formed what is called a “lean-to.” It faced nearly due south, and he thought, if he knew how to proceed, he might grow Grapes. We did not sit down and tell him how to proceed, but promised to write out instructions, so that they might be referred to at any time. The truth is, we were afraid (like the unjust judge) that his continued coming might weary us, and, worse, absorb too much of the few minutes which we can daily call our own. Our written instructions were as follows :—

“You may congratulate yourself on the fact of having had a bare wall facing the south against which to lean your house, for that is the best aspect possible—although one facing a little further east, or much further west, would have done well enough. Your “lean-to” is also the best form of a vinery, although even that is by no means necessary to successful Vine cultivation. I would advise you, in the first place, how to make your border. You need about 2 feet in depth, at least, of good healthy soil for the Vine-roots to run in ; and you want it a good breadth, for confinement either at root or branch is not good for Vines. You say that you have founded your house 6 inches deep. That was a mistake which you will have to rectify. Your front wall is 2 feet high, and you may have the soil to within 6 inches of the front plate. Well, you must excavate another 18 inches, beginning at the back wall and extending to, in the meantime, 2 or 3 feet in front of the house. This will of course undermine it, and you must provide against this by underbuilding it, and allowing the front wall to rest on pillars 3 feet apart,—two in the middle and one at each corner. The spaces are for the roots extending outwards ; for we certainly advise your having an inside border, and the Vines planted inside. Should you object to so much trouble, and perhaps expense, you may have your border wholly outside, but our experience is that your Vines will not grow so rapidly the first year as they would do planted inside ; but this is about all the difference that will happen in your case.

“After you have taken out the soil to the depth advised, if the soil underneath is the least wet you must put drains in it to make it dry ; for a wet bottom will not answer for Vines, although they do require such waterings as you saw us giving the Vine-borders here. If it is

naturally dry you will only need to surface-drain it—that is, lay a row of tiles from the back to the front, with a few inches of fall, if possible, one at each end, and one in the middle. Over these drains you must put stones or broken bricks, tiles, or similar material, to the depth of 8 or 9 inches; for Vines need great waterings, and a speedy outlet for superfluous water. Over these stones you must place a turf, grassy side downwards, to prevent the earth, of which the border is to be made, from getting down among the stones and choking the drainage.”

J. H.

(*To be continued.*)



NOTES ON DECORATIVE GREENHOUSE PLANTS.

LISIANTHUS RUSSELLIANUS AND L. PRINCEPS.

THESE Lisianths are perhaps two of the most gorgeous and showy greenhouse plants in cultivation. Though they used formerly to be considered and treated as stove-plants, yet they thrive quite as well in the greenhouse, or at least in the intermediate house.

They are both natives of South America; hence, as coming from a warm country, and before their culture was fully understood, they were, like most other exotic plants on being introduced, almost as a matter of course relegated to the stove, at least by those who did not stop to consider under what conditions they were found in their native habitats. They are found in Mexico and New Grenada, at a considerable elevation, even as high as 11,000 feet; so it naturally follows that the treatment usually accorded to plants from more temperate climes must suit them also, and such is found by practice to be the case. *L. Russellianus* was introduced to this country in 1835, and was so named in honour of the Duke of Bedford, who was a great patron of horticulture. It was flowered first by Mr Turnbull at Bothwell. The flowers are cup-shaped, and of a deep-blue colour, verging on purple. It is generally considered a somewhat difficult plant to cultivate, which may be the reason that one so seldom sees it among collections of plants. To grow a good specimen of it is considered a pretty fair test of a gardener's skill as a plant-grower; but it is well worthy of more extended cultivation.

It can be propagated either by cuttings of the half-ripened wood, or be raised from seed; the latter is the more general way. The seed should be sown at the end of February or early in March. As the young seedlings are very impatient of too much moisture, which makes them damp off quickly, the pot or pan should be well drained. It is immaterial what kind of soil the pot be filled with, provided about an inch and a half or so of the top be finely-sifted leaf-mould and sand—two-thirds of the former to one-third of the latter. The seed should be sown thinly on this mixture, and

pressed gently into the soil, with some flat instrument, but no covering of soil put over it. Water through a very fine rose, and cover the pan closely with a pane of glass, and set it in a warm pit. When the seedlings are large enough, which may be in about from six to eight weeks, they should be potted off singly into thumb-pots, and plunged in a gentle bottom-heat, being very careful of them in the way of watering. They may require a shift into larger pots about July. The soil should consist of two parts of peat, one part of good fibry loam, and one part of sharp sand, a little leaf-mould to be added, or a little good old manure. They should be kept as near the glass as convenient, and in a warm pit, until they take to the fresh soil, when they may be removed to a cooler place, but out of the way of draughts. They may be wintered in a pit where the temperature will range at about 50° at night, and they must be very carefully looked to in the way of watering. In spring they may be again shifted into larger pots, and plunged for a time in a slight bottom-heat, in order to make them start kindly. About the middle of June they will come into flower, and so continue for a considerable time; and will form an attractive addition to the greenhouse or conservatory. *L. princeps* is propagated in the same way as the other, either by cuttings or from seed, and it is even a more showy plant. The flowers are tube-shaped, and about 5 or 6 inches in length, of a glowing scarlet, but yellow at each end, and bulged out in the middle, the apex of each bloom spreading out into six segments, through which the anthers and pistil protrude themselves. The flowers are borne in clusters on the points of the shoots. The plant is of a compact habit, and grows to a height of about 2 feet. The general treatment given to *L. Russellianus* will also suit this variety.

J. G., W.

NOTES FROM THE PAPERS.

THE Apple trade of America with this country is, says the London 'Telegraph,' still in its infancy, and yet it is enormous. We are told that "Washington Market, in New York, and the adjoining streets, are 'literally blocked with barrels filled to repletion with red, green, and golden fruit; while trucks and waggons of every kind are engaged in conveying Apples from the receiving depots to the various commission houses.' From Philadelphia, Baltimore, Boston, and Montreal come similar reports, so that, for many weeks past, hardly a vessel has left the eastern seaboard of the United States without having a large consignment of American Apples on board. One hundred thousand barrels are exported from these cities every successive week, the cost of each barrel ranging at the shipping place from one dollar and seventy-five cents, or seven shillings, to one dollar and twenty-five cents, or five shillings, apiece. Upon arriving at Liverpool, Glasgow, and London, each barrel is sold at rates varying from seventeen to eleven shillings, and they are landed in excellent condition, with hardly an Apple damaged. The most favourite specimens are Newtown Pippins, Cranberry Pippins, Spitzenbergs,

Baldwins, and Greenings, which are, for the most part, sold in London by costermongers at the rate of two or three for a penny, while, by the West-end fruit shops, the finest Newtown Pippins are retailed at eighteenpence a dozen. It is obvious that, at these prices, enormous profits must be made either by the American shippers or by the consignees in this country; nor can it be denied that Apples ought to be much cheaper in England than is now the case. Be this, however, as it may, the export trade of fruit from North America to Europe is still in its infancy; and nothing is more surprising to an Englishman who visits the United States for the first time, than the amazing abundance and superlative excellence of Apples, Cranberries, and Peaches. In the Western and Southern States, big baskets containing these fruits may be bought at a shilling apiece; and Dr Nichols tells us that in New England 'the finest Apples cost less than three-halfpence a bushel—less, in fact, than a single good Apple often costs in London.' In Georgia and Alabama delicious Peaches rot upon the ground in thousands of bushels, which even the multitudinous hogs are not able to devour. In former times, before an ingenious Yankee had invented paring-machines, it was the custom, especially in New England, to have what were called 'apple-paring bees,' at which a dozen or more families met together during the autumn, in order to pare the Apples with sharp knives, and then to quarter and core them, previous to stringing the quarters upon twine, and hanging them up to dry in festoons suspended from the kitchen ceiling. Dried Apples, and open pies made from them, constitute, in fact, one of the commonest and cheapest dishes which are to be seen upon New England tables in winter; and if some little skill in cookery were employed, as is rarely the case, in preparing them, we doubt not that the insipid pumpkin-pie—of which, about a century since, Talleyrand, when exiled to the United States, expressed such abhorrence—would disappear before the superior attractions and flavour of a similar dish made from Apples.

"Hitherto the humbler classes in our great cities have had no idea of making any other use of these cheap Apples than is involved in their consumption in a raw state. 'Pleasant as is the Apple by itself,' says the author of the admirable 'Book of the Table,' 'it needs assistance in cooking. Its taste requires to be heightened by other fruity flavours, to be crossed with spices, to be enriched with butter, and magnified in contrast with sugars and creams.' Stewed or baked Apples, with a little marmalade or currant-jelly added to them, form a cheap and palatable dish; and Apple-tarts with cloves, nutmeg, and a little lemon-juice squeezed into them, are within the reach of the humblest households. We trust that the experience gained hitherto by American shippers of the amazing quantities of this delicious fruit which the English markets can absorb will lead hereafter to a largely-increased supply, at diminished prices to the consumer."

Turning from fruit to vegetables, it seems not at all unlikely that the Americans will soon be formidable competitors in the early Potato trade. Not much more than a week distant from our shores, and with a better climate, there seems to be no reason whatever against them securing a monopoly of this trade also. It seems as if home growers will eventually be compelled to confine themselves to the production of perishable fruits only—like Strawberries and Currants, &c., which there is always a good market for.

We do not know anything concerning Mr Stevens of Gullane, but should a monument ever be raised to the investigators of the Potato disease, we should

say he will deserve a prominent niche in it, not only for the originality of his views on that subject, but also for his remarkable opinions regarding the mental capacities of his own class—the farmers of the Lothians; that is, assuming, of course, that he was not “crammed” on the subject of the Potato murrain, and induced to exhibit himself in the capacity of lecturer before the Haddingtonshire farmers, by some malevolent wag who knew the lecturer’s weak point. According to the ‘North British Agriculturist,’ Mr Stevens set out with the affirmation that the Potato disease was “entomological in its nature—that is to say, an insect destroying the plant.” It was not an insect as large as “the caterpillar on the Gooseberry,” which, it appears, must also be an insect—but it was an insect for all that; and the lecturer was afraid lest he might be “charged with egotism were he to repeat the long string of illustrious names who supported this affirmation.” This modesty on Mr Stevens’s part was, we feel quite sure, superfluous, because any “string” of illustrious names might have been flattered by being even remotely associated with such a remarkable discovery. It is not by any means an easy task following Mr Stevens in the train of reasoning by which he evolves a Potato fungus from a Potato beetle, and associates it with Huxley and Tyndall, and the “bacteria,” “all of a heap;” and it is really a relief to the reader to get quite lost and confounded with the lecturer, in a maze of Parliamentary evidence and much irrelevant matter that does not appear to have any earthly relation whatever to the subject of the lecture. Burns talked of “stringing blethers in a rhyme,” but Mr Stevens’s were strung to such good purpose, that one of his audience declared that, “for his part, he did not know that he was a bit wiser; but by groping in the dark,” in the way they had begun presumably, he thought “they might stumble on something that would be a preventive or palliative of the disease.” Considering that the lecturer had just traversed the field of science for more than two hundred years back, in order to make the beetle-fungus theory clear, such a remark was neither kind nor complimentary. This was not all, however, for Mr Stevens’s discovery got into the ‘Scotsman;’ and the lecturer being questioned regarding the “entomological” descent of the *Peronospora infestans*—second cousin to the Gooseberry caterpillar—he explained that the insect-view of the subject was adopted purely for the purpose of carrying the idea home to the minds of men, into whose heads it could not be beaten in any other way; “he therefore wrote for them [the East Lothian farmers] in such words as would carry the idea into their minds.” The testimony of one of his listeners, already given, shows, however, that the lecturer’s laudable object failed somewhat in this respect. It seems exceedingly probable that Mr Stevens’s hearers went away with about as accurate an idea of the Potato disease “monster” in their minds, as the Irishman had of the mosquito after hearing a description of it, and recognised his entomological acquaintance in an elephant which he met soon after, exclaiming, “By jabers, if there ain’t the very baste itself!” Mr Stevens’s attempt to get out of the “entomological” situation, by throwing the blame on the stupidity of the class he lives amongst and associates with, is not generous, and cannot be accepted as quite satisfactory. The whole tenor of the address, and the remarks that passed, show that the ignorance was not all on the side of the audience; and besides, Mr Stevens uses terms such as “bacteria,” “mycelium,” flocculent films, “zoospores,” &c., without explaining them, that leads one to think he entertained a very high idea indeed of the intelligence of his hearers. In his closing remarks, he states that it is his “earnest desire that more and abler minds than his may give the subject

consideration,"—a sentiment to which we are sure any intelligent reader who reads his address will cordially subscribe.

Mr Luckhurst has been writing on the Potato disease in the 'Journal of Horticulture,' and although his arguments on that head are not very much to the point, he has one fact to record which is worth more than all the rest. He says he only secures his Potato crop when he lifts the tubers before they have finished their growth, and before the disease attacks them. His theory seems to be, that the disease does not manifest itself before maturation sets in, and if the Potatoes are lifted and stored before that period they will be saved; and he could, for years back, and does now, point to "store-sheds full of sound Potatoes" in proof of his statements. It is not the first time that early lifting has been suggested, if not practised; but whether the experiment has been fully tried or not, we cannot say. Mr Luckhurst will have done good service, however, if he can prove what he says in a perfectly satisfactory manner. If he has saved his crops on all occasions by the means he states, there is no reason why others should not do the same; and it is to be hoped the subject will receive further attention. We attach great value to statements like Mr Luckhurst's, but it is essential that they should be verified in the most satisfactory manner. It appears that Mr Luckhurst lets his crops grow as long as he thinks safe; and as soon as the tubers have reached a fair size, and before a speck of disease appears on the foliage, he lifts and stores at once. What about the keeping qualities of the tubers stored at this stage?

It has been stated by several correspondents of the 'Garden' that the Blue African Lily is hardy, or nearly so, in some parts of England, and succeeds well out-of-doors. For whatever purpose it is used it is a beautiful plant, and is well worth cultivating as a conservatory specimen, or for indoor decoration. Its tall spikes of delicate blue flowers render it a conspicuous and pleasing object anywhere. Its near neighbour, the *Imantophyllum*, is also tolerably hardy, and has been planted out and flowered well in the open beds in Yorkshire during the summer months. There are several varieties of this plant, the best producing very large trusses of deep orange-coloured flowers. We saw an immense plant of this in the front hall of a gentleman's house sometime since, and thought it one of the finest decorative specimens we had ever seen.

If it could be proved that the climate of Derbyshire and Yorkshire was superior to the climate of "Worcester, Hereford, and Kent," it may be readily comprehended that that interesting "under-ground" theory promulgated under the auspices of the Scottish Horticultural Association need not be quite abandoned. If Apples and Pears, &c., succeed better in a bad climate than in a good one, it is manifest that there must be something in the "stratum of soil" that does it. If, however, this question of climate cannot be sustained, we do not see what course is open to the able author of the 'Fruit and Flower Producing Agencies of Fibry Roots' but to capitulate as gracefully as he can; and the closing paragraph of a late communication of his to this paper shows how well he understands the amenities of polite discussion, and that this is not too much to expect from him. With regard to the question at issue—climate—here is what any one may read in any authentic topographical and statistical history of Worcester from which our author hails,—and the other two counties are much the same: "The soil of Worcester consists of almost every variety suitable for vegetation; its timber is magnificent, especially the Elm, which is called "the weed of Worcester. It produces

table-fruit and vegetables of the finest quality, and its fertility has long gained for it the reputation of being the garden of the mid-west. The climate is mild and healthy, and the rainfall is nearly *the minimum* of England. Hop-gardens are plentiful in the western division, and their produce ranks next to that of Kent." So much for Worcester.

Yorkshire, we learn from the same source, suffers from its inclination to the German Ocean; and as for Derby, we are told that it is "more a manufacturing and mining than an agricultural county," and that "the climate is cold and moist, with fogs and often frosts in summer." History does not make any allusion to the culture of hops in Derby or York, or to the manufacture of either cider or perry. The above description of Worcester applied, we must remind the reader, five years ago; but the author of 'Fibry Roots,' &c., went there about that period, and the climate changed for the worse immediately, and it is now neither "early, dry, nor warm." What changes of a physical or other nature have happened there during these five years have not yet been chronicled, but a paper on that subject will, it is to be hoped, be forthcoming soon. The writer of the paper under review was "suddenly called to Edinburgh," and broke his journey at Leeds and Derby, where he spent probably about four-and-twenty hours, a good portion of the time in bed no doubt, and he had therefore "an opportunity of making climatical notes," hence his authority for his statements, which we do not of course attempt to controvert. In taking leave of this subject, "Reader" has only to observe, that in criticising lectures or papers addressed to the whole world, he does not consider it incumbent upon him to put any other construction upon the words and phrases they may contain than these express and are meant to convey, and as they are evidently understood by those to whom they are addressed.

READER.



HINTS FOR AMATEURS.

HARDY FRUITS.

It is seldom that experienced fruit-farmers plant orchards at this season; neither do practical gardeners often commit a mistake in this manner, though frequently they are, not from choice, compelled to yield to circumstances, and plant when a chance offers itself. If the work has not been done during the past three months, we would prefer preparing the ground for the trees by the necessary trenching, draining, or whatever is required, and plant when days are longer and warmer, as well as when the ground was congenial. Turfy loam, or otherwise fresh wholesome soil, placed next the roots, is always a good beginning for them. A quantity of lime-rubbish or brickbats laid immediately under the tree will cause the roots to spread outwards instead of going down into the cold subsoil. When trees are for orchards in which cattle are to graze, the stems should be high, and every encouragement given to make good substantial growth; but then the roots and trees will do much better if they are kept into the surface-soil and free from the cold subsoil. Tap-roots mostly lead to unfruitfulness. In few

localities can roots be left to themselves with safety and profitableness. If trees on walls and elsewhere have to be planted now, choose a period free from frost, lay the roots out into wholesome loam with extra care, and finish by mulching well. Pruning, training, staking, clearing trees of moss, &c., washing them with lime and soot mixed, stimulating old trees with fresh rich surface-soil after clearing off that which may be sour or inert, are some of the more pressing operations at present. When training where wires are used, it is necessary always to have a twist of the tying material between the bark and wires, otherwise canker may show itself. This precaution is specially necessary with Cherries, Apricots, and Peaches. When tying is made to nails (a system we rather like by placing nails thinly and permanently), the wood should be also clear of the metal. When shreds are used (a practice we never countenanced), they should not be tightened to injure the shoot, but plenty of room left for the wood to expand. Rasps may be trained to wires, single stakes, or bent over, such as taste may dictate. Crowding should not be allowed: four canes tied together, growing 3 to 4 feet apart, are enough if they are strong. Proceed, if not done, with Currant and Gooseberry pruning, and paint the shoots with lime, soot, and cow-manure mixed, to keep off birds. Examine fruit-stores.

FLOWER-GARDEN.

In this department the chief part of the work is keeping order and sweetness. Whatever style the beds and borders are arranged in, the same attention as to general management is necessary—rolling, sweeping, using lime-water to keep worms quiet, and prevent their mischief in lawns. Where flower-beds can be turned up to frost by trenching, it will be of much advantage to the bedding plants next summer; drought is thus prevented from burning up the roots, which it does when they cannot get down out of its reach. Tulips and Hyacinths should be protected during severe weather. Turfing, box-planting, and repairing of edges, may be done at any time that weather is mild enough for the operation. Now is a good time to have composts ready for potting. Stock of cuttings for next year's supply may be examined, and when kinds are scarce they may be placed in warmth to start them into growth; when large enough, they can be taken off as cuttings, and propagated. This applies to such kinds as Verbenas, Petunias, Heliotropes, Iresines, &c. All hardy and half-hardy plants under protection of glass should have plenty of air and light. Watering must now be done with much care. Dribbling of surfaces will now be more destructive than usual. Avoid throwing the water about the structures, especially when there is no means to dry it off quickly. A small hotbed made now with leaves and a little horse-manure would bring many things on to be increased, and also do well for propagating; but steam and unhealthy vapours should not be confined.

GREENHOUSE AND CONSERVATORY.

Greenhouse plants generally require more care during this month than at any other period, watering only when necessary; and to give enough requires practice how to ascertain this. With many plants the mischief from bad watering is only seen after the season is advanced. Chrysanthemums, when done flowering, are the better of protection in a frame or pit, especially when early cuttings are wanted. They may be put in a frame this month, and kept plunged and close till signs of flagging are past; then they should have plenty of air. Flowering shrubs, bulbs, and other plants to make the show-house gay, may be placed into heat (say 50° to 55°) every two or three weeks, to meet the demand. Cinerarias, Calceolarias, and Primulas should be kept near the glass till they come into flower. Those Cinerarias which are flowering and have their pots full of roots, may have manure-water. Camellias, Epacris, and Heaths now flowering may have more water than those not flowering. Drainage and clean surfaces are very important to such plants. Change the atmosphere by applying a little fire-heat to expel damp. In severe weather it is injurious to keep high temperature by fire-heat; 40° to 45° is safe. Keep foliage-plants free from dust, and insects must have no footing on them. Climbers may be kept within bounds: except those which are flowering, the most of them will be about starting into growth.

STOVE.

Many plants will have finished blooming here for the season. They may now be rested by having less water, and be kept cooler. Gesnerias, Gloxinias, and Achimenes may be put into pots or pans to be started. As the month advances, some of the pot-bound plants to be grown larger may be potted in preference to starving for want of root-room; others may have their drainage put right, and be fresh surfaced. Look to Caladiums, and see that they are not getting dust-dry, or suffering from damp and cold. Thrips, scale, and bug must be stamped out. Temperatures may be 55° to 60° . M. T.



PEAS AND THEIR CULTURE.

Of all the different kinds of vegetables grown none are greater and more general favourites than Peas. The chief object which every one aims at in their culture is to have them as early as possible, and they can never be had too late in the autumn. In some exceptional instances they are produced in pots early in spring, and by this means they may be had some weeks or months earlier than in the open air. But few have the accommodation to treat them in this way; and as it is a practice never likely to become very general, details of it need not be given here. A few notes, however, on their outdoor culture throughout the season will no doubt be more acceptable.

Many sow their early Peas in November, others not until January, February, or March. Having sown them at all these times, we are not greatly disappointed if vermin or severe weather prevents the November sown ones from doing so well as could be wished, as we find that those sown in January and February come in about as early; and as a rule they are more satisfactory both in growth and crop. From this your readers will understand that if they have not sown their early Peas in November they will not be far behind yet, but the first chance should now be taken of sowing the first crop. For mid-season and late crops the rows are better when far apart; but with early ones it is different, as it is an advantage when one row affords shelter to the other. This is best secured by sowing the rows about the same distance apart as the Peas grow in height. Supposing the variety to grow 6 feet high, sow the rows 6 feet apart. Dwarf ones may be sown in under the same rule.

A south border or sheltered but sunny strip of ground is best for the early crops. Where manure is plentiful the whole ground may have a coating dug into it; but when this useful commodity is scarce, as it is in many gardens, a quantity should only be dug in under the rows. Good manure of any description is necessary for Peas, as the produce is always inferior and flavourless without it. In selecting a day to sow let it be dry over head, and the soil not wet and spongy. The drills should be taken out with a spade to the full width of that tool, and the seed should not be sown too thickly; but this is not so liable to happen in a wide drill as in a very narrow old-fashioned one, when the Peas were generally sown on the top of each other, and the young growths came up in thickets. The drill should never be more than 3 inches deep, and the soil should be made firm and smooth over the seed.

Where vermin are troublesome, care must be taken to trap them from the time the seed is sown. Snails can generally be kept from doing harm by sprinkling the surface of the row with soot or lime; and if this is followed up after the young plants are above ground, birds will hardly ever touch them. As soon as the growths can be seen above ground, the Dutch hoe should be run deeply along each side, and the stakes may be put to them afterwards. These, especially if a few small bushy twigs are put in along the bottom, afford much shelter during cold winds in spring. When the first crop is in, others should follow sufficiently close to each other to give a continuous supply of Peas throughout the whole season. To make two sowings every month from January until July, will give fresh green Peas from the end of May until the end of October. As the season advances, the most open parts of the garden may be selected for the rows; and the same mode of putting in the seed as we advise for the early sowings should be followed out all through. In heavy soil and damp situations the seed should never

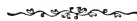
be put far below the surface ; but in light dry soils the crops which will come into use throughout July and August, when hot dry weather is generally experienced, had better be sown in shallow trenches. The soil is thrown out as if for Celery, the manure dug in the bottom, and the seed sown and covered over, leaving the surface of the row from 4 to 6 inches below the surrounding ground.

Mildew often proves troublesome on Peas in summer and autumn. Extreme drought as well as excessive wet seems to propagate and nourish this, but good liberal cultivation will overcome all such maladies better than any other prescription. In very dry weather, liberal waterings with liquid-manure does much good ; and a mulching of half-rotten manure, put along the sides of the rows before they come into bloom, improves quality and lengthens supply in hot weather.

As a show vegetable, Peas have received a good deal of attention lately, and deservedly so, as their merits and popularity entitle them to this. And it may interest some to know that they may be grown to win in the very best competitions, without any special treatment apart from that which we have just recommended, and that, too, without in any way sacrificing the ordinary crop. Of varieties we have said nothing, but these must not be omitted, as they are now so very numerous that few can grow them all, and a trustworthy selection may be the means of preventing many disappointments in scant produce and inferior quantity. William the First is now a well-known early Pea, and is amongst the best of the kind which can be named. It comes sooner to maturity than any other tall-growing Pea, and the pods are plentiful and flavour good. The first and second sowings may be made of this ; then we come to something better for the main crops in Carter's Stratagem, Telephone, and Culverwell's Telegraph. These three Peas have been selected by us from amongst over three dozen kinds grown here, as the best in every way which have yet been introduced. They all bear enormous crops of long handsome pods, well filled with sweet high-flavoured Peas. Champion of England, Veitch's Perfection, and Ne Plus Ultra, although not very new, also possess much merit ; the last named is an excellent late variety, but to grow it properly, it should be stopped when the growths are 5 feet high. Laxton's Omega is another grand late sort, and that gentleman's new "John Bull" eclipses everything for size of pod.

J. MUIR.

MARGAM, TAIBACH, S. WALES.



CHOICE NEW OR RARE HARDY FLOWERS.

Armeria setacea.—This little gem of an alpine plant grows only about 1 inch or 1½ inch high, in pin-cushion form, densely set with bristle-like bright-green leaves. The flower-stems rise to the height of about 2 inches, wiry and erect, bearing beautiful rosy-pink flowers.

Lithospermum tinctorium.—A very beautiful and distinct species, with broader and very much more hairy leaves than the lovely and better-known *L. prostratum*. The flowers are large, brilliant deep-blue, produced on stems 6 inches long, enduring for a couple of months in summer.

Thermopsis rhombifolia.—A very handsome species, with large Lupine-like flowers, bright-yellow, and very showy in terminal racemes. The plant is vigorous, growing to the height of about 18 inches.

Androsace sarmentosa.—One of the most beautiful of this highly interesting genus of alpine plants. It forms attractive rosettes of small ovate leaves, densely clothed with silky white hairs, giving the whole plant a somewhat hoary aspect. The flowers are larger than those of most of the other species of the genus, deep rose-coloured, with a white eye, and are borne erect in neat umbels. Most suitable for rockwork and pot-culture.

Lamium longiflorum.—A most desirable border-plant, growing to the height of about 18 inches, and clothing itself in the early summer months with large white and purple flowers.

Daphne rupestris.—A very dwarf-growing Daphne, of rare excellence both as regards perfume and decorative qualities. It forms a dense compact carpet of dark-green foliage, which is quite obscured in its flowering season by the profusion of its soft rose-coloured flowers, which are produced in terminal clusters, and are larger than those of the lovely *D. cneorum*.

Saxifraga pyrenaica var. maxima.—This beautiful early spring-flowering saxifrage belongs to the oppositifolia section of the genus. It is the largest-flowered species of that section, and one of the most attractive of spring flowers.

Anemone vernalis.—A very dwarf-growing species of this valuable decorative group. The flowers, which are large, are pure white internally, and bluish-purple externally.

Arenaria balearica.—An old-fashioned, but little-cultivated, gem, admirably adapted for sunny banks on rockwork, or for carpeting in light warm soils where the drainage is good. The plant, even when in flower, rather clothes than rises above the soil. The flowers are small, pure white, and profuse.

Campanula Raineri.—One of the handsomest of the dwarf-growing species. The flowers are very large, nearly 2 inches across, erect, purplish or bluish-purple.

Campanula macrantha.—A very handsome *Bell flower*, growing to the height of about 2 feet. The plant grows erect, with deep dark-blue flowers of large size.

Campanula pulla.—One of the gems of this rich genus. It grows only a few inches high, but in every stage of its growth is a most interesting plant. The flowers are pendent, very numerous, deep dark indigo-blue. It is best adapted for culture in pots or on rockwork.

Campanula Waldsteiniana.—A dwarf dense-growing species, of somewhat tufted habit. It is a very profuse blooming plant, the flowers being rich deep lilac-blue.

Crocus imperatorius.—A very distinct and pretty species, flowering when the weather is favourable about Christmas. The flowers are lilac, buff, and purple.

Helonium Hoopesii.—This is by far the finest of the genus. It grows about 2 feet high, producing very large deep orange-yellow flowers of the most showy description. It is one of the most handsome of summer-flowering border-plants.

Erigeron macranthus.—A very showy species, with large spreading rosy-purple flowers—that is, the ray is of that colour, and the disc yellow. An excellent border-plant, growing to the height of about 15 inches.

Gentiana gelida.—One of the most lovely of this beautiful genus. The flowers bright pale-blue, borne at the extremities of the somewhat diffuse stems, which rise to the height of about a foot.

Linum campanulatum.—A handsome yellow-flowered species, about 15 inches high.

Linum flavum.—Another beautiful yellow-flowered species, perhaps the best of its colour, and a very compact grower.

Linum provinciale.—A compact-growing species, with bright-blue flowers, height about 18 inches.

Linum viscosum.—A remarkable species, with viscous downy foliage, and large handsome rosy-purple flowers.

Silene Elizabethæ.—A most lovely species, growing to the height of about 4 inches. The flowers are very large, bright deep-rose.

Pentstemon glaber.—A very pretty Pentstemon, very dwarf, only about 6 inches high, with pretty glaucous foliage and large rose-tinted blue flowers.

Pentstemon humilis.—A lovely little plant, about 6 inches high. The flowers are deep gentian-blue.

W. SUTHERLAND.



THE RENOVATION OF AN OLD GARDEN.

SOME few months ago "Mr Iggulden" alluded to the kitchen-garden here under my charge, at the same time suggesting that I should describe the system adopted in bringing the soil into a tolerably satisfactory condition. At the outset it will be necessary to state, that for many years past (at least ten) the old garden in question was condemned as worn out and of comparatively little use. The management of the ground during the early portion of that time I cannot say anything about; but for a few years previous to being in my charge, the system of kitchen-gardening adopted was anything but likely to improve an old garden—cropped and undoubtedly heavily manured for many years. It would be unreasonable to say that the crops that were taken from

it were good, because they grew worse and worse until it was difficult to produce a Cabbage. If planted, the whole would club before being ready for use, and had to be cleared away. Many attempts had been made to obtain a new garden, but without success. Although late in the season when it passed into my charge, and the time for cropping close at hand, I resolved to try in earnest to see what could be done towards improving the condemned garden. However, in the first season but little was accomplished, owing to the large quantity of work remaining to be done, both under glass and in the outdoor departments. The little that was done was done well; and during the summer season preparation was made as opportunity offered to make a good start in early autumn. But, the greater portion of the garden was dug and cropped only to disappoint and annoy; for all the Brassica tribe clubbed and went off as on previous occasions, except a good batch of Brussels Sprouts that was planted upon the ground prepared as the whole garden was intended to be done. The Sprouts were really grand, and gave good hope of improving the ground if the plan started was well and thoroughly carried out,—not one clubbed.

The portion on which they were planted was considered the worst in the garden, but fortunately it turned out to be the best, with a little extra labour the first season. Heavily manuring an old garden that has become impoverished or worn out does not mend the evil, and is, comparatively speaking, of no use. Deep digging cannot be too highly recommended in the improvement of old gardens; but great care is requisite not to bring to the surface too much of the soil that has been undisturbed at the bottom for years, or it will be some time before it is sufficiently fertile to produce a crop, especially if in a sour and unsatisfactory condition, as was the garden here. It had evidently not been disturbed deeper than 8 or 9 inches below the surface for some years. The subsoil was poor hungry-looking stuff to bring up to grow vegetables in, if the ordinary system of trenching had been adopted. In the soil-yard there was found a large heap of old soil that had been used for growing Cucumbers and Melons, and for other purposes, which, when cleared out of the houses, had been allowed to accumulate: this was removed to a piece of ground intended to be operated upon. In another enclosure were leaves and grass, which had been wheeled from the lawns and allowed to remain for years, and were thoroughly rotted. Quantities of this were carted upon the ground and spread over the surface 6 inches thick, ready when the work of trenching commenced. Only 2 or 3 inches of the bottom-soil were brought to the surface; the leaf-mould and about 2 inches of the surface-soil were placed in the bottom, with some of the fresh soil well worked amongst a portion of the subsoil—in fact, nearly as much care was taken in mixing the whole as if required for potting purposes. The layer of soil near the surface had no vegetable matter, but an extra quantity of the fresh soil incorporated with it. In addition to this, the whole had a dressing of

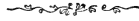
hot lime liberally applied, and only the largest lumps slightly slaked—the rest was turned into the soil without being slaked. It was surprising how it upheaved the soil and quickly made it as light as a bed of ashes, the sodden and sour condition of the soil being soon changed. Before planting the Sprouts, the ground had to be rolled and made more firm.

The following autumn and winter a good portion of the garden was treated in this way ; and from time to time, as quarters became vacant, old potting soil, the surface-soil from Vine and Peach borders, old Vine borders, and all kinds of rubbish from various sources that would burn, was burnt and mixed in as well. All the ground was treated as described, and the lime worked into it in the spring, or sufficiently early to get well cooled before the various crops had to be put in. Knowing that soil of a tenacious nature was much better adapted to the growth of good vegetables, and our soil being light, and made lighter still by the heavy application of lime, clay was obtained and liberally scattered over the surface and allowed to lie through the winter, so that the frost caused it to crumble, in which condition it incorporates with the soil much better than if spread on and dug in at once without exposure to the action of the weather. Clay mixed with the soil remains in lumps unless it be either burned or exposed to frost ; and the latter being the best in our case, as the soil was already too light, the clay was dug in at the same time as the lime. This operation was repeated again the following year, but without the application of lime, when the greater portion of the bottom-soil was brought nearer the top. At this time manure was used for the various crops, but not in large quantities ; in some cases it was worked in as the trenching proceeded, in others just before the crops were put in : the latter I think preferable. All old soil is still carefully kept, as it proves of much greater service to old gardens than heavy applications of manure. Fresh soil, clay, and lime are capable of bringing old gardens where the soil is light into a thoroughly satisfactory state ; and the latter is, so far as I am able to judge from the effects here, calculated to reduce clubbing to a minimum.

The garden here will now grow all kinds of vegetables well except Carrots, and we hope that they too will soon succeed. It is questionable if ever the ground was in much better condition than it is now ; and I do not doubt that it will yet considerably improve, and ere long grow first-class vegetables—as good, at least, as can be produced in this changeable and uncertain climate. These notes on the renovation of an old garden are not intended for those who have had similar circumstances to contend with, and much greater difficulties to surmount, and who have had many years of experience in the renovation of old gardens, and may be able to point out in the ‘Gardener’ some facts worth recording ; but they are intended for those who may be labouring under disadvantages in trying to produce vegetables in exhausted gardens. Doubtless at first the renovation of impoverished

gardens entails a large amount of labour—much more so than if trenching, manuring, &c., only were needed. Trenching and thoroughly mixing the soil takes almost double the time of ordinary trenching. Nevertheless it pays well in the end, when satisfactory crops can be produced with some certainty. When the soil is once got into fair condition, it is not difficult afterwards to maintain it in order, and continue to improve it. Under judicious management it should never require to be all trenched the same season, but a portion at a time, thus extending the operation over a series of seasons.

WM. BARDNEY.



BOTANY FOR GARDENERS.

NO. III.—STEMS.

THE Stem or Trunk is that portion of the tree which has by some been termed the axis, supplied with pipes, cells, and filters, and through which the sap rises in its progress to the leaves. Part of the stem displays a *vascular*, and the other portion exhibits a *cellular*, structure. The stem is produced by the successive development of leaf-buds, which cause a corresponding horizontal growth between them, and varies in structure in four principal ways,—viz., *Exogens*, with 2 cotyledons, the radicle itself usually elongating; leaves net-veined; perianth (petals) in 4's or 5's; wood in a continuous ring, formed by successive additions to the outside. *Endogens*, with 1 cotyledon, the radicle usually remaining undeveloped; leaves straight-veined; perianth in 3's or multiples of 3's; wood in isolated bundles, formed by successive additions to its centre. *Acrogens*, when the stems are formed by the union of the bases of the leaves, and the extension of the point of the axis; or by simple elongation or dilatation, where no leaves or buds exist, as among *Thallogens*. In altitude or length, and diameter, stems present the most varied and contrasted features. According to some travellers, there is a Palm that grows 15 feet high, with a trunk not thicker than a finger. A comparison, indeed, between the stems of various plants would in some cases afford examples of widely divergent extremes. The *Scirpus capillaris* is not thicker than a hair, and some are as fine as a gossamer thread; while the trunk of the Baobab is nearly 100 feet in circumference. The stem of *Exogens* may be distinguished into the Pith, the Medullary Sheath, the Wood, the Bark, and the Medullary Rays.

The *Pith* consists of cellular tissue, occupying the centre of the stem. It is always solid when first organised; but in some cases it separates into regular cavities, as in the Walnut, when it is *disciform*; or it tears into irregular spaces, as in the Umbelliferæ (Parsley, Carrot, and Parsnip, for instance).

The *Medullary Sheath* consists of spiral vessels; it immediately surrounds the pith, projections of which pass through it into the

medullary rays, and is in direct communication with the leaf-buds and the veins of the leaves; and by it oxygen is carried upwards, liberated by the decomposition of carbonic acid or of water, and conducts it into the leaves.

The *Wood* lies upon the medullary sheath, and consists of concentric layers; is formed by the successive deposit of organised matter descending from the buds, and by the interposition of the medullary system connecting the pith and the bark. New wood is formed annually and deposited between the external surface of the woody skeleton and the inner surface of the liber. Therefore the central wood is the oldest and firmest, and necessarily the most mature and permanent. Our forest-trees supply examples of this kind of growth, and the age of a tree may be known by the number of concentric layers. A layer is the produce of one year's growth in countries having a winter and summer; but this rule is of uncertain application, as in some tropical countries, owing to the very small and sometimes no period of rest, more than one is formed.

The *Medullary Rays* consist of cylinders or compressed parallelograms of cellular tissue belonging to the medullary system: they connect together the tissue of the trunk, maintaining a communication between the centre and circumference; act as braces to the woody and vasiform tissue of the wood; convey secreted matter horizontally from the bark to the heart-wood; and generate adventitious leaf-buds.

The stem of *Endogens* offers no absolute distinction of pith, medullary rays, wood, and bark. Endogenous plants deposit a layer of wood internally and towards the centre. The external cylinder is consequently the oldest and first formed, and therefore the exterior is the hardest or most indurated, as is also the lowest part of the trunk; and, it may be repeated, the stem is thus gradually built up by a prolongation of the fibres of the leaves that are deflected at a specific angle towards the centre. From this view of the case it must appear that the extension in length of *Endogens* bears no ratio of proportion to their diameter, as is exemplified in the case of Bamboos or the Palm.

In what are called *Dictyogens*, the stem has the structure of *Exogens*, the root that of *Endogens*—*Smilax* is an example.

NO. IV.—LEAVES.

Leaves, when perfect and fully developed in flowering plants, consist of two parts: the *lamina* (limb), or disk—and the *petiole*, or foot-stalk; the latter in many cases being articulated or jointed with the branch or stem, so as to be readily detached without laceration when the leaf begins to decay. Leaves originate around the growing apex of the stem—they are never terminal organs—and are expansions of the bark immediately below the origin of regular leaf-buds, and appendages of the axis. They are sometimes opposite, as in *labiate* plants, such as *Coleus* and *Wood Betony*; alternate, as in *Ivy* and the *Common Garden Pea*; verticillate, as in the common *Bedstraw* (*Galium*), &c. As I mentioned before, *petioles* are foot-stalks, and the *petiole* is the

channel through which the vessels of the leaf are connected with those of the stem: it is formed of one or more bundle of spiral vessels and woody tissue, enclosed in a cellular integument. It is often absent, and then a leaf is called sessile, as the well-known spotted Orchis. The leaves of the Common Primrose (*Primula vulgaris*) are also sessile. When the *petiole* becomes dilated and hollowed out at its upper end, the *lamina* being articulated with, and closing up its orifice, as in *Sarracenia* and *Nepenthes*, it is called a pitcher or *Ascidium*; if it is unclosed, and is a mere sac, as in the *Utricularia*, it is termed *ampulla*. Sometimes the *petiole* has no *lamina*, or is lengthened beyond the *lamina* and retains its usual cylindrical or taper figure, but becomes long, and twists spirally; such a *petiole* is called a tendril. Excellent examples of tendrils are furnished in the Vine, Pea, and Clematis. The form of the simple leaf is extremely variable. The leaves of the tall *Convolvulus* are *cordate*; of the Ground Ivy (*Glechoma*), *reniform*; of the *Mezeræon* and Plantain, *lanceolate*; of the Daisy, *spathulate*; of the Iris, *ensiform*; of the Sheep's Sorrel, *sagittate*; of the Arum, *hastate*; of the Whortleberry, *retuse*; of the Tulip-tree, *truncate*; of the Horse-chestnut, *digitate*; of the Passion-flower, *palmate*; of the Christmas Rose, *pedate*; of the Water Milfoil, *pectinate*.

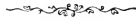
In reference to size, the leaf varies from a point to an expansion of immense magnitude. The leaves of the Palmyra Palm (*Borassus flabelliformis*) will each shelter twelve persons; beneath a leaf of the *Corypha umbraculifera*, a person on horseback can be completely sheltered; and a leaf of the *Pandanus longifolia* has often been grown 15 feet long in this country. Again, on the contrary, leaves are almost as thin as a hair: native examples of this are furnished by some of our aquatic *Ranunculi*. The leaves of *Myriophyllums* are also extremely small. By the foregoing remarks it will thus be seen that in consistency leaves vary from a gossamer tissue to the enormous ones of the Palms, &c., I have mentioned. A perfect plant consists almost entirely of leaf-formations, which are as follows: (*a*) The lower stem-leaf; (*b*) true stem-leaf; (*c*) upper stem-leaf; (*d*) calyx-leaf; (*e*) flower-leaf; (*f*) stamen-leaf, and (*g*) fruit-leaf formations. An explanation of the above seven terms is necessary. The first formation (*a*) is characterised in form by a broad base and limited height; in substance by a frequently fleshy cartilaginous or leathery consistence, and a dark colour. These characters show that this, the lower stem-leaf formation, is wholly or partially excluded from the influence of light and air, and serves for the fastening of the plant in most cases. (*b*) The second formation, or that of the true stem-leaves, is generally a very extensive structure, characterised by the multiplicity of its organs, which are properly called leaves, and are distinguished from the lower stem-leaves by a greater longitudinal extension, with less breadth of base, expansion at the upper and contraction at the lower ends, a more membranous nature, and a green colour. The third (*c*), or upper stem-leaf formation, which consists principally of sheaths, bracts, glumes, &c., in some degree similar to the first formation, but are distinguishable from that formation by the much more delicate structure and narrower base; they present but little that is strikingly remarkable, in consequence of their very small size. The fourth (*d*) formation is that of the calyx-leaf, or more popularly known as sepals, and are much more massive, coarser, greener than the last formation (*c*); they have a broader base, are equally destitute of any incision, and rarely possess an expansion. The fifth (*e*), or the formation of the flower-leaf or petals, is especially distinguished from all others by the delicacy of its tissues, as well as by the purity and diversity of colours. Flower-leaves, or petals, are generally longer than calyx-leaves, but narrower at the base; in

some cases the corolla resembles a calyx, and *vice versa*. The sixth (*f*) formation consists of the stamen-leaves, which are the smallest and most remarkable leaves of the flower, with a decisive development of *petiole* and small expansion, which passes into the bag-like enlargements of the lateral parts or *anthers*. The last or seventh (*g*) formation is that of the fruit-leaf or carpels, which form the uppermost storey of plant-structure. Here (as in the last-named formation) the leaf-like character is less obvious, principally because the individual leaves of this formation are always crowded together more than those of any other, and generally even grown together, forming a cavity in which the axis terminates in numerous radiations; they are thicker, larger, and greener than the other leaves; they rise from a smaller base, but expand immediately, while the upper part contracts in a petiolar manner, forming the style. These leaves have a longer duration than any others, and still continue to be developed when the others are for the most part dead. In these leaves, together with their enclosures, that in the first instance form what are termed fruit-buds, from which afterwards the fruit is developed, various modifications of leaves are often seen; for instance, the "prickles" of the common Dog-rose are merely modified leaves.

WILLIAM ROBERTS.

PENZANCE.

(To be continued.)



FLOWER-GARDENING: COST OF THE TWO SYSTEMS.

WHEN "J. S., W." advocates any particular theory or system of gardening, we may be sure that he will fall foul of whoever may have the misfortune to disagree with him. Six years ago "J. S., W." was obliged to plant a border with hardy plants, which previously had been furnished with bedders, and since then the latter have passed under a cloud, and the former attained to the position of "J. S., W.'s" especial favourites. Not so long ago he was tilting against an unfortunate who happened to give expression to the opinion that a hardy white Phlox was not such a beautiful flower as *Calanthe veratrifolia*; and now I have put the proverbial foot into it, and called forth a statement as to the relative cost of hardy-flower borders and that of ordinary bedders. Had I found that it cost more labour to keep these poor bedders in first-class condition than it did to keep hardy flowers, no harm would have accrued; but, as my experience led me to believe quite the contrary to be the truth, "J. S., W." has had to put himself to an amount of trouble on behalf of hardy flowers which perhaps not another two men in the kingdom would have done. He has in this instance found a statement in the article that irritated him very much, which I do not think any one looking straight at it could have discovered. This is how he commences his article: "Mr Brotherston refers to the comparative cost of the bedding and herbaceous or hardy-flower gardening; and the latter, according to his way of thinking, is the more expensive. 'There is no use blinking the matter,' he tells us, and I quite agree with him; but if he can make it appear that the bedding-out system, as practised at present, is less costly than the other, or even as cheap, he will have to tell your readers a great deal more," &c. Compare this with what I did say: "And then remains the great and final question — that of cost. Many are forming collections of hardy plants who never give this question a thought; or, if they do, expect it will be a saving. A few years back I remarked that the keeping of hardy plants in good order was no light matter, and was borne out in that

remark by Mr Sutherland. Since then I have had a great deal more experience of them, with an extended practice in ordinary bedding and leaf bedding, and I have no hesitation in saying that these borders will require more labour to keep them in first-class order than either styles of bedding alluded to. With our present experience, hardy plants will not be tolerated unless they are well done; and in pressing the claims of these on gardeners, there is no use in blinking the matter of labour." For several years back I have consistently advocated the claims of hardy plants, and in the same article from which "J. S., W." made his mutilated quotation, I praised them as highly as any one could. How far I go may be seen in this sentence in the same article, "No garden should be without a selection of good sorts." But it is no reason why, because hardy plants are worth cultivating in every garden, that we should ostracise, from that moment, masses of Geraniums, Calceolarias, and other bedders. Nor would I conceive it to be quite honest to withhold my experience in the matter of cost of keeping these hardy borders in the same style that our bedding borders and beds are kept, without letting it be known that a gardener does nothing to relieve the pressure of work during some of the busiest months of the year by substituting hardy flowers for bedders, but that, on the contrary, he would thereby be heaping up more work to himself. At the same time, hardy flowering-plants, when well selected, are in themselves so deserving of culture that a garden without them wants a feature which it should not be long without. Again, it is well to have "J. S., W.'s" assurance as to the small amount of outlay on which a border of these can be kept gay from February to November. From an experience extending to a period of eight years under my own management, and a further three years when in a subordinate position, I should have deemed it impossible for any one who had a few years' experience with these flowers to assert, as your correspondent does, that going over the borders "about four times" is sufficient to spend in the way of keep and the maintenance of a constant succession of flowers. Without taking into account that part of the season up to July, during which time very little labour is required to keep things tidy, I find from that time that it takes the borders to be looked over every ten days at the least. Then, every spring there are a certain number of plants, of a rank-growing nature, to pull to pieces and replant. Double Primroses, for instance, require taking up and replanting every year in order to keep them from dying out. There is also the propagating of Carnations and Picotees which cannot be left over two years to do any good. We propagated 350 plants of one Picotee this year without counting Clove and Self Carnations, and Anne Boleyn Pink, of which we cannot get too many. It would be interesting to know what means your correspondent takes at so small an outlay of labour to make good the gaps left by the decayed foliage of such plants as Snowdrops, Crocuses, the various Narcissi, Grape Hyacinths, Dondias, Dentarias, Scillas, Crown Imperials and other Fritillarias, Ranunculus amplexicaulis, Iris reticulata, Adonis vernalis, Sanguinaria canadensis, Winter Aconites, and others. Then my experience tallies exactly with that of the Editor, in that the best of the flowers which bloom after midsummer are subjects which require to be staked. The Phlox is the only late flowering-plant which "J. S., W." can call to mind, and Delphiniums amongst summer flowers. Can he intend the many species and varieties of the tall-growing Bell-flowers, of Lychnises, Monardias, Sun-flowers, Erigerons, Lythrums, Salvias, Lobelias, Aconitums, Enotheras, Adenophoras, Scabious, Pentstemons, strong-growing Lilies, &c., and the many fine Michael-

mas Daisies, to be excluded, and only dwarf-growing subjects admitted? There is also this to be borne in mind, where dwarf-growing Alpine species are grown—namely, their tendency to go off without leaving a trace behind, excepting the label which tells where the plants used to be. It is consequently necessary to have a duplicate collection in frames to make sure of preserving a stock of these disappointing subjects. Of course there is the alternative of not growing these at all, and it is advisable for gardeners not to do so as a rule; but it is only fair to bear in mind that the collections trotted out from time to time in 'The Garden' have an attached stock in frames, and sometimes houses of a more expensive character.

Turning now to what your correspondent has to say as to his experience with tender bedders, and the figures he has so kindly placed at the disposal of your readers, a criticism of which he challenges, permit me in the first place to point out the absurdly large number of plants he employed to fill the border he discusses under the two systems. Allow me to quote the whole of what he says on the numbers of plants raised: "We had to vary the style of the border every year; but on the average, the labour and cost were about the same. Sometimes the border was ribboned and sometimes panelled, &c. Our plan, then as now, was to plant autumn-struck Geraniums 'the length of the trowel' apart each way, or about 9 inches—not more; and such things as Lobelias, Calceolarias, Verbenas, &c., were planted about 6 inches apart; while succulents were set nearly touching each other. One way and another, front and back, at least 2400 Geraniums were required, and more when the groundwork was composed of Mangles's variegated Geranium, or other kinds, besides other 3 or 4 rows perhaps. In addition to these, at least 1200 Calceolarias were used, as *Aurantia multiflora* and *Aurea floribunda*, and as much *Verbena venosa* between these and the Geraniums. This left still near the half of the border to fill, which was perhaps filled up with *Lobelia* panelled with Geraniums, or *vice versa*, &c. The Lobelias, we know, came to about 8000, and in front of these are sometimes planted a row of *Echeveria secunda glauca*, *Crimson King Verbena*, or any other suitable edging at the time. The total number of plants generally used was about 13,000." The above statement, though somewhat mixed up and wanting in plainness of expression, obviously means that the border which we were told in a previous sentence was 360 feet long by 10 feet wide, took 13,000 plants to fill it, or nearly 4 to every square foot; that, occasionally, after more than half of the border was filled, 8000 Lobelias were panelled with Geraniums in a portion of that front space, and that a suitable edging was used in addition! That all ordinary bedding-plants were set out at 6 inches apart each way, with the exception of Geraniums, which were planted 9 inches apart each way. Now, let us analyse these figures. A border 360 feet in length will require 720 plants at 6 inches apart in the row; 18 such rows will require 12,960 plants. Allowing a space of $4\frac{3}{4}$ inches next the box to the first line, and a space of $4\frac{3}{4}$ inches between the back edge and the backmost row of plants, there remains, of the 10-foot border, 17 spaces of $6\frac{1}{2}$ inches each between the 18 rows. Next let us take the instance of the 8000 Lobelias (which were panelled with Geraniums in "near the half of the border"), and the suitable edging. "Near the half of the border" would be a little less than 5 feet wide, perhaps 6 inches less, but 5 feet will do. Planted at 6 inches in the row, or 720 plants, these 8000 Lobelias would fill 11 rows of 6 inches wide, and cover a total space of 360 feet by 5 feet. There remains this query for more ingenious arithmeticians than I can pretend to be, to find where the Geraniums which were panelled with

these 8000 Lobelias were put, as also the precise position in the border the "suitable edging" was placed. Then there remains the question of distances between the plants—9 inches for Geraniums, and 6 inches for other kinds of plants. Here again I confess to be somewhat at variance with the above mode of arithmetic. Where is the utility of planting Geraniums which are 9 to 15 inches across, at a distance of 9 inches from each other, and allow them six weeks in which to meet; or of planting Calceolarias of an average size of 6 inches across, at 6 inches each way, and allow them ten weeks to do it in? Of course the plants for that particular border might have been grown on a principle of great refinement, and were not allowed to grow beyond a certain size before being planted out; but I do not think that gardeners at all act on that principle in a general way.

Before leaving the 13,000 bedders, we will compare the number of hardy flowers required to stock the same border. For hardy plants £35 were spent, or "close upon" that sum. "Most of the plants came from Mr Parker's, of Tooting, at the prices marked in the catalogue." Sixpence per plant used to be the lowest price quoted in Mr Parker's list, and we may take the average at ninepence each. That gives, allowing a percentage of "gratis" plants, 950. "The most" was made of these, and with the addition of what was "propagated" from "our own small stock," and the further "addition of a few annuals," the border which swallowed up such an unconscionable lot of tender bedders was complete, though why annuals should be classed as herbaceous plants it is difficult to say. It will also be noted, as the Editor did on the appended notes to "J. S., W.'s" article, that all mention of hardy bedders is omitted. This is hardly fair, when such plants as Violas, variegated Grasses, Polemonium variegatum, the dark-leaved Ajuga, Golden-feather Pyrethrum, Sedum spectabile, and others, are to be found in almost every garden. As to cost of production, "J. S., W.," will not lose anything at 5s. per 100. Geraniums are the only expensive article to produce, and a great deal less than £8 per 1000 will produce these. Calceolarias are more than covered at 15s. per 1000; Lobelias, Ageratums, and other tender plants, at 20s. per 1000. The cost of hardy bedders, in most cases, depends on how many pieces a man can break up in a day. Now I do not want to make out a case either way, as I think just as much of a border of mixed hardy herbaceous plants as I do of a bed of Geraniums; but from a little calculation I have made, I find that "J. S., W.'s" border could be planted with 6500 plants, and that their cost would not exceed £10 for the lot, or 3s. per 100. Take the whole quantity of plants required for a flower-garden, and much less would suffice for even an extravagant "bedding man."

Now let us take a nurseryman's prices, and see what the cost of the two systems would be were a stock of each to be bought. I have a quotation before me for 5000 plants, 1500 of them to be Geraniums—of which 500 are gold and silver variegated,—the remainder "Calceolarias, Lobelias, Verbenas, Ageratum, &c." These, furnished next May, fine plants out of *single pots*, are £4, 10s. per 1000; out of store pots, £2, 5s. per 1000. Remember, these are all good plants. Well, then, here is a quotation from a nurseryman, who makes hardy plants a specialty; his rate is £3, 10s. per 100 in quantity, *his own selection*, and does not include the best sorts. A selection of finer sorts is £7, 10s. per 100, and of course does not include such things as Pæonias, the rarer hardy Lilies, &c. If we follow the directions given by the persons who have taken hardy flowers under their own special care, a hardy border must be planted so thickly that the taller plants will support each

other, and all bulbs will have a carpet of dwarf plants through which they are to spring. It would take nothing short of "J. S., W.'s" 13,000, taking the above mode of planting, and allowing from three to twelve bulbs for a clump, to *fill* the ground the first year as completely as the same number of bedding-plants would do. These gentlemen will perhaps be able to say something on the cost of furnishing a border under the two systems, allowing 13,000 plants in each case, the one at a nurseryman's price of 4s. 6d. per 100, and the other at 66s. 8d. per 100. Before closing this question of cost, I would just say that I know the cost of bedding-plants in one of the largest establishments in the three kingdoms, and where some 200,000 plants are used, is reckoned at one farthing per plant, or 2s. 1d. per 100. I have taken up too much of your space already, but allow me just to say further, that I consider the cost of production, as raised by "J. S., W.," has very little to do with the matter from a gardener's point of view. To us the question is whether we should rid ourselves entirely of ordinary bedders, and only find room for hardy flowers, or whether we should adopt the common-sense plan of finding a place for each, no matter whether the cost of production or the cost of keep should in either case be more than we like. Strawberries in March or new Grapes in April, French Beans and Cucumbers in February, are not worth the cost of production. In the same sense it does not pay to mow grass once in ten days, or hoe walks once a fortnight, or sweep up autumn leaves every morning. The whole of "J. S., W.'s" argument is a question of the same kind.

R. P. BROTHERSTON.

[We do not think it advisable to devote more space to this discussion, for, after all, cost is no argument against a system of flower-gardening, or any other phase or branch of horticulture owners of gardens may choose to spend their money on, as being to their taste, and most suitable for their places—just as one may derive most pleasure from, and spend money on Orchids, and his neighbour's fancy may lead him to spend on Alpines or Auriculas, &c. It is the fact that so much has been said of the expensiveness of the one, and the wonderful cheapness of the other, that led to our remarks in November. It entirely depends on how either system is gone about. If hardy herbaceous flower-gardening is to be done as *well as tender bedding has generally been done*, and a constant succession of bloom to be kept up over a given area, in conjunction with the absence of untidiness for five or six months of the year, then we maintain it cannot be any cheaper than tender bedding, while its first cost, if the same area be planted, is many times more costly. To stick a few hundreds of hardy herbaceous plants widely apart into a border, and make up the spaces between them with tender hardy and half-hardy annuals, biennials, and other plants, and call it *hardy herbaceous gardening*, is not correct, and very different from a border *kept gay by means of a mixture of hardy herbaceous plants alone*, and should not be called a herbaceous border. To call it the mixed border of hardy herbaceous and tender plants would be its proper denomination. Some writers would appear to wish for nothing so much as the total extinction of the bedding system, and have it replaced with an *ideal* system not yet to be found. Now what we advocate is a curtailment of the one, and a slight extension of the other—the extent in either direction depending on the time the owner resides at his country-seat; and we think nine-tenths of our readers will agree with our idea of the matter. Let us have both systems, in proportions depending on circumstances, and away with the furious tirade against flowers in masses.—ED.]

AMONG THE CHRYSANTHEMUMS.

FEW flowers have so rapidly "come to the front" as the Chrysanthemums, and none more fully deserve their popularity. They are easily grown, and the species (*Sinense*) comprises a wonderful variety of forms and colours, which are at their best when flowers generally are very scarce—for this reason alone deserving all that can be written in their favour. They are especially suited for town and suburban culture, as witness the large collections formed in the very heart of London—viz., the Temple Gardens, and the innumerable well-grown collections in the metropolitan area. The Chrysanthemum Shows, which are fast on the increase, have done much to heighten the love for Chrysanthemums, and also to demonstrate to what perfection they may be grown. Anything like a full report of even a few of the best of these would be out of place in the 'Gardener,' and in this communication reference will be made to the primary exhibits rather than to exhibitors. Concerning the collections in the Temple Gardens, which by the kindness of the Benchers were open to the inspection of all comers, we must confess to a feeling of disappointment. It may be said, "What could be expected from plants grown in the city of London?" Not much, certainly, by those who know what a miserable atmosphere there is to contend with; but we were led by glowing reports in contemporaries to expect greater things. As a group they were certainly very effective; but the blooms individually would bear no comparison with those to be seen in numbers of smaller private collections. In one instance, indeed, the whole collection was below mediocrity. They were grown too weakly early in the season. Here, as in many other instances, the plants are grown with a single stem, the head consisting of three or four shoots, each carrying one large bloom. This admits of a great number being grown; and as they are grouped closely, a very effective floral bank is formed. Of course those trained for exhibition are trained either as standards, pyramids, or dwarfs; but in either case, unless well done, they present a very miserable appearance. This was strongly exemplified at the London Aquarium Show, though it must be admitted that the specimens were perched up on a ridiculously high platform, so that even those that were well grown presented a rather undignified appearance. From what we hear, the finest dwarf-trained specimens seen this season were exhibited at the Birmingham Show, the exhibitors being Messrs Stacey, Crook, and Denning, who received the awards in the order named. They were certainly smaller than several of the giants staged at the Aquarium (some of which were 8 or 9 feet in diameter) and at other Shows, but were much more profusely flowered, carrying in some instances fully 250 well-formed blooms. The varieties suitable for training are rather limited in number, as the majority are too stiff in growth. Those that are adapted for this purpose are Mrs G. Rundle, and the two sports from it, Mrs Dixon and G. Glenny (these are to be seen in nearly every group), Lady Talfourd, Lady Slade, Prince Alfred, Fingal, Bronze Jardin des Plants, White Venus, Lady Hardinge, Empress of India, Prince of Wales, Eve, Golden Beverley, Dr Sharpe, Aureum multiflorum, Mr Brunlees, Julie Lagravère, Hero of Stoke Newington, and Mrs Haliburton. Every schedule includes classes for trained Pompones; but, as a rule, they are not very effective. Those varieties usually shown are the White, Lilac, and Golden Cedo Nulliis, Mdle. Marthe, Bob, Fanny, Antonius, Salamon, Helena, St Michael, Aurora Boreale, and Brilliant. Good Anemone-flowered Pompones are Antonius, Calliope, Mr Astie, Sidonia astarte, Firefly, Dick Turpin,

Marie Stuart, and Miss Nightingale. The classes for cut-blooms are the most popular with the growers, as they are invariably well filled—some of the exhibits being really extraordinarily good. The way they are shown unfortunately mitigates greatly against them. Complaints are often made of the formality of the approved method of exhibiting cut-Roses; but they compare most favourably with the Chrysanthemums, as, in addition to their own good foliage, they have a groundwork of beautiful Moss, whereas the Chrysanthemum has nothing but the green boards to show them up. Why not use Moss in this case also? Real lovers of this flower, doubtless, do not heed the surroundings, but there are many who do. Although good growers are numerous in the south, the premier collection of cut-blooms of the year was undoubtedly that which gained Mr Sunnington of Liverpool the Champion Challenge Vase at the Kingston and Surbiton Show. It must be admitted that the Liverpool growers are somewhat atmospherically favoured: at the same time, there is no doubt that Mr Sunnington is thoroughly "at home" with the Chrysanthemum, and for this reason his selection is instructive. Of incurved varieties he staged Novelty, Inner Temple, Beauty, White Venus, Mrs Dixon, Jardin des Plants, Empress of India, Golden Empress of India, Prince Alfred, Queen of England, John Salter, Sir Stafford Carey, Mrs Heale, Lord Derby, Venus, Hero of Stoke Newington, Mrs G. Rundle, Princess of Wales, Nil Desperandum, Lady Hardinge, White Beverley, Prince of Wales, George Glenny, and White Venus; and of Japanese varieties, La Nympe, Comtesse de Beauregard, Fleur Parfait, L'Incomparable, Apollo, Fulgore, Laciniatum, La Frissure, Baronne de Prailly, Nuit d'Automne, Mdle. Moulx, Chang, Cry Kang, Meg Merrilees, Elaine, the Sultan, Bismarck, Peter the Great, Soleil Levant, Hero of Magdala, Fair Maid of Guernsey, Arlequin, M. Crousse, and Fulton. To the former selection may well be added Lady Talfourd, Mrs Haliburton, Mr Brunlees, Isabella Bott, Miss Mary Morgan, Dr Brock, Bella Donna, Golden Eagle, Mr Gladstone, Princess of Teck, Lady Slade, Baron Beust, Hereward, and Yellow Perfection. Other Japanese varieties that have been well shown are Magnum Bonum, Hiver Fleur, Gloire de Toulouse, Grandiflora, Striatum, Triomphe du Nord, the Daimio, Red Dragon, Dr Masters, Red Gauntlet, Meteor, Purpureum album, James Salter, Bouquet Fait, the Mikaido, and Oracle. On account of their greater novelty the stands of Japanese varieties command the largest share of attention, and no private collection can be called complete without a good selection of them being included. They are too stiff in growth for training; but grown as standards they are wonderfully attractive, and being rather late-flowering, help to prolong the season considerably. Those incurved varieties recommended for training into specimens are the best for growing for cut-blooms and decorative purposes; and probably no four more useful varieties exist than the "Rundle family" and Julie Lagravère, and should be grown in great quantities if the demand is large.

* A SOUTHERN CORRESPONDENT.



CATTLEYA LABIATA AT BOTHWELL CASTLE.

A FINE specimen of this magnificent Orchid has recently flowered at Bothwell Castle. It had 22 blooms open on it at once. Three spikes had 4, three had 3 blooms each; and one leaf, where there was no appearance of a stem or spike, showed 2 blooms, but brought only one

to perfection. We should be glad to hear if a specimen of this *Catleya* has ever been known to produce so many flowers. A more beautiful Orchid than this, with its 22 flowers, could scarcely be conceived; and it is one of the many fine specimens Mr Turnbull has grown with the most ordinary accommodation—at one time a shelf over a flue which heated a fruiting Pine-stove. Probably the finest *Miltonia spectabilis* ever produced was grown over this flue thirty-six years ago. If we remember correctly it had over 130 blooms open at once. D. T.



STORRS HALL.

STORRS, the charming Westmoreland seat of the Rev. Thomas Staniforth, is situated about two miles south-west of Bowness, on the margin of the beautiful Lake Windermere, and is by far the most princely residence in the whole of the Lake district, standing, as it does, in a sylvan vale, surrounded on all sides by its own property to a considerable distance, save on the side it is bounded by the crystal and placid water of the "Queen of English lakes." The mansion is a commodious and well-finished pile of architecture, and is enclosed from the lake on the north-west side by a miscellaneous plantation of Conifers, Evergreens, and a good collection of Rhododendrons. From the south front there is a capital view of the lower part of the lake and the adjacent hills—a scene most beautiful, not in many places to be surpassed: the greensward, the rippling waters, and the heather-clad hills, in glowing harmony together, are sights that poets never tire to describe nor painters to depict; and these are scenes familiar to all who may visit this tranquil and picturesque habitation in this delightful vale of "bonnie Westmoreland."

The gardens at this place call for more than a passing notice. Their arrangement and tidiness reflect great credit on Mr Evans, Mr Staniforth's able gardener, and fully vindicate his abilities as a thorough master of his profession. Their situation, in many cases, adds much to their lustre; but in no way are all their beauties to be attributed solely to nature, for the ingenious work of art has aided nature in making Storrs a varied scene of charms that other places of higher pretensions may justly envy. The grounds are very interesting, and in complete unison with the surrounding country: gentle undulations and pleasing retreats, venerable old rocks arrayed in vivid garments of green Moss, stately trees, and secluded walks, are met with here.

Along the side of the lake runs an enjoyable walk, winding frequently to the water's edge, and in a few places hid from the lake by an irregular plantation of trees and shrubs intermixed with large stones, so characteristic of this district, before which the giants of old must inevitably have succumbed: amongst those may be found, flourishing in true luxuriance, *Osmunda regalis* and *Lily of the Valley*.

The flower-garden is neatly laid out and tastefully planted. Here is a long herbaceous border containing a good collection of Phloxes, and in their season are a sight that lovers of this grand old favourite would go a long way to see. Amongst them are to be found the newest varieties, and older sorts of popular merit, and about the middle or end of August are a perfect mass of flowers. Here also is a unique specimen of the Fern-leaved Beech (*Fagus asplenifolia*), its trunk measuring in circumference (3 feet from the ground) 9 feet, while that of the area covered by its branches is 60 yards, and for symmetry and form of growth is a perfect model.

The houses are next most important, in which the lover of exotic and rare plants can with interest spend a little time. On entering the lowest of the bottom range is an excellent specimen of *Lapageria alba* in full vigour, and delighting in its present position. It is trained on a trellis suspended a couple of feet from the glass, the dimensions of which are 24 feet by 8 feet, and is thickly covered with strong young shoots, and 520 expanded blooms on it at present. It has only been planted six years. Here is a nice plant of *L. rosea* and *Rosea superba*. On the back wall are two hale old Lemon-trees that are very prolific, and are trained on a trellis against the wall, thickly covering it, measuring 26 feet by 12. Adjoining are the vineries,—the early house, Black Hamburg; and the late or succession house filled with Lady Downes and Mrs Pince—each house measuring 36 feet by 18. The Peach-house is also in this range—a “lean-to,” like the vineries, and of the same dimensions. The varieties are Royal George and Noblesse; also the Solway Peach, from which has been gathered fruit weighing $10\frac{1}{2}$ oz., and measuring $11\frac{1}{4}$ inches in circumference. In this house is a very good collection of British Ferns, comprising some good forms of *Scolopendriums*, *Athyriums*, *Lastræas*, *Polypodiums*, &c., amongst which a lover of those plants would find something to his interest.

The *Camellia*-house comes next. The plants seem truly at home; all are planted out and progressing favourably. About half-a-dozen of the largest plants are 16 feet in height and 10 feet in diameter. The varieties are *alba-pleno*, *Lady Hume's Blush*, *Valtevareda*, *Coletti*; *imbricata*, *Marchioness of Exeter*, *Donckelaarii*, *Saccoi nova*, *Targioni*, and *Mathotiana*; all well covered with buds. In this house is growing a grand piece of *Asplenium marinum*, the admiration of many eminent Fernists, with fronds measuring 20 inches in length; and in a frame is a fine plant of *Todea superba*, 3 feet across; also *Trichomanes radicans*, *Hymenophyllum Tunbridgense*, and *Disa grandiflora*. This is a very lofty structure: and on the roof, high above the *Camellias*, is a plant of *Wistaria rosea* that blooms most profusely; its myriads of lavender-coloured bunches of blossom make a very effective show in the early spring. The flowers are larger and more fully developed than when grown out of doors.

On the other side of the kitchen-garden are the other houses. On entering the large stove the eye soon rests on a splendid specimen of *Adiantum Farleyense*, $8\frac{1}{2}$ feet in diameter, and flourishing amazingly; also a nice plant of *A. gracillimum*, 3 feet across, arranged together among some noble plants of *Cycas revoluta*, *Pandanus Veitchii*, *Cocos Weddleyana*, *Aralias*, *Curculigos*, *Marantas*, *Crotons*, *Eucharis*, and a grand plant of *Anthurium Schertzerianum*, $6\frac{1}{2}$ feet through. This plant, unlike many, is not a collection of single crowns potted together to obtain a specimen, but is one solid mass of crowns united together by years of steady growth. A few other varieties, such as *Palmeri*, *Wardii*, and *Williamsii*, add a little variation to this grand exotic, all of which are progressing admirably. On the roof of this house is trained *Ipomæa Horsfalliæ*, that blooms profusely and lends a charm to the gaiety of the house; also on the roof is *Allamanda Hendersonii* and *cathartica*, *Cissus discolor*, and *Passiflora princeps* and *gossypifolia*. The latter is very rare and interesting; it was brought to this place from Borneo. The flower is similar to most of its species, but smaller, and of a pure white colour, the blooms not much bigger than a shilling, which are expanded only in the early morning. In a smaller stove, devoted to young plants, are some good things in the way of *Crotons*, *Dracænas*, *Gardenias*, &c. There are upwards of twenty-four varieties of *Crotons* grown: most noticeable are *Disraeli*, *Lord Derby*, *lacteus*, *Mortii*, *irregu-*

laris, Youngii, Weismanni, ovalifolius, angustifolius, and several others, arranged together with good effect amongst a lot of nice plants of *Reedia glaucescens*, *Pavonia Wiotii*, *Phyllanthus roseo pictum*, and a host of others. Conspicuous in this is a fine plant of *Gymnogramma Martensi*, and *Cheilanthes elegans*. The former has fronds from $3\frac{1}{2}$ to 4 feet in length, and measures $7\frac{1}{2}$ feet through; and the latter, 4 feet in diameter, a capital specimen of this pretty Fern. In the Cool-Orchid house are to be found some good varieties of *Cypripediums*, looking quite at home. Most prominent are *Harrisianum*, *barbatum*, *majus*, *Sedeni*, *Maulei*, *venustum*, *Veitchii*, *Hookerii*, *Schlimii alba*, *Pearcei*, *Nevium*, and many others; also some of the best sorts of *Odontoglossums*, *Oncidiums*, *Lælias*, *Cattleyas*, *Masdevallias*, *Maxillarias*, *Cælogynes*, *Dendrobiums*, &c., all clean and healthy. Amongst East Indian Orchids are some good plants of *Phalænopsis grandiflora*, *amabilis*, *Schilleriana*, and *Lud-demanniana*, *Aerides Fieldingii*, *Cattleya Dowiana*, *Saccolabium giganteum*, *Reedii guttatum*, *ampullaceum*, *violaceum*, and *Blumeii*, *Angræceum sesquipedale*, and a beautiful plant of *Vanda cærulea*, an excellent variety, with extra large flowers. To go more minutely into this class would be a lengthy task, so we will turn for a moment to the collection of Azaleas. Upwards of 100 varieties are grown, all good specimen-plants, trained in pyramidal form, and measuring from 6 feet high by 4 feet at the base downwards to half these dimensions—together with a host of smaller well-shaped plants, amongst which are some of the best varieties in cultivation, all of which are well trained, and denoting the exercise of experienced labour in their culture and formation, and when in full bloom fully compensate for the time spent in attending to their many requirements, with a vast sheet of flowers of various hues.

Amaryllis-growers will find at Storrs a great treat, should they be fortunate enough to visit it during the period that most of the home-raised seedlings are in bloom, as doubtless many are aware that not many gentlemen are more enthusiastic in their culture than the proprietor of Storrs, and few more successful in their hybridising than Mr Evans; for on entering another house specially erected for their cultivation, are to be found the leading varieties of the day, comprising the newest and best-named sorts, and some of the finest seedlings that skilled crossing can produce. The one called after this place—viz., *Storrs Beauty*—is a marvel of excellence, and a sufficient reward for the most sanguine cultivator for the time spent in bringing forth so superior an Amaryllis. In a bed in another house are upwards of 200 seedlings of the best crosses; and should this batch give as much satisfaction as others have hitherto done from the hands of the same grower, Storrs will henceforth be the premier home of Amaryllis-growing. In another large span-roofed structure that serves the purpose of show-house, are some good plants of *Aphelexis*, *Macrantha purpurea*, *Araucaria excelsa*, *Eriostemons*, &c.; and trained on the roof is *Lapageria rosea*, *Rhodochiton volubile*, *Abutilon vexillarium*, *Habrothamnus elegans*, and many fine old *Fuchsias* trained up the rafters,—all of which add to the look of the house, in combination with all the season's bloom in succession. Now its stages are embellished with one class, and in a few weeks hence with another—never failing all the season through to be tastefully adorned. Close by is another range of three-quarter span-roofed houses, one of which is devoted to wintering bedding-plants and Melon-growing in summer; the other is a Cucumber and propagating house, and is particularly adapted for its requirements.

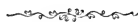
The frame-ground is in close proximity to the houses, and is neat and shel-

tered. In this little department is to be seen Rendle's system of glazing with-out putty ; also Parham's,—both of which answer their purpose very well.

The bothy, fruit-room, potting-sheds, Mushroom-house, and stoke-holes are situated on the north side of the kitchen-garden. The boilers used are Stephen's improved Trentham, and two old saddles, that work most efficiently.

In conclusion, I am compelled to say all ardent horticulturists would enjoy a visit to Storrs, and would be courteously received by Mr Evans. I may also add, Mr Evans got his preliminary training at Enville under Mr Craw, and subsequently at Chatsworth during the period of Mr Taplin's superintendence.

JAMES MORTON.



DUNDEE HORTICULTURAL ASSOCIATION.

THE first meeting of this newly formed association took place on the evening of Friday, December 3d. There was a large attendance. The president, Mr Doig, Rossie Priory Gardens, occupied the chair, and delivered an interesting address on the progress of horticulture. He went on to show that there was, however, still room for improvement, and for an association such as had just been formed. He had sometimes heard it said that they ought not to permit all they said and did to go abroad to the public, as in that way every one would become acquainted with the secrets of the trade ; but such ideas as these had long ago been exploded. It was not his intention that evening to treat upon any subject specially, but rather to indicate some of the many subjects which might be discussed at their meetings. It was very desirable that the nature of the different soils, and their adaptability for the growth of the various plants which came under the care of the horticulturist, should be considered. The winter digging of soils might form not an uninteresting paper, whether in all cases it was desirable or beneficial. The different kinds of manure and their proper application was a subject of paramount importance. The matter of seed and seed-sowing demanded careful inquiry, and the seasons for seed-sowing should form part of the information to be derived from their meetings. He suggested for the consideration of local nurserymen whether it would not be for their benefit, as well as for the benefit of horticulturists in general, to persevere in eliminating from their catalogues the great amount of unnecessary varieties of the different genera. The theory that Potatoes became exhausted after several years' growth had been brought very prominently before the public of late. The fact that they still had the ash-leaved Kidney as vigorous and prolific as it was forty years ago, pointed to the duty of raisers of seedlings to cultivate early varieties of good keeping qualities, so that they might be ripe and stored before the disease got hold of them. It was not to be wondered at that Potatoes had succumbed to the treatment they had received for many years. How often did they see them planted in May, at the time they ought to be breaking through the ground, with all the first sprouts broken off, and sometimes the second, and thrown amongst fermenting manure in such a crippled condition, that, in their efforts at recuperation the season was so far advanced that the wet in autumn found them in a soft unripened state, and an easy prey to disease ? Instead of saying Potatoes were exhausted, it would be nearer the truth to say they were destroyed through neglect and want of attention on the part of the cultivator. The rotation of cropping the kitchen-garden was another thing worthy of being brought before the Association, as was also the transplanting of trees.

Although the latter operation was principally mechanical, yet failures often occurred from want of scientific knowledge of the proper principles which should guide them. Mr Doig next drew attention to the subject of pruning, on which, he said, there existed a considerable diversity of opinion; to the cultivation of stove and greenhouse plants, and the culture of fruit under glass. The Pine-apple was not now cultivated so much in this country as formerly. The rapid communication between different parts of the world enabled the growers, where no glass was required, to produce Apples so much cheaper, and often of superior quality, for the greater part of the year, as almost to drive the home-produce out of the market. After a reference to the growing of Peaches, Figs, and other fruits, flowers, and vegetables, and to the manner in which the debates should be conducted, the President concluded by expressing the hope that the meetings of the Association would help to stir up and foster a desire for self-improvement, which ought to form a part of every man's ambition.

Mr Edward Moir, Newport, then read an able paper on "The Alpine Flora of Forfarshire." In the course of his remarks, he pointed out that the hills and dales of the county contained many of the rarest plants of our British flora. The rare *Lychnis alpinus*, *Saussurea alpina*, *Maulgedium alpinum*, *Astragalus alpinus*, and the still more rare *Oxytropis campestris*, all found a home in the Clova mountains. There, by mountain streams and rugged scars, nearly all the genera common to an Alpine flora were to be found. Dried specimens of nearly every plant named were exhibited, which added greatly to the interest of the meeting.

It was intimated that the business for next meeting would consist of papers on "A Trip to the Rocky Mountains," by Mr William Stewart, nurseryman, Dundee; and on "Hardy Border Flowers," by Mr Thomas Miln, The Gardens, Linlathen.



Calendar.

FORCING DEPARTMENT.

IN commencing the Calendar for another year, we propose not to take up so much space with every little item of detail as has been devoted to it in former years, but will dwell more at length, month by month, on some important point of culture under each heading. At the same time, there is no intention of passing over the leading directions applicable to each month.

Pines.—It has been our practice for many years to keep our whole stock of Pine plants as thoroughly at rest as possible from the middle of November till after the first week of February. There may be exceptional circumstances in which this rule may be departed from with benefit; such, for instance, as when, from any cause, the stock of plants of any size are less or more backward than is desired.

These, if kept near the glass, and plunged thinly in a pit with a direct south aspect, may be kept growing all winter in a temperature of 65°, with air according to the state of the weather; but, excepting plants swelling fruit, and those being started into fruit, the more they are at rest the better we have always found the ultimate results. In cold weather all young stock and plants that are full-sized should not have more heat than 55°, and when mild, 60°. The less fire-heat applied, the less water required; and the less water required to keep the plants in health the better. The plunging material used for Pines may not be of the very greatest consequence, but some materials are much more convenient than others for the purpose of plunging. In houses where the bottom-heat is

got from hot-water pipes in air-chambers, we have used Oak-leaves, spent bark, sifted ashes, and sawdust. All but the sifted ashes answer very well, and we never gave it a second trial. The operation of plunging in Oak-leaves is threefold more laborious than in bark or sawdust, and there is the constant bother of making them up, for they shrink from the pots and allow the heat to escape without doing any good. The bark we have always thought a material that Pines liked; and not much can be said against it, except that it is difficult to get in many places, rots quickly, and breeds worms and wood-lice at a great rate. We have used sawdust in our fruiting-house for some years, and know of nothing against it. It looks clean, is easily plunged in, keeps close to the pots, and does not subside much in a year. This season we have had as finely swelled Pines plunged in it as could be desired; some of the fruits ran to 9 lb., others 8 lb., and one fruit, seven pips deep only, swelled till it weighed 8 lb. all but one ounce—the heaviest seven-pip Pine we have ever grown. Sawdust is easily got in most places, lasts two years without breeding fungi, but if kept for a third year it becomes a trouble in the matter of fungi. A stock of soil should be got in readiness this month for shifting all plants that require it, in February. A rather light loam, with all the finer particles either beaten or sifted out of it, is best for Pines. This, with an 8-inch potful of bone-meal, and a handful or two of dry soot to each barrow-load of soil, is the mixture we prefer. Keep a watchful eye on early Queens expected to start this and early next month. Whenever the fruit is detected in the centre of each plant, let it have as much water at 85° as will wet the whole ball, but do not be over-free in watering till the plants show fruit. Keep the temperature at 70° at night, when mild the bottom-heat at 90°; when cold let the heat be 5° less. Keep all young stock quiet for another month at least. As soon as fully swelled fruits show signs of colouring, and are moderately damp at the root, do not give any more water this month till the fruit are cut, or they may begin to decay in the centre before being fully ripe.

Vines.—In the forcing of Vines to

produce fruit in May (and it is little use having them earlier in these times of long-keeping late sorts), avoid above everything, as the greatest evil, high night-temperatures. Let the state of the weather decide the heat on any given night. Fixing a temperature to be worked up to all weathers is only a waste of fuel, and a waste of vital force in the plants. If from any cause rapid forcing is called for, let it be carried on by day, when the natural temperature is highest, and under the consolidating influence of light and more or less air. In a cold night do not be afraid to let the heat for Vines in leaf descend to 55°, rather than have singeing hot pipes to keep it at 60° or 65°; of course, if a very mild night, either of these figures may be wrought up to safely. The proper time to force is when Nature forces—by day; and she arranges her hottest nights to be when there is the shortest interval of darkness; so that, as the day lengthens and the sun strengthens, the temperature of the night can be kept higher with less fire-heat—and, of course, so it can by day, when some heat can be trapped and stored into the night. In starting pot-Vines in December and January, it is sometimes necessary to do so with more heat than is good for them after they are fairly started. The buds of Vines never before forced are shy to start, and the better ripened the Vines are the harder they are to start. 60° may be applied both night and day till the buds move. The tops of the Vines should be bent down so as to be in the coldest stratum of air, or they are apt to burst and leave the rest too much in the rear. But as soon as all are fairly started, force by day and give comparative rest at night. We look upon this as a cardinal rule in all forcing of fruits or flowers, because it is Nature's rule. Now that the bottling system of Grapes has proved a successful one, there is no necessity for having Grapes on the Vines after the New Year. It is of great advantage to the Vines to get rid of their load, and to be thoroughly rested in a cool temperature, with plenty of fresh air. We could never see our way to drawing the water out of pipes and boilers, and letting Vines and vineries have all the winter frosts. In some cases this is practised to let

the frost kill vermin. The vermin that infest Vines that cannot take care of themselves in a time of frost we have yet to discover. In other cases the saving of fuel is the consideration — a very questionable saving; for we have seen the joints of hot-water pipes split when caught by frost; and we have known the Vines themselves hurt, to say nothing of the bad effects of frost on plaster, brick-work, &c. We prefer keeping the water in the pipes, throwing the vinery open at all ventilators and doors, letting wind blow through it, and lighting fires in time of severe frost to keep the pipes and everything else safe. Besides, thus managed, the vineries can be made use of in many ways for storing plants on which there are neither thrip, spider, nor bug. Do not lose a day in pruning Vines whenever they are clear of fruit. The system of pruning best suited for such varieties as Muscat of Alexandria, Black Hamburg, Lady Downes, Alicante, Gros Colman, and most Vines, is the close spurring system — *i.e.*, cutting back every year to the lowest eye on last year's growth. Such sorts as Golden Champion, Duke of Buccleuch, Muscat Champion, Gros Guillaume, do not fruit so freely as a rule on the close spurring system as when two or three eyes are left. These do best of all on the long-rod system, only in wide vineries with long rafters, when a young rod is run up the whole length of a 20-foot roof, the lower portion of the Vines frequently does not start its buds so freely, especially if started with fire-heat. The best way in the case of such Vines is to have the fruiting canes 4 feet or 4½ feet apart, and to have a wood producing one between each, with a growing point at the bottom of the rods, and one half-way up the lower growth, to grow, say 10 feet, and be stopped, and the next growing point to run to the top, thus giving two short rods that are more likely to start equally into growth along their whole length. At pruning-time fruited Vines are cut down 10 feet from the top, and the bottom growth is cut to the bottom of the roof, so that while one set of canes are bearing on young growths, the other set are producing these growths for the following year. This is a simple and safe

plan with the varieties that do best on the rod system. Rub off all buds from the spurs of Vines that are far enough advanced to see in which bud the most compact bunch is coming. Do not quite close the ventilators at any time after Vines have broken into growth, unless it be when there occurs a very stormy cold night. We never syringe Vines after they are fairly started, unless under very exceptional circumstances. We have to do with a sunk range of vineries, where the pipes are quite close to the foliage, and these are the only vineries where red-spider ever puts in an appearance, or is expected. Invariably spider begins the whole length of the vineries just over these pipes. Sometimes we have sponged the leaves, at other times we have syringed with clean water to get rid of it. In the other vineries, where the pipes are away from the Vines, we have not seen a spider since they were built in 1870, and the Vines are never syringed after the growths are half an inch long; indeed one house is never syringed at all. We damp the floors in the afternoon, and shut the house up closely for an hour or two, and in that way they get the refreshing influence of the moisture without the many evils of syringing.

Peaches. — There are few things more injurious in the early stage of Peach-forcing than anything approaching high night-temperatures. The night-temperature in mild weather should never exceed 50°, and when cold, 45° by means of fire-heat, until the blooms are open. High temperatures produce blooms with debilitated organs, and the fruit does not set properly. It also causes the wood-buds to come away too much in advance of the bloom, which is very undesirable. Trees that have long been accustomed to an early start do not need high temperatures to excite them, and if they did, it should be applied by day. Keep a moist genial atmosphere, and syringe the trees several times daily till the bloom opens. When the bloom is fully expanded, and the pollen developed, keep the house warmer by day — it may run to 60°, except in very cold weather — and the atmosphere buoyant and moving by means of ventilation, but always avoiding draughts of frosty

air. With the much earlier varieties of Peaches and Nectarines now in cultivation it is not necessary to start forcing so early, by a month at least, to produce ripe fruit at a given time. A tree of Hales's Early Peach and one of Lord Napier Nectarine in the early house, will give ripe fruit with a few weeks' less forcing than the old sorts. There are sorts earlier still, but none that we know of combining so many good qualities as those named. All late Peaches not yet pruned should be attended to at once. In pruning, above everything, avoid leaving such a number of young shoots as will crowd the trees, but leave ample room for tying in the summer shoots for next year's bearing without crowding the foliage: as a rule, the bearing wood should not be closer together than 4 inches. In shortening back young growths on trees now occupying all the space upwards, see that the cut is made at a point where there is certain to be a wood-bud. Cutting, too, a triplet of buds, two bloom-buds and one wood-bud should be the rule. Get the planting of young trees completed as soon as possible. Use a rather heavy fresh loam, with no manure added except about half a bushel of ground bones to every square yard of soil.

Figs.—This fruit is gaining ground rapidly in gardens, and deservedly so. It is a very productive and wholesome fruit. When well managed it is astonishing how long one tree continues to bear. We gathered fruit from three trees last summer, from June till November, with a very short intermission, after the first crop was over. We have tried a great many sorts, and have found none with so many good qualities as old Brown Turkey. The great points in successful Fig-culture are, to plant in restricted borders, and mix no manure, except a few bones, with the soil, when the trees are first planted. A 6-feet wide border will keep large trees in splendid bearing order for many years, provided they be well nourished with top-dressing and liquid manure after they have attained to a free-bearing condition; but we never find Brown Turkey in anything but a free-bearing state. We have struck it from eyes in February, run it up 4 feet high, and

ripened fruit off the young plants in October. Some say the Fig should never be pruned. This is a questionable rule. Certainly the pruning should be carried out when the trees are making their young wood, and very few growths should be retained in winter that need to be cut out in winter. But to allow trees to become a thicket of wood is quite another and erroneous practice. Every shoot and leaf should have as much space as will let light and air play freely about them, and then next to no winter pruning is called for. Trees started last month should have 5° more heat when they have fairly commenced to grow. The night-temperature, when very mild, may range to 60°, and 5° more by day. Keep the trees moist at the root, and syringe twice daily with tepid water.

Melons.—A few may be sown for an early crop. Half fill 4-inch pots with loamy soil, and sow two seeds in each. Plunge near the glass, in a temperature of 70° and bottom-heat of 85°, and when the young plants appear let them be kept in as light a position as can be afforded them. Do not give more water than is sufficient to keep them from flagging, and earth up their stumps as they lengthen.

Cucumbers.—A few seeds should now be sown for planting out in February. Sow in the same way and temperature as recommended for Melons. The soil should be more light and friable than for Melons. Plants that have been bearing more or less all winter will now be benefited by a slight mulching of manure over their roots. See that they are kept free from insects, and remove all deformed Cucumbers that may appear. Keep the night-temperature about 70° when the nights are mild, and make the most of every blink of sun in bright days by closing the pit early.

Strawberries in Pots.—Very early started plants may be in bloom by the end of the month. Until they are set, do not let the night-temperature be more than 55°, and give a little air every day, guarding against cold currents coming in contact with the blooms. Put more plants into heat fortnightly, and let forcing be commenced very gently.

KITCHEN-GARDEN.

IN January, for the last two seasons, ground was (as is often the case at this time of year) sodden, and, in many cases, frozen and covered with snow; therefore no ground work could be advanced except draining, and that was somewhat profitless, from the difficulty of clearing snow and frozen surface before the work could be proceeded with. Nevertheless, the operation is always an important one, and if a fall from the ground can be had at all, there is little difficulty in making efficient drainage. Where ground is damp and flat, it is well to see to the means of clearing off stagnant water. If a ditch is the receptacle, let it be clear of vegetation, mud, or other obstacles, so that the water may run clear to its destination. We refer to these points, because it often occurs that drains are well laid, but by ditches filling, a "back water" is caused, and much mischief ensues. We had to deal with a case of this kind on an old place two years ago, and woods, shrubberies, and kitchen-garden suffered materially. Fruit-trees were dying piecemeal; but a clearance of the ditches made a great difference in a short time. Where there is stagnant water, one can seldom calculate on a successful supply of vegetables during the winter, and now is the proper time to judge of the requirements of the ground in this respect. The value of the soil should be tested by its depth, and drains made accordingly. 3 to 4 feet is the usual depth; and seldom can one deal with sodden ground with drains much wider apart than 20 feet. Hard ashes from factories may be used, where clay predominates, and several inches nicely placed over the pipes to prevent them filling by rain washing in the clay at the joints. Where drains are formed among trees and shrubs, it is well to use socket-pipes, and the ends should be dipped in tar in process of laying them—the tar to be kept boiling. This makes a suitable preventive of the roots filling the pipes and stopping them. They (the roots) turn from the tar in search of more congenial food.

When weather is suitable, trench or dig up ground to the action of the weather as it may seem necessary.

Avoid treading on wet surfaces: there ought to be plenty of work in the store-yard, when it is unsuitable to tread the ground. Trimmings of hedges may be burnt; stakes for Peas, &c., may be made; composts may be turned and prepared; manure may be turned likewise, and, to increase its quality, turf, siftings of ashes, soot, road-scrappings, and other material, may be mixed with it. Potatoes may be overhauled, clearing out any which are decaying. Roots which are stored may be examined. Onions and every other vegetable in store should not be left to themselves. Everything being in order, one can use all energy in preparing the ground and gathering in the necessary crops, unimpeded, when the time arrives. Manure may be wheeled during frosty weather, but it should not be turned into the ground at random. Potatoes, Beet, Parsnips, and Carrots do well on land which has been properly prepared with manure for other crops the previous season. Trenching the soil is a good preparation for such crops the forthcoming season. The south border for early crops, which require shelter, should now be in readiness, by well digging and breaking the soil: leaf-mould and sand may be serviceable in preparing the soil for seeds or plants. Peas and Broad Beans may now be sown. They do well sown on the surface and the soil drawn over the seed: red-lead or furze will keep mice and rats at bay. Soot and lime, mixed with dry and fine ashes, is suitable for dusting surfaces to keep slugs off. This may be strewed between all crops—Lettuce and Cabbage especially. Cauliflowers in frames require abundance of air: a pan may be sown in light soil for succession, and brought on cool and airy; so may also Cabbage and Lettuce. Coddling defeats the object of earliness and hardness. Horse-radish may be dug up and placed in sand, and ground well prepared by trenching and manuring for planting a fresh supply. If pieces of the roots are put down about 12 inches to 16 inches deep, they will come up strong and useful. Spinach and every other crop should be clear of weeds, and have fine open surfaces. Parsley now requires special attention; a portion,

with other herbs, lifted and potted, or placed in boxes and pans, may be brought on to meet the demand. Forcing, even in the smallest of places, will now have special attention. Asparagus on gentle hotbeds; French Beans in pots planted every twelve to twenty days; Potatoes potted and kept under plenty of light and air, and also placed in pits or frames in a gentle warmth, with abundance of light and air; Carrots and Radishes treated in a similar manner, the latter

sown between the Potatoes,—are some of the most pressing of crops at this time. Mustard and Cress and Thread Onions should be sown every fortnight, as may be necessary. They should have plenty of air when they are up and growing. Sow pinches of Celery, Capsicums—Tomatoes, if required early. Keep them near the glass, with a temperature of about 60°. Take in successions of Seakale and Rhubarb, as formerly advised, or blanch with leaves and pots. M. T.



Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in 'The Gardener' to David Thomson, Drunlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

A. A. P.—The following climbers will be most likely to suit your purpose, although we doubt the air of your hall will be too dry to grow them well: *Tacsonia van volxemii* and *T. Exoniensis*; *Passiflora cærulea* and *P. Campbellii*; *Jasminum grandiflorum*; *Habrothamnus elegans*; and *Plumbago capensis*. You must either have sunken recesses for a few bushels of soil round each pillar, or large ornamental vases or pots that will hold a bushel of soil for each plant. All the plants named will do in equal parts good friable loam and leaf-mould, with a quart of bone-meal to each bushel of soil. You can grow the *Nymphæa odorata* in basins of glass or earthenware with a few inches of loam and some pounded charcoal in the bottom of each. The water must be kept sweet and fresh by constant renewal.

J. O.—In the absence of every particular of the circumstances under which your Grapes were grown we cannot give you a satisfactory answer. The Grapes, however, had evidently never ripened thoroughly, and this, no doubt, had something to do with the stalks giving way so badly.

J. D.—Instead of Apricots we would advise you to plant some upright single Cordon Pears, but if determined to plant the former, take Moor Park. Duke of Buccleuch does well on both Muscat and Hamburg roots; and so it does on its own roots, all other things being favourable. Try Foster's Seedling and Dr Hogg, or other whites.

AMATEUR.—The most likely cause of your Lettuces damping off, is a want of sufficient ventilation.

We have to thank numerous friends for their much valued contributions, for which we are unable to find room in our present issue.

THE
GARDENER.

FEBRUARY 1881.

ORCHIDS.

INDIAN CROCUS.



MR WILLIAMS, in his admirable work on Orchid-culture, goes so far as to say that these lovely mountain Orchids are somewhat neglected by gardeners and Orchid cultivators generally. They are so beautiful, and flower in autumn at such a welcome time, that they are not at all deserving of neglect,—indeed, on the other hand, worthy of the most assiduous culture. Even where but “a few Orchids” are grown, they should find a place on account of their distinct habit of growth, and, by comparison with their own bulb and leaf growth, enormous flowers. If you take the largest-blossomed *Lycaste* known, and measure it and the smallest-flowered *Pleione*, bulb for bulb and leaf for leaf, you will find that the *Pleione* has flowers three times larger in proportion!

I am just reminded of these upland gems by the sight of my own little collection of them just sprouting up into growth like young Palms from their mossy beds of sphagnum, which, being seen betwixt the eye and the light, is of the loveliest green tint imaginable. I am the more particularly interested in them because all my stock is or has been the gifts of kind Orchid-growing friends. As it is now the fashion to boast of one's presents in the horticultural press, I suppose I must boast of mine also. Well, about six weeks ago I received from a kind friend on the north side of the great “saumon river” a long shallow box, the look and probable contents of which was at first somewhat of a puzzle to me. On opening it, however, and removing the layers of soft paper and cotton wool, there lay exposed to view three rows of splendidly grown bulbs of *Pleione lagenaria*—

twelve in a row—and all large, and plump, and fresh, and as much alike as thirty-six bullets all cast in the same mould. It was a sight to charm the heart of any one who can distinguish an Orchid bulb from an Onion, and the care and delight with which they were unpacked and placed in those mossy-surfaced pans before alluded to would have pleased the kind donor exceedingly. The plant, either in growth or flower, will always be to us a living and beautiful souvenir. This is so, indeed, with a large proportion of our plants, especially the Orchids. That morsel of *Cœlogyne Lemoniana*, for example, with its plump pseudo-bulbs, rivalling hens' eggs in size and smoothness, is to us a reminder of one of nature's born gardeners, and one of the most genial of men—a Christian who lives his Christianity instead of talking of it. *Cypripedium Maulei*, just opening out its wonderfully spotted upper sepal, is another souvenir to us—a souvenir of one whom we can respect by reputation as well as by name. Look wherever we may, these kind gifts of brother gardeners present themselves to our notice, and enliven our daily duties with thoughts of others rather than of ourselves. But I must stay this preachment, and return to the Pleiones. I have chosen the present time to write of these plants because now is the time they require especial attention; and if they are not in the possession of those desirous of having them, now is a good time to obtain them.

In nearly all collections they will have been repotted some weeks ago: if it has been overlooked, however, now is the time to repot or top-dress such as require it. As a compost we use fibrous peat, chopped living sphagnum, and about a fourth of fibrous loam. Some growers rub up dried horse-droppings or cow-manure in the compost, but in the case of Pleiones we prefer to give any essential manurial stimulant at the time it is most needed,—that is, about May or June, when light is abundant, and the leaves and roots are in full action. As a liquid stimulant for these and other sub-terrestrial Orchids, we use a weak and clear solution of cow-manure and soot, so made that the water is but slightly discoloured. Just “whusky an' water” colour, as an observant friend once told me on seeing it used.

At the present time the rootlets are being protruded from the warty base of the young growths, and neither manure nor over-much root moisture is good for them—indeed, on the contrary, likely to be hurtful. A temperature of 50° at night to 65° in the day-time, with plenty of air, suits them admirably; and our own practice is to grow them in shallow Orchid-pans suspended beneath the roof of an intermediate house. A *Cattleya*-house suits them well,—so also an ordinary plant-stove, if not kept too close and hot, or too much overshadowed by creepers on the roof. A vinery, where forcing is being commenced, and which is not lower than 50° at night, will be an admirable place for them; or failing these, even a shelf near the light in a warm greenhouse or conservatory may be utilised for them. As I

have before remarked, they require very careful watering until the roots gain strength with the lengthening. On the judicious starting of *Pleiones* and *Calanthes* much of the success of after-culture depends. This much is true of most other things, but I think it applies with more than ordinary force to these, since no amount of careful after-culture can with them make up for a bad start. Instead of using the watering-pot, just now, we rather trust to sprinkling the mossy surface once or twice daily with a fine-rosed syringe, not using sufficient water to risk its settling down into the heart of the young growth, and so causing rotting. On very dull or wet days we omit syringing altogether, and no doubt this may generally be done with advantage. As growth commences to strengthen, however, and the roots to form a network amongst the moss, and the sun becomes hotter and the days longer, not only may the water-pot be freely used overhead with advantage, but it will often become necessary to dip the pans entirely in tank or cistern to make sure of the earth being moist throughout. The greatest care must ever be exercised in keeping thrips, green-fly, and red-spider at bay; and syringing morning and evening, with plenty of air on by night as well as by day all through the summer months, is the best safeguard against insect enemies. As the foliage turns brown at the tips, do not be tempted to withhold water too suddenly. Syringe as usual, but do not soak the compost too much with the water-pot. Keep the compost moist, and no more. If this is judiciously done, the brown tips will extend down the foliage towards the bulbs very slowly, and this is very essential, as the bulbs are now "plumping up" or fattening themselves out so as to be able to take a few weeks' rest, and then push up their lovely *Crocus*-like flowers. On careful and timely starting and judicious resting the whole success in *Pleione*-culture rests, and the other routine culture is of easy management, being simply that of other stove or warm greenhouse plants,—careful watering, syringing, and general cleanliness.

A word as to the kinds grown may be of service. *P. lagenaria* is the strongest grower, and the most generally useful of the whole group. It is to *Pleiones* what "nobile" is to *Dendrobiums*. Then *P. præcox*, or as it is otherwise called *P. Wallichiana*, is a good free grower, and very effective. *P. maculata*, being mostly white, is useful for cut, or rather *pulled* flowers; for I must not forget to say that *Pleione* flowers are best if pulled gently from the plants, being careful to pull in the line of upward growth. The flowers come out of their sheathing bracts—just like *Lily of the Valley* spikes when pulled instead of cut—and the result is longer and more useful stems. *P. humilis* is a pretty pink-flowered kind, and *P. Reichenbachiana*, *P. Hookeriana*, *P. Arthuriana*, *P. tricolor*, and one or two others, are as yet too rare and expensive for any but the most zealous of Orchid-growers and amateur cultivators.

Any one who will give the first three kinds a fair trial as above recommended will, I am sure, not care to be without *Pleiones* as autumn flowers for a long time to come.

CŒLOGYNE CRISTATA.

Whenever any one writes to ask the names of half-a-dozen Orchids "to start with," I always include this plant, *Dendrobium nobile*, *Cypripedium insigne*, *Odontoglossum bictonense*, *Phaius Wallichii*, and *Bletia hyacinthina*. If they fail with these, I advise them to give up growing Orchids, and to stick to *Fuchsias* and *Pelargoniums*.

This *Cœlogyne* is just now unfolding its lovely white flowers, and though our plants are small we have thirteen spikes on each of them, which make a nice show. It is one of the Orchids that every one having stove accommodation or a house kept up to 50° on winter nights should grow. It does best in a pan of peat, sphagnum moss, and crocks or charcoal intermixed: the bulbs and rhizomes should be elevated on a low mound of compost in repotting, and the surface between the bulbs should be coated with bits of living sphagnum moss. When growing it enjoys being watered overhead; and if placed in a cool dry house as soon as the flowers open, they will remain fresh and good for twenty-eight to forty-two days.

F. W. B.



FLOWERING PLANTS FOR ROOM DECORATION.

OF late years the demand for flowers has increased considerably, and the rage for fine-foliage plants that existed but a short time ago appears to be gradually on the wane, and year by year the love for flowering plants and flowers in a cut state, for various purposes, has increased. However beautiful foliage plants may appear, they can never take the place of, or rise in public estimation to the same level as, flowering plants. Many fine-foliage plants are noble objects, when well grown, for associating with flowering plants and for decorative purposes, and are regarded by some as beautiful as flowers. It is surprising that at nearly all the exhibitions of late, foliage plants have been shown in the greatest numbers, especially for table decoration: during the past year I have not seen one flowering plant staged for this purpose. This alone would almost induce one to believe that they are far more popular for this purpose than flowering plants. Such we do not think really is the case, and it would not be difficult to point to several cases where foliage plants are only considered of secondary importance, and where their use for room decoration is entirely dispensed with, and flowering subjects alone used. Where two hundred plants or more are in daily request for months through the winter for room decoration, and all or the majority being flowering plants, it is a great strain upon a gardener at times to find suitable

subjects in sufficient number and variety to meet the demand, especially during the worst months of the year, which may safely be considered from October to the New Year.

Many plants are anything but suitable for room decoration, and do not last sufficiently long to pay for the trouble of growing. The task is more difficult still when only a certain class of flowering plants of a choice nature are admired, and those required in large numbers. For example, a vase that will hold a pot 9 or 10 inches in diameter, and that has to be filled with a trained standard Mignonette, and nothing else, until Hybrid Roses can take its place, causes a great deal of work. Mignonette in rooms does not last long, at least the fragrance is soon gone, and the plant must be removed and replaced with another. The damage done to the plant by a short stay in the dwelling-house takes a long time to repair. To accomplish the decoration of rooms successfully requires a good deal of care and forethought. To maintain a supply for cutting and the ornamentation of plant-houses is not so difficult as to provide large quantities of choice flowering plants suitable for the embellishment of rooms. For this purpose plants have to be grown in pots of various sizes, to suit the different vases. This must be kept in view from the first, or else the work becomes far more difficult.

Eucharis amazonica is one of the best room plants with which I am acquainted, if grown in 5- or 6-inch pots : the former is used here. In small pots it is easy to manage and to keep a succession of its beautiful flowers ; a few can be rested at short intervals, and again introduced into heat to throw up their flowers. They stand room decoration well, and are scarcely ever injured. It is a fragrant and lovely flower, and commands general admiration. When plants are placed in rooms they often suffer considerably from gas ; and another evil nearly as bad is careless housemaids opening the windows direct upon some choice tender plant. A vase of Lily of the Valley, produced during November, when delicate and tender, is soon spoiled by cold draughts, and its time of lasting in good condition considerably reduced. This is by no means the worst evil gardeners have to contend with in room decoration. Some of the most peculiar-shaped things have to be filled with a number of plants for which they are not adapted : plants have to be turned out of their pots, and in some instances half the roots pulled off the outer plants to fit them in so as to produce the desired effect.

Orchids are amongst the most useful of plants for room decoration, and it is surprising they are not more largely grown. In rooms not lighted with gas they last a long time without injury to the plant, especially cool or intermediate species. What is more choice or beautiful than *Odontoglossum cirrosum* or *O. Alexandræ*, which will last a month or more in good condition, and can be managed so as to be in bloom during winter if a little extra heat be given while growth is

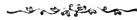
being made? *Maxillaria picta* is another sweet little Orchid, and flowers profusely in small pots; but, unfortunately, it does not last long. *Cœlogyne cristata* is another suitable kind. *Calanthes* can also be used, but the tops of the pots should be well dressed with *Lycopodium*. Many other useful kinds could be enumerated, but one more only shall be named—it is one of the oldest and best known, and doubtless the most useful of all Orchids—*Dendrobium nobile*. What is more lovely or better adapted for this purpose? It lasts a long time, and can be readily grown in small 4- or 5-inch pots, and larger as cases may demand. In two years good flowering plants can be grown from the small pseudo-bulbs, which readily produce themselves after flowering. A number taken off and placed in 3-inch pots for the first season and then into 5-inch the following spring, suitable plants may be produced, and if ripened well will not fail to flower and be lovely little objects. If not grown in small pots, one or two spikes may be cut from larger plants and placed in moist soil or sand, in small pots, and the surface covered with *Lycopod*. They last a long time in this way, and cause little or no injury to the plants from which they were cut.

Primulas and Cyclamen are invaluable plants and could not easily be dispensed with for winter, being suitable for rooms. The *Primula* lasts a considerable time, and soon recruits itself when brought out, and flowers profusely again. As a window-plant for cottagers, it is unsurpassed, and will bloom well in a cottage-window for six months. *Prunus sinensis flore pleno* and *triloba* are also valuable, and deserve to be more grown. They last nearly as long in light positions in rooms as when allowed to remain in the conservatory; and no plant can be more easily forced into bloom. They are as easily propagated as *Deutzias* from the young growths taken off with a heel, and in a season or two make nice plants, varying from six to ten shoots, in 5- and 6-inch pots. The treatment that suits the Peach suits these *Prunuses* well, and when growth is completed they can be placed outside to ripen the wood.

At no season of the year are flowers so much appreciated as during the winter months when all outside is quietly at rest, and at no season are they so bright and cheerful; and perhaps this accounts in a great measure for the increasing demand in winter over that of summer. Flowers inside, except of a very choice nature, become common when the outside borders and flower-beds are gay with a variety of plants. For instance, the Zonal *Pelargoniums*, the most brilliant and cheerful flowers that can be produced during the winter, are in summer looked upon as common when they would naturally continue to bloom for months in succession without much care or trouble. The same might be said of many plants. The New Year is a festive season, and for the occasion floral decorations are considered indispensable. Unfortunately this is a season when flowers are considered scarce and most difficult to produce. After the New Year days gradually lengthen,

light increases, and plants naturally unfold their blooms better than during the two preceding months. But for the dullest months there need be no break in the supply of flowers, and the conservatory may be kept as gay during the whole winter as any time in the year. This may scarcely seem feasible to those who fail to maintain a supply. But failure in this respect is due to more causes than one, and not the least important is carelessness in the selection of suitable varieties for early blooming. Amongst Zonal Pelargoniums, I must still cling to Vesuvius, Prince of Wales, and Wonderful; these are not surpassed for freedom of flowering during winter: a good light one will be found in Apple Blossom, although as a florist's flower it is poor. These will continue to flower, and profusely, in a temperature of 45° to 50°. Many of the large-trussing kinds require a much higher temperature in which to expand their blooms properly; they are not to be condemned on that account, because if more heat is given, some kinds do well. Harry Turner, a good pink, and Leopold, a good dark, both large-trussing kinds, promise well in the same temperature as the Vesuvius type. Vesuvius, although "weighed in the scales" by some growers and "found wanting," cannot be dispensed with for any large-trussing kind with which I am acquainted. A selection of plants is needed for winter work, and to a large extent success depends upon this matter. When proper kinds are grown, even of Rhododendrons, Azaleas, and the like, much of the difficulty of forcing is reduced, and the work is accomplished with ease and certainty. There can be no doubt that to maintain a blaze of bloom and abundance for cutting, and plants for room decoration, a good deal of forcing has to be attended to, not only in autumn, but in spring, as stated in previous notes in the 'Gardener;' and unless this system of growing plants purposely year by year entirely changes their nature, as far as their flowering period is concerned, it is useless to force in early autumn before the various plants have enjoyed a natural rest.

WM. BARDNEY.



HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

NO. II.

WHEN commencing these papers, I intended to treat of each border separately, making suggestions in detail both upon the first and successional crops. This would have been much the simplest; but the conclusion I finally arrived at was, that, for my remarks to be instructive, they must be seasonable—that is to say, if hints were given in the April or May number of the 'Gardener' upon work that should be performed in February or March, they would certainly miss their mark. Another idea was to advise upon the breadths or quantities

of any kind of vegetable to be planted or sown. This, again, is impracticable, as the sizes of gardens, and the demands of different establishments, vary considerably. I shall therefore make my remarks as seasonable as possible, with perhaps a few suggestions as to quantities to be grown.

Sowing Early Peas.—If not already done, it is advisable that a good sowing should be made early in February. Nothing, however, will be gained by sowing early, “in spite of everything”—quite the reverse, as much depends upon having the ground in a suitable condition for the reception of the seed. My practice is to sow on the first favourable opportunity during January or early in February, taking care that the soil is so far dry as not to bind badly when trodden. The ground selected is generally previously occupied with either late Cauliflowers or early Broccoli, which help to keep the soil somewhat dry. A dry time prevailing, the manure is wheeled on, the ground deeply and roughly dug, and allowed to lie till the next day, or perhaps for two days, when it breaks up readily. If allowed to get sodden, it is weeks before it is again in good condition; and on the other hand, if it gets very dry and hard it also works badly. Although Peas delight in a good depth of rich soil, we do not trench for the earliest, as we find they succeed better on ground trenched the previous season for Potatoes. It is better for being firm, and is also generally drier. In the winter of 1877 we trenched for Peas, but owing to the continued wet weather were obliged to shovel out the drills and use fresh light and dry soil below and above the seed. Since that time we have altered our practice. While on this subject I may remark that, with this or any other important crop, it is imperative to “strike while the iron is hot,”—or to be plain, one man should not be set to do all the important work, as that means many opportunities lost. Muster a sufficient number of hands where possible, so as to get a job completed quickly.

To return to the Peas. Previous to sowing, our ground is well trodden, and then stirred with a dung-fork. Wide drills are drawn with a flat hoe, or thrown out with a spade, from 2 to 3 inches in depth, and running from north to south if on a south border, or from east to west if on a west border, either of which sites is suitable. The seed is sown thinly, trodden in, and covered with soil, and the whole border is then raked over. If circumstances are against the seed being sown before February 14th, then seed should be sown in boxes—as advised in the January number—placing these in a gentle heat, hardening off before the plants are much drawn, and planting as previously advised; and to follow these, a sowing on the border should be made as soon as possible. The best two early varieties I have grown are Harbinger and William I., both of which I strongly recommend. If a third variety is wanted, Sutton’s Emerald Gem may be added: Harbinger was the earliest last season by about a week, and is very productive and good in

quality. When the first sowing is pushing through the surface, another sowing of the same varieties to the same extent (twelve rows 10 feet in length) is made, also on a sheltered border; and these continue the supply till those sown in the open are ready for use. The rows are all placed 3 feet apart, and 4-foot stakes are used, near to which height the Peas are topped, this inducing the pods to fill more rapidly. The young Pea growth is very much liked by the sparrows, and for that reason we select for the sowings that part of the border where there is much traffic. Every morning, or in the evening after a shower, the Peas are lightly dusted over with a mixture of lime, soot, and wood-ashes, and this, with the help of a gun, keeps the birds off. We mould up and stake early, working in the spray, purposely saved, between the stakes, which also tends to protect the growth. Mice are very troublesome at times, and these we poison (cats do not thrive near game-preserves), using phosphorus-paste, putting it down every evening, and picking up what is left the following morning, otherwise the birds would be poisoned wholesale.

Spinach.—This is sown between the rows of Peas at each sowing of the latter. It is a mistake, often made, to sow Spinach thickly, as when crowded it is not so good in quality, and is more liable to run to seed. Thinning out, if performed in good time, is right enough; but then this is frequently left undone till it is too late. Spinach is one of the best of materials in which to pack either vegetables or flowers.

Cauliflowers.—To succeed those planted either at the base of a warm wall or under hand-lights, as the case may be, towards the end of February or early in March, according to circumstances, more of the autumn-sown plants should be planted on a sheltered border. This crop is a valuable one, and well repays a little extra trouble. The soil I find most suitable for Cauliflowers generally is a rather stiff fresh loam, in which has recently been dug a liberal quantity of half-decayed manure. They will not “take hold” of a soil that has long been heavily manured and lightly dug, and from which comparatively light crops have long been taken. Bastard trenching is the best antidote for such a poisoned soil. If there is any likelihood of the plants moving badly from the boxes or frames, it is advisable to pot some of the strongest singly into 4-inch pots, placing them on shelves in a warm house, in a few days returning them to a cold frame to harden off, and planting out before they are root-bound. Choose a dry time for planting, make the soil firm, and ram it well about the plants with the back of the trowel, as loose planting encourages premature heading-in, or “buttoning.” Eighteen inches apart each way is a good distance to plant, unless extra large heads are required—which for ordinary purposes are a mistake—and some of the smaller new early kinds may be planted still closer. If the plants are well hardened, not much protection will be needed; but severe frosts may be warded off by covering with 6-inch pots, with clods of earth over

the drainage-holes; and branches of Evergreens may also be used. Neither, however, should be used to excess, and only when severe frosts are anticipated. Liquid manure, applied when the heads are forming, will materially assist them, and should be followed up if large heads are required. Moulding up before the plants are large serves to steady them, and also tends to preserve the moisture about the roots. The weaker plants in the frames or boxes may, at the end of March or early in April, be potted up, or transferred direct to the garden,—planting half the batch, if possible, on a warm border, and the remainder in the open, thereby prolonging the supply. If autumn-sown plants are scarce, seed should at once be sown in pans or boxes, and placed in gentle heat. (I prefer the shelves near the glass in a newly-started vinery.) The soil should be light and fine, the seed sown thinly; and great care should be taken not to syringe the seedlings, as their very brittle stems are easily broken—this being the cause of whole batches damping off in an apparently unaccountable manner. The seedlings should be potted, or be pricked either into boxes or a frame, over a slight hotbed,—be grown as sturdy as possible, and planted out before they become crowded. They will move out of a fine, light, leafy soil better than a coarse soil. Such varieties as Veitch's or Carter's "Extra Earlies," Dean's Snowball, and Dwarf Erfurt Mammoth are suitable for the earliest crops; and to follow these, I can recommend Carter's Mont Blanc, Sutton's King of the Cauliflowers, and Dickson's Eclipse,—which, if sown at the same time, will "turn in" in the order named. By varying the sites, and planting frequently, a good supply may be maintained with one variety—none in this respect being superior to Dean's Snowball.

Broad Beans.—Unless there is a demand for these, they are not worthy of a place on a sheltered border. If wanted very early for a particular purpose, they may be sown singly in 4-inch pots, and started in a gentle heat. The young plants should be kept sturdy, and hardened off early; they may then be planted out, on the first favourable occasion, 5 inches asunder, in lines 2 feet apart. Protect slightly in the first instance, and stake up the heavy exhibition varieties, such as the Seville Longpod and Carter's Leviathan.

Onions.—Our earliest supply of Onions are usually autumn-sown, the first fit for use being the Queen, and this is closely followed by the Early White Naples. Those who may not have sown an early variety, and fear a break in the supply, should at once sow seed of one or both of these varieties in pans or boxes, using fine light soil, and place in heat. Harden off before the plants become drawn, and transplant thickly, either at the foot of a wall or on a south border. Fully a month will be gained in this manner; and by sowing more seed as early as possible on the same border, the supply will be maintained. Even the White Spanish and other types may be forwarded considerably in this manner; and the smallest of seedlings transplant readily. They

should be put in firmly, but not deeply ; and Onions generally delight in a rich and gritty soil, made firm by trampling. If size of bulb is no object, when transplanting either autumn or spring sown Onions, place the rows 10 inches apart, and dibble them, 2 inches apart, alternately on each side of the line. If large bulbs are required, they may be disposed 4 inches apart in the rows.

Parsley.—This herb is equally as indispensable as the foregoing vegetable. From various causes, during the spring months, it is frequently very scarce, and where this is anticipated, seed should at once be sown, and grown in a frame, similar to early Carrots ; or the seed may be sown in boxes, and placed on a gentle hotbed. The seedlings may be pricked off in boxes, gradually hardened off, and finally planted in a double line, at the base of a south or west wall. They will well repay the trouble. More seed should be sown on the south border. Cooks must have Parsley, which some young gardeners find to their cost. Sow frequently, and allow the plants plenty of room, and the supply will never fail.

W. IGGULDEN.



PART OF A SEASON'S EXPERIENCE IN THE FLOWER-GARDEN.

DURING last winter a new herbaceous garden was made here, and I may say no pains were spared to lay a solid and lasting foundation, both in labour and material, in order to insure success. The subsoil of the garden is an open gravel, so that drainage was not necessary. The natural soil was removed to a depth of from 2 to 2½ feet, and a very liberal preparation substituted, such as is rarely given to hardy plants. The compost consisted of the top spit of a rich pasture which had been used for fruit-growing purposes for a year or two, and had been enriched with bones and manure. The soil was laid roughly in the beds all the winter, and was therefore fully exposed to the action of the frost, which sweetened it thoroughly, and rendered it a mellow pulverised mass for the plants to take root in. I may state here that the garden was made before "open-air conservatories" came into vogue, so the idea was neither borrowed nor stolen.

Well, after a long dreary winter spring came, and the garden was planted with a very select collection of herbaceous plants. After planting, we had the surface of the beds top-dressed an inch thick with broken horse-droppings—a luxury we did not accord to bedding-plants later in the season. Of course it is well known that horse-droppings, independent of arresting evaporation and maintaining a uniformity of earth-temperature, possess the still greater virtue of exciting and sustaining surface-roots. A feeling of delicacy prohibits me from attempting to delineate the process of planting—an undertaking in these latter days that seems to require teaching in a special school. However, the plants grew and flourished through the season.

In the spring we sowed patches of Mignonette, and also of two beautiful annuals—*Browallia elata* and *Collinsia bicolor*. There were in addition a goodly number of East Lothian Stocks and Evening Primroses, raised from seed, which, by the month of July, were very pretty, and in point of beauty and effect simply eclipsed every herbaceous plant in the garden.

The air was absolutely perfumed with the smell of the Mignonette ; and bees hovered about, and sometimes descended to sip a drop of honey from the opening flowers. At evening, too, the dew descended, and like crystal diamonds sparkled upon the refreshed flowers and leaves, just as the sunbeams grew faint, and the Evening Primroses (*Enotheras*) deigned to open their large but handsome flowers. There were also stately Delphiniums ; and large Sun-Roses hung their heads, as if doing obeisance to the smaller but certainly more beautiful members of the hardy family.

But I must stop. I find I am growing sentimental in order to accommodate my friends with choice of language for their favourites. I must now for a moment direct attention to the flower-garden. Your correspondent, J. S. W., has quoted, in support of his arguments, a report from a distinguished correspondent of the 'Gardener' respecting his dealing with two large beds which swallowed up the sum of 10,000 plants, all good and valuable.

I do not for a moment dispute this statement ; but would beg to suggest that a simpler and less expensive system of planting might possibly yield an equally good effect. In the summer of 1879 I had some very large beds to plant myself with Pelargoniums and suchlike, which took such a number of plants that I resolved upon changing the system of planting. In accordance with this determination, we procured a number of Cannas in the spring of the present year ; and we also raised a stock of Castor-oils, Zeas, Abutilons, Solanums, Balsams, and suchlike—the former of which were planted at 6 feet apart, and were touching each other by the end of the first week in July. The Balsams were 5 feet in diameter in August, and flowered splendidly : of course the margins of these beds were toned off with groups of smaller plants.

I may also point out that the centres of many large beds would be much improved in appearance by the introduction of plants that are conspicuous for the grace and beauty of their foliage, whether hardy or half hardy. 10,000 plants might in this way plant a whole garden instead of two beds. Many of the finest of the Cannas and Abutilons I had lifted in the early part of the autumn and potted, and they are now (December) doing excellent duty in the way of furnishing a large conservatory ; and perhaps before winter is over they will be useful for something else—whereas the finest things in the herbaceous garden are no better looking than a "bundle of dead sticks."

But to return to our system of planting the flower-garden. Independent of the foliage-plants, we used a large number of a Heliotrope we have here, which bears enormous trusses of flowers, and these we associated with pink Pelargoniums. Mrs Pollock Pelargonium and Coleus Verschaffelti were planted in representative beds, as were Pelargonium Flower of Spring, Beauty of Calderdale, and Iresine Lindeni,—from our point of view the most striking beds in the whole garden, the Heliotrope excepted. I name these as an example of our arrangement. After planting, little labour was required for some weeks, as we never peg down edgings before the plants have grown a considerable length; and once going over in this way is quite sufficient up to August. In point of labour I consider—nay, I boldly assert—that our herbaceous garden, yard for yard or foot for foot, cost us more than the flower-garden. Of course no sane person would say the same of carpet-bedding, which is costly, but very effective.

Having therefore given equal attention to the management of these two gardens, we have a right to compare results; and I venture to think that there are few people who (were it possible to accomplish such a thing) would exchange the one garden for the other for brilliancy of effect or unity of arrangement. And yet both are necessary in their places.

Herbaceous plants are interesting—many of them pretty, if you like; but they will never supplant the former of their birthright unless the tastes and habits of those who support horticulture so generously undergo a change which requires a more imaginative mind than mine to conceive.

Not satisfied, however, with my own experience, I journeyed last August to the nursery grounds of one of the largest, if not the very largest, growers of herbaceous plants in the neighbourhood of London, for the purpose of inspection. I was courteously received, and was conducted round the grounds by a very intelligent guide; but, alas! I had to return home a sadder instead of a wiser man,—being too late for the show. I retraced my steps, and feasted my eyes upon the grand display that the able curators of the London parks annually provide for the British public.

W. HINDS.



NOTES FROM THE PAPERS.

PLAGIARISM by known and unknown contributors to the horticultural press has increased to an almost discreditable extent of late. Different gardeners writing on the same subjects, on which they entertain similar opinions, are very apt to express themselves in similar language, and one often sees examples of this kind. The same ideas are, indeed, now often expressed in language so nearly alike, that it smacks of “copying” at first sight, but a little closer examination soon shows that the

language is the writer's own. We perused not long since, in one of the monthlies, an article entitled "Poetic Parallels," in which a large number of examples were furnished from the most eminent authors, showing how writers sometimes think and write alike, that probably never read a line of each other's productions. Burns, Scott, Longfellow, and even Shakespeare, are all unconscious plagiarists of this kind, and such examples should make us cautious in attributing blame; but after all, the real "brain-sucker" is easily detected, and the horticultural plagiarist does not appear to be an adept in the art of disguising the appropriated articles of his neighbours. He seems to be rather a stupid type of the class, and when detected in his pilferings he generally either endeavours to extricate himself by a lame excuse that carries falsity on the face of it, or he offers no defence at all, and shows no shame. The worst sufferers by these literary pirates are not the robbed parties, but the editors of the papers, who receive their communications in the faith that they are original, only to discover, almost to a certainty, that they are probably the production of another, to whom, maybe, would have been accorded a less favourable reception—all of which is no doubt exceedingly mortifying. But editors may be easily deceived in this way, and no fault to them. An editor of one of the horticultural journals, who was bitten in this way some time back, acknowledged the fact at once and in the most courteous manner, and stated that it was impossible he or any editor could, at the present day, "read a tittle of the articles that were written," hence any nefariously disposed rogue might deceive them. The best cure is to pillory the thief well, and not to screen him by accepting his explanations when these are so manifestly untrue. It is not long since an industrious writer was shown up, who was engaged in reproducing the chapters of another writer almost *en bloc*—whole pages being transferred with scarcely a word of alteration; and yet he had the audacity to write to the author to declare that it was a coincidence merely—he had never read the papers in question. This was something like a coincidence surely. Another sent a leading article to a paper, only the dates, names of places, and a few other particulars of which were his own. He made one amusing and fatal mistake, however. The real writer had described himself as living on the borders of a certain northern county; but the plagiarist, who wrote from Wales, had missed this point, and we had the remarkable fact furnished of a man living and practising in two different parts of the country at one and the same time.

Another somewhat noted practitioner was induced to deliver a lecture on a certain horticultural topic in a town not a hundred miles from St Helens in Lancashire, and finding its way into a local paper, was discovered to have been copied in great part from one of the horticultural papers, to which it had been communicated some years before by another writer. In this case the plagiarist had not the excuse of want of experience on the subject of the lecture to plead, but chose,

notwithstanding, to strut in borrowed feathers on the occasion. The probable reason was the want of the ability to describe his own practice in his own language—hence the dressing of it up in somebody else's. One of the latest devices exhibited by this fraternity, however, is to copy the writings of some one else into their memorandum-book, and put them away to pickle for a period of years, after which they come to regard them as their own. The advantages of this plan are, that the real author might die in the meantime, and at the least the copyist will merit commendation for the excellent quality of his "preserves." After all, it is a sorry business this pilfering; and the root of the evil seems to be a vain desire to make people believe you are the embodiment of all originality and ability yourself. It is very proper and chivalrous to acknowledge the authorship of all declared opinions or practices as far as possible, and such will always stand as testimony in one's favour. He is a poor creature who imagines that either his own exclusive practice or preaching will be accepted by everybody without question, or that it will suit all cases.

If what has been stated be true, the new Alnwick Seedling Grape is likely to be one of the *best looking* of late Grapes—being larger than either the Alicante or Lady Downes in the berry. A good buncher when it sets well, and taking on a splendid colour; but it is not so good as either of the other two to *eat*—being comparatively *sour* even when quite ripe. We have tested fine-looking examples of it along with the other two grown beside it, and no doubt could be entertained of its more acid and less agreeable flavour.

Mr Burbidge's new book, 'Gardens of the Sun,' is out, and contains much suggestive information for the gardener; but it is practically beyond his reach—though we thought it was intended for him, as it would certainly be more useful to him than anybody else: the price is 14s. It is the publisher and not the author that arranges these matters, we suppose; but it seems a pity that cheap editions of such works cannot be provided, like Scott's Novels, Shakespeare, and other popular books. Any book that costs more than 5s. is too dear for the gardener in a general way. Burbidge's 'Cultivated Plants' has the same fault as the other—it is nearly as dear. There is hardly a book on garden literature that would be more useful to the gardener—particularly those who take an interest in hybridising and the raising of new fruits and flowers, &c.; but it is not well known amongst them. A cheap edition of the latter, that would come within the reach of young gardeners, and old ones too, is very desirable. 'Gardens of the Sun,' with its attractive title, which reminds one of some of Mayne Reid's stirring romances, will, we daresay, interest a variety of readers; but 'Cultivated Plants' can only have an interest for a certain class, and that class, as a rule, cannot afford to buy it.

READER.

PRUNING ROSES.

PROBABLY no more common subject could be selected to write on than this, but for all that, the pruning of Roses is far from being generally understood or rightly performed in numerous instances. I believe it would be a most difficult matter to find any one who owns a Rose-bush who did not profess to know how and when to prune it—and indeed pruning is an operation which every one claims a knowledge of ; but this does not prevent us from seeing many mistakes and omissions in it,—such as doing it at the wrong time, cutting off what should be left on, and leaving on what should be cut off, taking too much away, or more frequently not taking enough. In pruning fruit-trees, one can hardly be wrong in doing it any time from the fall of the leaf until the buds are swelling again ; but it is different with Roses. Were they pruned in autumn like fruit-trees, a week or two of mild weather might excite the buds into growth any time during January or February, and the March winds would more than likely destroy all our dearest prospects of a Rose crop for that year. Supposing this to take place when they are not pruned, it is only the buds at the ends of the shoots that start into growth ; and this does not interfere in the least with the lower buds, from which all the best blooming shoots come. To simplify matters, we will class our Roses according to the pruning they require, and begin with

HYBRID PERPETUALS.

Taking the numbers in cultivation into consideration, this is the most popular of all classes of Roses ; and we are glad to learn that those ugly standards with long stems and tufts of heads are fast giving place to the more useful dwarfs. Before beginning to prune, it should be taken into consideration, that according to the time of pruning, so will the blooms come. If all the Roses are pruned on one day or in one week, then most of them will come into flower together. Supposing a portion of the stock were pruned on the last days of February, a few more about the middle of March, and the last about the beginning of April, a much longer succession of blooms would be had during June, July, and August, than by pruning the whole of them at any of these times. Season and climate must also be taken into account, as some may be able to prune their Roses days or weeks before others ; but from the end of February to the beginning of April will include all Roses and latitudes. Some kinds of Hybrid Perpetuals grow very strong, others weak. This is not always owing to cultivation, but often to constitution. Shy growers are not the best for ordinary cultivators. Those of the Paul Neron type are the kind. As their growth so must the pruning be. Strong growers will always bear hard cutting. The more wood they have formed, the more must be taken out. The strongest shoots should be cut in to three or four buds from the

base ; all the weak shoots should be cut close off to where they have started, not leaving a bud to form another shoot, as it is such as these that produce a number of small flowerless stems only to crowd up and smother the others. Weak-growing varieties must be done in the same way, but one or two more buds may be left on each stem. When the plants are two or three years old, it takes some care to prevent the dwarfs from assuming a semi-standard form, as by a loose way of pruning the stems sometimes become some feet in length, with a number of smaller growths emitting from the top. To rectify this, the best plan is to cut such stems down to a few inches from the ground, and let them sprout afresh.

TEA ROSES, ETC.

The time to prune these should be the same as the others, but few of them will bear or are beautified by hard cutting. *Gloire de Dijon* is one of the most rampant amongst them. It is not well suited for dwarf or standard in beds amongst others, but should be planted where space is afforded to ramble. Here only the very smallest of the shoots should be cut out, and the strong ones must only have their points cut off, if it is desired that they should throw out shoots and clusters of blooms from every bud. *Maréchal Niel* has the same habit. Others, when growing in beds, must all be pruned in proportion to the growth they have made, but never heavily or too early, as many Tea Roses have very delicate constitutions, and a severe winter or spring often injures the wood to a considerable extent. We allow all our Tea Roses to become more bushy than the H. P.'s, and the pruning they get is simply a thinning out, not a cutting in ; and with the majority this answers better than any other way we have tried. All climbing Roses against walls, pillars, &c., are treated in the same way—always allowing the best formed and matured shoots to remain, and never leaving any small growths that are likely to be flowerless to make any headway.

ROSES IN POTS AND UNDER GLASS.

In many gardens the stock of these is ever increasing, and the knowledge of this must be gratifying to all ardent Rose-growers—as of all Roses, I think there are none so valuable as those gathered under glass in January, February, March, and April. By care in pruning and attention to selection, Roses in these months may easily be obtained by all who can keep any glass structure from 40° to 60° during the time specified. H. P. pot-Roses must be pruned on the same system as the same kinds out of doors, to regulate the time of blooming and the distribution of the shoots. If wanted to bloom in February or March, we would prune in October or November ; if in April or May, January would do. Teas planted out and in pots may be treated differently ; many of them continue flowering all the

year through, if they can be induced to make fresh wood to supply the blooms, and the way to accomplish this is to keep pruning at them every month of the year. When one bud or cluster of flowers has faded or been otherwise removed, the shoot which bore it should be shortened back a little way, but leaving a number of buds, which will soon sprout again, run into branches, and form buds and flowers, to be reproduced by a repetition of the same operations.

J. MUIR.

MARGAM.



HINTS FOR AMATEURS.

GREENHOUSE AND CONSERVATORY.

THERE should now be a good preparation of soil in dry quarters to be ready for use. During this month much potting may be done, and a store of peat, loam, charcoal, sand, and healthy well-rotted leaf-mould will be of much value. Potting, especially peat, soil should never be dust-dry when used, and if very wet it is also objectionable. When potting early, and especially plants which have few roots, we never like to use extra-rich soil, even when the plants may be gross feeders. The absence of air causes soil to become sour and unhealthy. Good drainage and clean pots are of great moment for plants at any period of their growth. The numerous specimens of New Holland plants which flower at this season are invaluable for decorative purposes. Pure water (rain-water is always best), fresh air, absence of crowding, no coddling with heat—artificial heat only given to expel damp and keep out frost,—good drainage, and cleanliness on every part, are indispensable to the healthy growth of these plants. *Correas* (*cardinalis* is very showy), *Chorozemas*, *Lapagerias*, *Genetyllis*, *Grevilleas*, *Aotus*, are now most serviceable; and when not pressed with heat will flower freely far into the spring. *Epacris*, *Erica*, *Hyemalis*, *Wilmoreii* (autumn *Gracilis* in middle of February are at their last), *Caffra*, and others which have done service early and going out of flower, may be moderately cut back and placed in a gentle moist heat till they show signs of breaking. They then may be reduced at their balls and placed in smaller or same sized pots; and when growth is active they will do well with ordinary greenhouse treatment. It is of importance to have these early into flower during autumn and winter.

A few small plants of these bought each season are most serviceable. It is a profitless operation to propagate small quantities of them. Tear and wear by cutting, and confinement in rooms, are very destructive to them. *Cytisus atleensis* and *racemosus*, *Coronillas*, *Camellias*, *Acacias*, *Habrothamnus*, *Imantophyllums*, *Neriums*, *Sparmannias*, *Plumbago capensis*, *Vallotas*, *Lachenalias*, and some others, may be everybody's plants, they are so easily grown, and all may be had

easily in flower at this season. If the roots of any of them are confined, they may be cleared of their inert surfaces, and a thin coating of rotten manure, loam, and peat substituted. Weak, clear manure-water — like pale sherry — may be given to those flowering. The short flowering period is often due to starvation of the confined roots. Thick, muddy manure-water for such plants is ruinous. Roses, bulbs of sorts, Hepaticas, Violets, Mignonette, Cinerarias (these may require larger pots), Harrison's Musk, Primulas (double and single), Cyclamens, and Pinks, are all favourites at this season. They may be assisted with manure-water and rich surfaces; their pots placed into larger ones, with soil to root through into, may help to lengthen their period of flowering. Force on Azaleas and all the hardy shrubs and other plants suitable for winter and spring flowering—Deutzias, Dielytras, Lily of the Valley, Lilacs, Spiræa japonica, Kalmias, Cherries, Pyrus japonica, Thorns, Guelder Rose. Mock Oranges can now be brought forward with gentle warmth. When the flowers begin to open they may be removed to more airy and cool quarters.

Bouvardias, Epiphyllums, Burchellias, Libonias, Plumbago rosea, and similar plants requiring heat, should (when in conservatory) be placed away from draughts. Young stock of plants should be kept free from green-fly; none should be huddled together; give air and light to all.

STOVE.

For the plants in this department a good stock of peat and loam is indispensable. The days being longer, and the sun expected to be more powerful, it is a favourable period to get all the inmates of stoves examined as to the condition of their roots. When it is necessary to increase the plant to the size of a specimen, any inert soil may be cleared away and the ball planted firmly into a pot one size larger than its former one. The soil and roots should be moist when they are transferred to the larger shift; firm potting is in most cases desirable. Some mutilate the ball by cutting it severely with the view of allowing the roots to be free to run into the new soil at once; but it often takes them much longer to recover from the "chopping-off" method than the taking to the fresh soil by the "pot-bound" ball of roots, and the check is immensely greater. All plants require some help at this time; but to pot all and sundry, whether they require it or not, is mischief which will show itself in due time. Where roots may be scarce, use a minimum size of pots, and the soil more sandy than for vigorous healthy roots. Peat, sand, turfy loam, with some charcoal added, suits most stove-plants. Fleshy, strong-rooted kinds require little in the way of peat to grow in. When potting is done, cleaning the structure in every part should have attention. Where there is no separate structure in which plants are to flower, there is a difficulty in making the one structure answer all purposes. The syringe must be used cautiously among flowering subjects. Amaryllis,

Eranthemums, Epiphyllums, Eucharis, Euphorbias, Jasminum, Sambac, Pancratiums, Poinsettias, Begonias in great variety, Plumbago rosea, Gesnerias, Stephanotis, Gardenias, Scutellarias, Thyrsocanthus, Libonias, may either be in flower or going out. While under the latter condition they may be kept on the dry side for a short time, trimmed in in some cases, then started into growth; and cuttings may be had from the young growths of many of them. A young stock of the shrubby kinds is raised yearly, and the old ones thrown away. Temperatures after potting a stock of plants must be kept higher, and moisture given proportionately. 60° to 65° by fire-heat may be a fair temperature, but where no potting has yet been done less will do.

Gesnerias, Gloxinias, Caladiums, and Achimenes may be started forthwith. A portion of the house which can be used for bottom-heat is exceedingly useful for starting plants into growth; but the continuous plunging of plants is seldom practised now. Shading must now be put in order, and used only when sun is bright. The state of the weather is the only guide in such matters.

Now is a favourable time to get up a stock of Ferns. They divide well, and will root readily into the fresh soil. Some of the kinds take much more loam than others. Loam and peat suit most kinds.

FLOWER GARDEN.

In this department there is little which can be added in a calendar to what has been advised for January,—a general examination of the stock, young and old, to supply plants for the beds next season. Get growth active, so that vigorous cuttings may be had; weakly stunted ones are difficult to root, and are long in making good plants. When the cuttings are active they root without any check, and are large when they are turned out. This applies to Verbenas, Alternantheras, Iresines (the two last require to be in heat late, as they are tender and cannot be bedded out early), Heliotropes, Petunias, Fuchsias, &c. A good stock of hardy plants of fine foliage, such as Sedums, Cerastiums, Ajugas, Arabis of sorts, &c., are all useful, and can always meet a shortcoming. Pansies of the better class now so favourably known are most useful, especially where ground is rich and deep. Dahlias and Cannas kept as stove roots may be examined, and if the stock is short they may be potted, boxed, and placed into heat to be increased. Calceolarias may be taken from their cutting-pits and planted in turfy loam, to be afterwards lifted with balls to the beds. See that green-fly does not have its own way. Fumigate with tobacco-smoke where it appears. Pot Geraniums, or plant them in pits, using turfy soil, which will adhere to the root when they are transferred to the beds: finer kinds, or those which may be scarce, should not be put with the general stock. All hardy plants in pits or frames must be kept free from damp by abundance of air. Slugs may be lurking among the plants; they should have fresh lime thrown in their tracks. All hardy plants to flower in pots, such as Chrysanthemums, Lobelia cardinalis, &c., should be kept away from the bedding-stock, so that they may have proper treatment. Shrubs and trees may be planted when ground is in condition; but Evergreens we would prefer leaving till they were about to grow in April.

HARDY FRUITS.

To say much about these will be a recapitulation of the past few months' practice. Many, however, do not think of planting their fruit-trees before this month and onwards, and we have more than once planted when they were coming into leaf. Where the work remains unfinished, no opportunity should be lost in bringing it to an end. Rather than be advised entirely by any material in print on the subject of kinds, see which do well in the district; consider soil and altitude as well as latitude. As an example, we visited a friend who grows Apples and Plums largely on his farm, and he plants with the view of getting a crop every season. Last autumn his orchards were a sight to be remembered, every tree being loaded; but there were other items worthy of notice (not of imitation)—weeds of every description were growing in their rankest form among the trees,—Gooseberries, Currants, vegetables, and some Roses smothering each other; yet the trees were loaded. No cultivation is attempted, nor considered necessary. Soil of rocky marl, in which the roots become a mass of fibre but grow freely, secures the fruit-crops in this jungle. Prune, stake, train, mulch, destroy moss and lichens—do whatever trees and bushes may require. The coming months will bring plenty of work with them. Make cuttings of Gooseberries and Currants; a few in store are often useful.

M. T.



NOTES ON DECORATIVE GREENHOUSE PLANTS.

VALLOTA PURPUREA.

ONE of the choicest and most useful of our greenhouse flowering bulbs is the *Vallota purpurea*. This charming plant is a native of the Cape of Good Hope, and is worthy of a place in the most limited collection of plants; in fact no collection, however small, should be without it. Either as a dinner-table plant for room decoration, or in the conservatory, it is equally suitable and equally admired. It takes rank among the *Amaryllids*; and indeed in its habit, foliage, and shape of flowers, it very much resembles the *Amaryllis*, only that the flowers are smaller and a self-colour, which is bright scarlet. Why it is called *purpurea* I cannot tell, as there is certainly nothing purple about it. At no stage of its growth does it require a higher temperature than that of the ordinary greenhouse. It nevertheless stands forcing very well, and when introduced to a hot pit or stove, will quickly throw up its flower-stems, provided it has been previously sufficiently well ripened. The ripening process, however, should not be carried to the length of causing it to lose its foliage; and herein it differs from the *Amaryllis*, being an evergreen bulb, and should on no account be allowed to lose its foliage through starvation: the ripening process must be carried out by limiting the supply of moisture and increasing the amount of air,—of course seeing that it has made its growth previously.

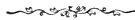
My remarks apply to its treatment as a greenhouse plant coming into flower in its natural season, rather than as a plant subjected to the process of forcing. It is propagated by offsets, or small bulbs

formed at the sides of the old ones. In potting, which should be done about the middle or end of February, the bulbs ought to be assorted, keeping the flowering-bulbs by themselves. These should be potted, say in 6-inch pots, which is a very useful size for general decorative work. Five or six bulbs may be put into each pot; and of course, if large specimens are wanted, large pots should be used, and bulbs put in in proportion. The smaller bulbs may then be potted in 4-inch or 6-inch pots, as may be most convenient, putting in a number of bulbs according to size of pots or size of bulbs—and these can be grown on for future flowering.

The soil best adapted to their wants consists of fibry loam and peat in equal quantities, with a good dash of sharp sand and a little fine old manure incorporated with it, or failing this a handful of ground bones. The plants must not be over-watered until they begin to make fresh growth; but after they are fairly on the way, and throughout the summer, they must get an abundant supply.

From the end of May and onwards, they will do very well in a cold pit or frame, kept near the glass, and a moderate supply of air given every day. They will flower during the autumn months from the end of August. Some cultivators re-pot the bulbs as soon as they have done flowering, and keep them growing on during the winter, only with a lessened supply of water during the dull winter months. I consider it to be more a matter of routine than anything else whether they be potted in autumn or early in spring. I have tried both ways, and could see no material difference, only that being re-potted into fresh soil in autumn, they required somewhat more careful looking after throughout the winter, and it may be that they will come into flower a little earlier; but they are less liable to come to harm if wintered in the pots in which they had flowered, which, of course, are full of roots, and will stand a greater degree of cold with impunity. They will winter safely in a temperature of about 45°.

J. G., W.



THE HOLLYHOCK.

ANY one who has a stock of Hollyhocks should now propagate as many as he can. If the old stock plants had been lifted in the early part of winter, potted and placed where a little growth has been made since, they will, during the beginning of this month, be in the proper condition to manufacture into plants by root-grafting. The way to do this is to get some healthy Hollyhock roots, preferring those with growing rootlets, and cut up as many as are required. Then take off the offsets with as much stem as can be got; prepare these first by cutting the stem half through, and slit the stem up, removing the half of it up to the cross-cut; then select a root of as near as possible the same thickness, and cut it to fit into the stem of the graft. Run a pin

through the two, and a strand of matting round them, and pot into 4-inch pots. When all are grafted the pots should be plunged in a mild bottom-heat, and the plants kept moderately airy and not over warm. These make good plants for putting out in April with those propagated the preceding autumn. The other modes of propagating named sorts are by cuttings from near the root, through the summer, and by cutting the partially hardened stem into single eyes, and inserting them in boxes or frames in sandy soil. Both cuttings and eyes should be kept as cool as possible, under which conditions they produce good plants before winter. The Hollyhock comes very true to character from seed. The best time to sow is about the beginning of September, in a cold frame, where they should remain throughout the winter. Plants from earlier-sown seeds make too much growth, and do not come through the winter so well. The Hollyhock cannot get too deep a soil, or one too rich for its wants, in order to obtain strong spikes and large blooms. Deep and rich soils carry the plants through spells of hot weather without needing to have recourse to the watering-pot every other day, and in all cases amply repay the work and manure laid out on them. In such soils the plants ought to be planted not closer than four feet from each other,—more if space can be spared. Hollyhocks do well and look well in mixed borders, and here more room can be allowed them than when grown together in beds. Long and strong stakes are necessary early in summer; but in tying take care that the ties are not so tight as to cut the fast-thickening stems. Spikes intended for exhibiting should have the tops pinched out, and the blooms, where too thickly set, thinned out. Shading must also be provided. This is economically and efficiently provided by swathing the spikes in newspapers—of course, providing means of keeping the papers off the blooms.

Last year there were plants offered for sale reputed to be free from the Hollyhock disease, and many more than usual were grown throughout the country. In some localities it seems, from information I have received, that the plants did well and kept free from the fungus—at least to an extent that was not noticeable. In my own case, I bought from a source warranted perfectly “clean;” but on one or two of the plants I found the fungus. The infected leaves were removed, and I determined to try and stamp out the fungus if it was simply confined to these plants. As growth proceeded the few specimens which appeared were removed by cutting them out of the leaf and burning. This did very well for a time, until the fungus appeared in hundreds on stems as well as leaves. Then the plants were cut down underneath the soil right into the root-stock. The shoots which broke were very soon in a like condition with those which were removed, and they were again cut over in the same way. The plants had only time to commence a fresh growth before winter when the plants were lifted for spring propagation. Clean off-growths propagated in summer went

exactly the same way as the parent stocks. Curiously enough, in one locality where the Hollyhock has done well during the past year, the common Mallows by the waysides were covered with the fungus. The question is altogether a puzzling one—why, in some districts, the fungus should attack the plants, and in another, where the fungus was most abundant, the plants should escape. It has been noted before how curious it is that the common Mallow should live and perform its functions under a crop of the parasite which kills the Hollyhock; but in the Mallow the leaf alone appears to be subject to attack, while in the Hollyhock, not only the leaves but the stems are affected. If the stems were not subjected to attack, it is probable the fungus would not prove of such a deadly character as it is. Should we now be in for a few years of really fine summers, it will be seen whether the Hollyhock will not again go under, as it is only during the last few years that any progress seems to have been made in getting up healthy stocks.

R. P. B.



FLOWER-GARDENING—THE BEDDING-OUT OR MASSING SYSTEM.

It would appear that this system of arranging the various kinds of plants employed in the decoration of the flower-garden will soon be a thing of the past. At least, if the advice of some writers on horticultural subjects is followed, bedding-out must go, “bag and baggage,” before long.

The present opposition to the style of flower-gardening that has been in the ascendant for some years past, is the result of the teaching of an eminent “arm-chair” gardener. He, in the seclusion of his study, has discovered that hardy plants are beautiful, and the most suitable subjects for out-door flower-gardening. It is only plants of certain stature, however—dwarfs and creeping things,—that finds favour with gardeners of the above type. Any species or varieties, however beautiful their flowers may be, if they require support in the way of stakes, are reluctantly admitted into the “hardy brigade;” and, as a consequence, the greater number of the most beautiful, showy, and useful of our hardy herbaceous plants are not admissible in the ideal flower-garden of those who advocate the abandonment of the bedding-out system.

Fancy the result of excluding from the herbaceous garden the stately Delphiniums, the beautiful Asterlike-flowered Pyrethrums, several species of the Lily family, Carnations, all the taller kinds of Phloxes, and a host of representative members of other families that in this windy island of ours it is absolutely necessary to stake, in some way or other, if we would see them in all their beauty, and not as bedraggled, bespattered, betattered objects—highly illustrative of their fitness for admission into the ragged brigade!

There is no use talking about doing without staking in the hardy herbaceous garden, unless we, at the same time, do without "the cream" of hardy herbaceous plants. "Order and neatness" at all seasons are the chief charms of a "fair garden;" and order and neatness cannot be maintained by going over the beds and borders "about four times" during the summer season, not even in the case where "hardy plants exclusively" are planted. To keep borders or beds of hardy herbaceous plants in an enjoyable condition, they will need going over at least once a-fortnight, from March to October; and if they get a little tidying up once a-week during that time, they will look all the better for it. It is not quite clear to me what the opponents of the bedding-out system are finding fault with in particular. Do they object to the bedding-out or massing system as a system of arranging plants of any kind? Or is their objection only to employing half-hardy plants out of doors in the summer season? If their quarrel is with the massing system, whether the plants be hardy or half-hardy, or a combination of both, then I venture to say that by no other system can so grand a display, as a whole, be produced, and, at the same time, the individual or special characteristics of the various plants employed be preserved. In the mixed or promiscuous system of arrangement, the special characters of individual classes are lost in the mass when the beds or borders are looked at from a little distance.

If the objection is mainly directed against the employment of half-hardy flowering and ornamental-foliaged plants, then I ask, In what way is the flower-gardening of the present time superior to that of forty years ago, if not in the use of suitable members, in judicious numbers, of this class of plants? Was it not by the employment of the class of plants just referred to that flower-gardening was got out of the groove in which it had moved for generations previous to their introduction to the beds and borders? and does not their presence give life and beauty to the flower-garden during the summer and autumn months, that is unattainable by the use of hardy herbaceous plants alone? It is not, however, by employing tender, and excluding hardy plants, or *vice versâ*, that the most interesting and beautiful display of flowers can be maintained in the flower-garden the year through, but by the employment of suitable members of both sections arranged in the bedding-out or massing style. Some practitioners, however, are so extreme in their ideas, that to pursue a middle course in anything is highly distasteful to them. Hence, in the matter of flower-gardening, if their idea for the time being is in favour of tender plants, those of a hardy nature are rigorously excluded from their arrangements. Borders, hundreds of feet long, by tens of feet broad, are bedded out year after year with tender plants, and these only. The pattern may be changed from year to year—one year the panel, another the ribbon, or it may be the carpet or cushion style is selected,—but whatever

shape the plan may take, tender plants are used in working it out. After some years' trial it is thought that this style of flower-gardening with tender plants costs more than it is worth ; and panels, ribbons, carpets, and cushions of tender plants are unceremoniously set aside and replaced with hardy plants, arranged in the promiscuous style, with a view of reducing the cost of flower-gardening. Well, it would not be a difficult matter to lessen the expenditure still further. Why not turn the herbaceous garden into a "wild garden?" The latter style of flower-garden is the most natural. The blooming season in it is quite as long as in any other style, and by adopting it we get quit of the necessity for hoeing and raking, tying and staking, mowing and sweeping, and all the keeping incidental to other styles.

Some may object to contrasting the herbaceous with the wild garden in the matter of keeping or otherwise. Well, the comparison is just as fair as in the case of a garden bedded out with tender plants and one devoted to herbaceous plants only. The systems are different ; and, in my opinion, praising the one and condemning the other is a mistake. Each has its own peculiar beauties to present us with, and it is only those of one idea that would restrict us to one or the other system, or to a choice between hardy and half-hardy plants for the decoration of the flower-garden. In our own case we use both hardy and half-hardy plants as bedding-out plants, and we find the plan answers our purpose ; and before discontinuing it, the objections urged against it will have to be of a different kind to any that have hitherto been advanced.

It would also appear, from the teaching of the authority referred to at the beginning of this paper, that we are not only wrong as regards the class of plants we employ at present in the decoration of our flower-gardens, but that we are also wrong in keeping our gardens in so orderly and clean a state as is usually the case. We are seriously informed that "the eternal raking and scraping and brushing of the garden leads to primness and ugliness—starves the trees, and causes endless labour for worse than nothing." Now here is information for lovers of well-kept gardens ; but it is just the kind that might be looked for from any one who prefers to see Carnations tossed about and spoiled—so far as their flowers are concerned—by the force of the wind, rather than supply them with supports in the way of neat stakes.

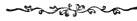
I am of opinion, however, that there are not many *practical* gardeners who have such a superabundance of labour at their disposal, as leads them to expend it in creating "primness and ugliness" in the gardens under their charge. With "arm-chair" gardeners, however, the case may be different. The outdoor departments under their care may not be extensive enough to employ all their leisure time in a profitable manner ; and hence for the sake of bodily exercise they may at times overdo the raking and scraping, brushing and scrubbing business. The same teacher condemns the practice of collecting leaves after they have fallen from the trees, and also the cutting of grass in flower-gardens. He says, "The leaves should be allowed to fall and rest on and nourish the surface." Well, we cannot prevent the leaves from falling, neither can we compel them to rest on the surface where they fall.

After dropping from the trees, they are constantly being shifted from place to place by every breeze that blows ; and unless they are gathered and put away, the majority of them get driven into quiet corners and sheltered nooks, where their presence is of no use.

No doubt, to allow leaves after they have fallen from the trees to remain ungathered about lawns and pleasure-grounds, we would thereby provide in the garden amusement and information of certain kinds for the inmates of the dwelling-house, without putting them to the trouble of going out of doors to see the performance or acquire the knowledge. It would also produce some mirth to see the young ladies of the house going forth to visit their floral favourites after a summer shower, with their feet and legs encased in clogs and leather gaiters, or mounted on stilts to prevent themselves from getting wet feet and dragged tails, each armed with a long-handled rake or scraper, wherewith to search for their pets among the long grass, rotten boughs, and half-rotten leaves. The fair ones might not think this the most comfortable way in which to take a stroll about the flower-garden on a sultry summer afternoon ; but the picturesque appearance they would exhibit while going to and fro, extricating "spreading colonies of choice things" from dead leaves and other rubbish in various stages of decay, would in some measure recompense them for any little inconvenience they might suffer through the use of the gaiters and stilts.

When sitting by a window on a dry breezy day, it is very amusing to watch withered leaves "racing and chasing" each other, like the pursuers of young Lochinvar on Cannobie Lee, up and down the lawns, in and out amongst the shrubs and trees, gathering in thousands, and forming little irregular-shaped hillocks here, bolting up in the air Will-o'-wisp fashion yonder, gambolling, turning somersaults, and cutting all sorts of antics like legions of "leaflets" out for a holiday. Then by observing the direction in which the majority are travelling, a pretty correct idea may be formed of the direction in which the wind is blowing at the time, without vacating the chair to consult the weather-cock. On these grounds, it might be advisable to discontinue the practice of collecting the leaves as they fall from the trees ; but I fear there are not many gardeners or their employers who will think so.

J. H., B.



THE FRUIT-GARDEN.

No. II.

THE GRAPE VINE.

IF there is to be an inside border, you will require to build up pillars from the bottom on which to rest your flue—for we advise you to build a flue so that you may apply a little fire-heat when necessary ; and a flue, constructed of 6-inch glazed pipes, will answer your purpose admirably, and be much cheaper than a boiler and hot-water pipes. Had your house been larger, we would have advised you to have a boiler, as heating by hot-water is more economical in large houses—or a series of them—than flues ; but for a small house such as yours, where only a little heat is wanted occasionally, we certainly think a flue, such as we have recommended, is best. It is important to have it resting on a

foundation that will not sink, for the joints must be properly cemented to prevent smoke escaping ; and if they are allowed to sink with a loose sinking border, the cement will crack and the smoke escape. Pillars of a single brick on bed, at each joint of the pipes, will prove sufficient support. Of course, if your border is to be wholly outside, you may save yourself this trouble.

The fireplace should be at one end, seeing that another person occupies the ground at the back of the house ; otherwise the back would have been the best place for it. Never mind ; just build your fireplace 12 or 18 inches below the level of the flue, and the same as you would a fireplace for a boiler. You may put it pretty well under the house, for economy's sake, and cover it over with a fire-brick cover, and lead your flue along within 2 feet of the front wall, and right out through the wall at the other end ; and then lead it up, by means of a metal or other pipe, a foot or two higher than your house, and your heating apparatus is complete.

And now we will return to the border when you have laid down the drainage with a turf upside-down over it. The next thing to do is to fill in the soil ; but of course the soil must be prepared beforehand. The best soil you can possibly get is turf from an old pasture ; and if you dared, or could get liberty, to take a few cartloads from off the park just over the wall, you would be all right. I daresay you cannot. But you need not put on a rueful face ; for we only said that such was the *best* kind of soil. But you have a good heap of soil which you wheeled from off the site of the house, and that will do very well for mixing along with the best you can get. The turfy material which is to be had along the sides of the turnpike roads will do capitally : we have seen it used with good results before now. As much of this as you have soil in your heap, when mixed with it, will make enough of soil to fill up 4 feet of your border ; and that will be a good beginning for this year. Then you have a fine heap of horse-droppings, which your boys collected off the roads,—and for manure nothing better could be desired. You should also get some bones—a couple of barrow-loads, if possible—to furnish phosphates to the plants ; for the bunches of Grapes need phosphates. Further, some gritty matter, such as burnt rubbish, or lime-rubbish, or broken stones, is necessary to keep the whole mass open, so that the roots may run freely, and the water may not stagnate in it.

Having got these materials together, they will need some mixing before putting into the border. The turfy stuff must be chopped up into pieces, but not too finely. Having done so, put a layer of it down 6 inches thick ; then a layer of the gritty material ; then an inch of the manure and a sprinkling of bones ; then a layer of common soil, gritty matter, manure and bones, as before, and over all a sprinkling of hot lime. Repeat this until all your material is worked up. If any urine is to be had, a good soaking should be given to the heap,

—for urine, especially cow's, is rich in potash salts—in order to have strong vigorous growths, without which you may look for fine fruit in vain. If you have used wood-ashes for opening material, they will also supply potash.

After your heap has lain a few weeks, it will be ready to put into the border ; but in so doing it must be mixed. To do this properly, the heap should be sliced perpendicularly with the spade. Fill in the soil some inches higher than the floor level, and do not be afraid of treading it down if it is dry ; but if it is the least pasty, allow it to sink of itself. Year by year you may add to the breadth of your border, until it is 16 or 20 feet, or even more, broad.

Having settled the question of soil, we must now think of plants, and how to plant them. The best kind, if you are to put in the flue—which we hope, for your own sake, you will—is Black Hamburg. This is regarded as the most desirable Grape, by the most extensive growers in this country, even for their purpose ; so you can understand that it is a good one. It is, moreover, very easily grown, and is just the thing for you. We would strongly advise you to stick to this ; but if you are determined to have a white one, let it be Reeves's Muscadine, or Foster's Seedling, for such vineries as yours ; and we do not recommend you to grow a collection. You cannot grow any more than four plants in your house, for you must have 3 feet from plant to plant to allow them proper room. Our advice is to have three of these Black Hamburgs. The best plants to buy are well-ripened canes of last year's raising. When you buy them, see that they are not stunted plants that have been cut back. After you have got them, water them when necessary, and keep them in the pots until they begin to grow. When they do so, rub off all the buds as they start except two, which should be left about 4 inches from the surface of the pot ; but no pruning should be done, or they may bleed ; then turn them out of the pots, disentangle the roots, and plant them, with the roots spread out near the surface, as you would plant anything else. After planting give them a soaking of water at a temperature of 100° F., and mulch with rotted manure. They should be placed about 6 or 8 inches from the front wall. We are of course presuming that they are to be planted inside. If the border is wholly outside, the plants will require planting outside, and holes must be made in the front wall through which the canes will pass into the inside of the house. In this case the buds must be left further up the canes—just as far up as will allow of the plants being planted outside, and the growing buds reaching a foot or so inside the house. The holes and exposed part of the Vines should then be covered over with straw to prevent the sap getting chilled, or the wind from blowing through the holes—which ought to be 4 inches in diameter—and so chilling and stopping the growth of the young shoots.

J. H.

(*To be continued.*)

THE CHINESE PRIMULA.

PERHAPS amongst autumn, winter, and spring flowering plants there is none that can surpass the Primula for general usefulness, and nothing better exists for the amateur's greenhouse or as a window-plant. For room-decoration it continues in good condition for a long time, and is invaluable. The Primula is easy of cultivation and most floriferous, continuing to produce its flowers during winter in continuous succession. Many beautiful new forms are from time to time offered, but when really good strains of *P. sinensis*, *fimbriata*, *rubra*, and *alba* are obtained, none are much if any better.

If wanted to bloom in autumn, seed should be sown any time during the present month : if not until spring, the operation of sowing can be deferred some few weeks longer. Hitherto I have failed to see the utility of making successional sowings, as out of one pan of seed there is generally a good succession of plants, which should be sorted, when pricked out of the seed-pan, into two or three sizes, and placed in separate pans. Many experience difficulty in getting Primula-seed to germinate, which need not be the case if the seed is good to start with. Square pans or 6-inch pots, according to the quantity of seed to be sown, should be liberally drained, and the drainage covered with a layer of moss. They should be filled with a light compost of equal parts of loam and leaf-mould, with a liberal dash of silver sand. The soil placed on the top of the pan or pot should have passed through a rather fine sieve. The surface of the pan should be made level, but not pressed too firmly, and the seed should be evenly sown over the surface. No attempt should be made to thoroughly cover the seeds ; a little fine leaf-mould I have found the best to scatter amongst the seeds. Many failures result from covering the seed too deeply. After sowing, the pans should be thoroughly watered through a fine rose, and a square of glass placed over it covered with a little moss. The more heat the pans are placed in, the sooner germination takes place, but a temperature of 60° is ample ; or the seed will do in a much lower temperature in case the former cannot be maintained. Care must be taken that the pans do not suffer for the want of water until the seed has germinated. When growth commences, the glass over the pans must be tilted so as to admit light and air to strengthen the seedlings. Exposure to light must be gradual at first, until the glass and moss can be entirely removed : at no time should strong sun strike upon the seedlings while so tender and young. It is surprising how soon their tiny roots lay hold of the leaf-mould scattered amongst the seed. When large enough, the seedlings should be pricked into pots or pans and sorted as referred to above, using much the same soil with a little larger proportion of loam. This time none of the soil will need to go through a sieve—an operation I never practise except in the case of a few fine seeds. After the seedlings are pricked off, they should be placed in the shade for a time until they commence

rooting afresh, when they may be put as close to the glass as possible, shading them from direct sunshine, but allowing them all the light they can bear. Air must be admitted on favourable occasions, so as to keep the young plants dwarf and stocky. If in a nice growing temperature, they will soon be ready to be placed in 2-inch pots, which should be clean and liberally drained, as in all stages Primulas dislike sour or stagnant soil about their roots. When the young plants reach this stage, if a close frame can be given them where gentle warmth can be maintained, so much the better. The frame should be kept close until root-action commences and the plants have taken to the new soil, when they can be gradually hardened and grown under cooler conditions. The hardening process must be done carefully, or a check may be occasioned and the plants stand still for a long time. They should be arranged as close to the glass as practicable, over a moist cool bottom. As the season advances and all fear of frost is past, they can be grown in cold frames with abundance of air; and when the nights become sufficiently warm, air can be left on all night.

Potting should be attended to from time to time as the plants require it, until they are placed in 5- and 6-inch pots, which is large enough for all ordinary purposes; but if larger plants are required, 7-inch pots can be used. Care must be taken that the plants never become pot-bound while in small pots, or rapid progress is considerably impeded. When potting, the plants should be placed sufficiently low in the pots to keep them firm at the collar. Many cultivators are careful not to bury the collar when potting, for fear of the plants damping off. They are in consequence tumbling in every direction if moved, and liable to be injured unless small stakes are placed round them to keep them upright and steady. There is no fear of the plants damping when deep potting is practised. Primulas delight in a light rich soil composed of rich fibry loam, leaf-mould, a little well-prepared cow-dung, and a small percentage of broken charcoal, with plenty of coarse sand to keep the whole porous.

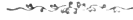
Watering is an important item in growing Primulas, and the water-pot should be used judiciously. They should never suffer for the want of it, or be saturated: an intermediate state appears to suit them best. For some time after the operation of potting, water should be very carefully applied. Stimulants are necessary when the pots are well filled with roots, and nothing acts quicker upon the plants than clear soot-water. Primulas do not care for much water over their foliage, and slight dewing only is necessary on very warm afternoons.

The plants cannot endure strong sunshine, and must be shaded during bright weather: at the same time the shading must not be so heavy as to exclude light. They will do well in cold frames until the approach of frost, and in any house during winter where frost is excluded. Shelves close to the glass are capital places for them. The earliest batch can be allowed to come into bloom any time in early

autumn according to circumstances, and will continue for months in a temperature of 45° to 50° according to the external temperature.

The double varieties supersede the single ones for cutting purposes ; and for bouquet-making they are admirably adapted, and last a long time in a cut state.

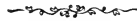
WM. BARDNEY.



LUCULIA PINCEANA.

THIS is one of the finest of all choice winter-blooming shrubs, and as it does not require a high winter temperature—indeed does best in a comparatively cool and moist house (40° at night will do it no harm)—it deserves to be seen more often than is now the case. In the culture of this plant there is a little secret. Never be tempted to repot it on any account, a remark which applies to *L. gratissima* with equal force. The finest plant I ever saw was purchased from a nursery in a 6-inch pot. After growing in the same pot for some years and doing well, it was decided to plant it out in a border in a warm conservatory. In performing the operation the plant was not turned out of the pot, but the drainage-hole was enlarged without injury to the roots, and the pot was plunged in the prepared border at the foot of a pillar, where it is now a picture worth going miles to see, each growth being terminated by a cluster of fragrant pink blossoms or buds. I know of several people who have lost *L. gratissima* simply owing to the operation of repotting ; and I advise every one who may intend to grow these plants to plunge the pot and allow the roots to find their own way out of the pot, rather than risk the plant by turning it out and repotting in the usual way. These plants are so sweet and welcome in mid-winter, that all having a warm greenhouse should grow them ; and if the above advice is followed, I am vain enough to think that they will not vanish from collections so mysteriously as is now sometimes the case. Both species may be increased by careful layering, each branchlet separately in a 6-inch pot. They are by no means easy to increase, hence the rather long price in the catalogues of the few trade-growers who have them to offer.

F. W. B.



EUCHARIS AMAZONICA.

THOUGH much has been written about this beautiful plant, I feel constrained to bring it once more before the notice of your readers. I may not be able, perhaps, to impart anything new concerning it ; but if I can draw the attention of your readers to its merits, especially at this season of the year, so that it may be more extensively cultivated, and receive the attention it so well deserves, my object will be fully attained.

Perhaps there are few plants more easy of cultivation than this, if the conditions under which it is cultivated approximate to the climate

of its native habitat, and its seasons of growth and rest are governed according to nature's laws. I believe that half of the failures are due to the want of a proper season of rest; but if properly managed, there are few plants more accommodating, or more under control. By regulating its growth and rest it can be had in bloom at any season of the year, and can be made to bloom two or three times a-year if necessary, although I would not recommend blooming it more than three, as it exhausts the energy of the plant. We have had a grand display of it here for some time, which has prompted this paper. One large plant has forty-eight flower-spikes, bearing 240 blooms, all of good substance—a lovely sight. In all, there have been nearly 1000 blooms since the Chrysanthemums were over. For cut-flower decoration, about Christmas especially, and through the dull season of the year, they are invaluable.

I may here give our mode of culture, which is very simple. We pot them in a compost of peat and loam, and place them in a temperature of from 70° to 80°, which suits them very well during their growing period. While making their growth they occasionally get a little weak liquid manure, from sheep-droppings, with a little soot. After they have finished their growth they are removed to a temperature of from 50° to 60°, and kept moderately dry at the roots. They should have a rest of two months at least, after which they may be again subjected to more heat to make them bloom. P. MATHIESON.

HOLMEWOOD PARK, TUNBRIDGE WELLS.

STOKING.

THERE are few subjects of importance to gardeners that are not discussed in the pages of the 'Gardener' by thoroughly practical men, and it cannot be said that the heating of our horticultural structures has been left out in the cold. The qualities of various boilers, the importance of economy of fuel, the circulation of the water in pipes, &c., have been discussed at some length; bad stoke-holes and bad stokers have been condemned, and the advantage of improved stoke-holes and good stokers have been commended. In the face of this, it may seem superfluous for me to write more on the subject. The economic management of our fires is, however, a matter of sufficient importance, I venture to think, to warrant its being again brought before your young readers at this season, many of whom will be fresh to the stoke-holes since the publication of some of those articles. I shall confine my remarks to a few plain directions as to the management of the "fires," and will commence by pointing out what has to be done in the morning. In the first place, pull the damper well out and keep the ashpit-door closed, so that the smoke and dust do not come out at the furnace-door when you begin to stir the fire. If the

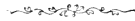
fire is well burned down, take the shovel or soot-hoe and push as much of the fire as you can back to the further end of the furnace. If there are any clinkers, they will probably be run together in a cake all over the bars. If it is cool and strong enough to be got out whole, so much the better. To do this, insert the instrument provided for this purpose under it at one side, turn it right over so as to leave all the hot ashes, and lift it out, balancing it on the bent end of your iron. When clinkers do not come out whole, the pieces must be picked out as well as possible and placed on one side at once, so as to avoid, as far as possible, having to breathe the sulphur emitted by them while finishing your operations. If the fire is not sufficiently burned down to admit of this being done, do not poke it up, as fifty per cent of men do, breaking the clinkers up and mixing them with the cinders, from which it is impossible to separate them; but insert the poker parallel with the bars, and work it backward and forward without using it as a lever to disturb the fire in any way, but simply dislodge the ashes, and so admit air. When coal is used, and has got caked over, break it a little, and leave it till it is burned down, when the clinkers may be taken out. Some young men keep continually stirring at their fire till they get it half full of small clinkers, which generally ends in its being found *out* some morning when it can be least spared. Coals such as are used for this purpose do require a certain amount of stirring, but a coke-fire should never be stirred except in the manner above described. Slow combustion stoves are perhaps the worst form of boiler to keep clear of clinkers, because of the smallness of the furnace-door. The best plan I find is to get a $\frac{1}{4}$ - or $\frac{3}{8}$ -inch iron rod with 3 inches of its length bent at right angles and slightly flattened, open both furnace and ashpit doors, insert the bent end of this rod between the bars from below and pull it forward, allowing the ashes, cinders, and clinkers to fall out at the former, when the cinders can be separated from the clinkers and ashes and returned to the furnace. If this is done morning and evening these useful little boilers are very little trouble, and answer their purpose very well indeed.

Cleaning.—Cleaning is a very important matter, much more so when coal is the fuel employed. There are some boilers that virtually clean themselves, such as the Upright Tubular and Slow Combustion class, where the whole of the heating surface is exposed to the direct action of the fire. It is, however, a very different matter when you have a series of horizontal flues or smoke-tubes in connection with a boiler. It is of the greatest importance for the man who has to keep a boiler clean that he knows every turn the smoke has to take, from where it leaves the furnace till it enters the chimney. Without this knowledge he is like a man groping in the dark in a strange place. Cleaning should be done twice or three times a-week, as it is found necessary, and the proper time to do it is before the fire is disturbed

in the morning. The flue leading to the chimney should always be the first to receive attention, making sure that all the soot settling at the bottom of the chimney is cleared out, and each flue in turn till the furnace itself is reached, the outlet of which should have the same special attention as the top flue. Without this thorough cleaning there must necessarily be a great waste of heat, in consequence of the heating surface being clogged with soot and ashes.

The Damper and Furnace-Doors.—How often do we find these defective? We often look in vain for a damper, and at times find the ashpit-door absent, or in a dilapidated condition, next to useless. And yet you might just as reasonably expect a seaman to guide his ship in its course without a rudder, as expect any one to manage a fire on economic principles without these. The damper should be built into the chimney as near the top of the furnace as convenient, should slide in an iron frame, and fit the flue exactly. The furnace-doors should be as near air-tight as possible, and the ashpit-door should have a ventilator to admit a little air when only a slow fire is wanted. But to proceed. Having cleaned out the boiler-flues, and cleared the furnace of clinkers, pull the fire together, add a moderate supply of fuel, close the furnace-door, leave the ashpit-door open a little, and the damper about a couple of inches out. This arrangement will generally get up a fair fire in an hour, which will answer for general purposes. But the amount of draught must always be regulated according to circumstances. The state of the wind and weather, and the amount of work the boiler has to do, &c., must always be considered. After sharp frosty nights we often have bright mornings. The stoker finding his temperatures low, is too apt to get up a brisk fire quickly, which is a great mistake. Sun-heat is always preferable to fire-heat, and one at a time is quite sufficient. When there is a prospect of sun, the fire should be attended to an hour after, a little more fuel added, both furnace-doors closed, and the damper left out just so far as to let the smoke pass up the chimney, and nothing more. It will thus keep up a steady heat till the afternoon. During cold stormy days is the time when a brisk fire is needed; and this is not best attained by cramming as much fuel into the furnace as it will hold, and keeping up a roaring draught till it is consumed, as some seem to think. First get up a nice clear fire, supply a small quantity of fuel, which soon ignites, apply the damper to moderate the draught, and by admitting a greater amount of air by the ashpit-door than there is outlet for at the damper, the heated air is forced into the upper flues of the boiler *slowly*, and so parts with heat instead of rushing up the chimney. When the fire has been kept quiet all day, it must be stirred up at closing-time to keep up the temperature, and be ready for evening arrangement. If it freezes, a brisk fire will be needed—in mild weather a moderate one; but it should in no case be allowed to burn down too low when made up for the night. The

hotter the furnace is then the better, if much heat is required; because whatever fuel is put on soon gets ignited, and there being no draught, it lasts for hours without being consumed. Do not use the poker to stir the fire when making up, but draw the fire together and beat it down gently, and do not heap on too much fuel: shut both furnace-doors tight, and adjust the damper so that there is just room for the smoke to get slowly away. It is a very common custom to leave the furnace-door open when made up for the night; and when there is no damper, or the ash-pit-door defective, there is no other means of keeping the fire in. But the cold air passing over the top of the fire is bound to cool the boiler, and should therefore be avoided. A shovelful of moist ashes thrown on the front of the fire in such cases is a good plan to make sure of its not burning too fast. R. INGLIS.



SEASONABLE NOTES OF FLORIST FLOWERS AND BEDDING PLANTS.

AURICULAS will again be on the move, and the first opportunity should be taken to go over the stock and surface-dress those requiring it. Young plants repotted in autumn we do not intend to surface-dress, but will either give them manure-water or a little chemical manure. To get offsets to take to the soil quickly, keep them for a short while in a mean temperature of 55°. A compost of equal parts loam and finely-broken-up cow-dung, to which a little coarse sand and soot have been added, is suitable for surface-dressing.

Pentstemons, if wanted extra strong, may now be lifted out of the cutting-frame and potted into a rich compost: 5-inch pots are a suitable size. Place them in a structure where they are safe from frost. By the end of April, when planted out, they will be splendid plants, and produce extra-fine spikes of bloom. I tried some thus last year, and intend to grow a few the same way again. Those left in the cutting-frame will bloom later.

Pansies may be propagated just now for producing a late crop of fine blooms. Our Pansies are extra strong this year—larger than they ought to be, in fact.

Do not be tempted by fine weather to put out these, or other hardy flowers, as Pyrethrums, Pinks, Picotees, &c., for there is nothing gained by putting them out before the end of March: they then get quickly established, and escape the drying winds prevalent in March. Do not be in a hurry to start Dahlias: cuttings struck in the end of April produce the best blooms. Gladiolus are also either planted or potted far too early. If they are got in about the middle of April, it is quite early enough. The soil is then sufficiently warm to induce rapid growth. Nor is there anything lost in earliness. Our stock last year commenced—Shakespeare and others—to flower at the middle of July, and we had a continuance of spikes till December.

Bedding Plants.—In this department do not get on faster than is really necessary. It is quite general to find Geraniums potted up before sufficient heat can be given them to root rapidly, while cuttings of Verbenas and other tender bedders are struck, and placed in odd corners indoors and out of doors, without progress being made in anything—the plants meanwhile getting into a wiry condition, which it takes many precious weeks of summer weather to get them out of again. Prepare the plants by generous treatment to make strong cuttings and plenty of them, but wait till the cuttings can be rooted quickly, and turn them out as soon as possible into beds in cold frames. In the middle of March plant out Violas, and also transplant any hardy bedders into their positions in beds and borders. Leave hardy herbaceous plants till the same time. *Echeveria secunda* glauca should be kept as cool as possible, merely protecting from frosts. *Dracenas* in a small state keep growing, and make the most of seedlings of *Acacia lophantha*.

R. P. B.



NOTES ON HARDY FRUITS.

WHILE on a business tour in different parts of Scotland, especially the Border counties north and south of the Tweed, it occurred to me to take note of such varieties of the different species of hardy fruit as I found in good crop, my object being to suggest to those interested in their cultivation the proper sorts to plant, and which are most likely to repay the outlay and trouble of their cultivation—starting with the proposition that any tree that has supported a generous crop of fruit in 1880, taking into consideration the ungenial season which preceded it, is most likely to produce abundantly in ordinary seasons.

In regard to this season's produce of hardy fruits out of doors, we have strong reason to suppose that in England and Scotland the present year has been the most barren on record. This remark applies alike to Apples, Pears, Plums, Apricots, and Peaches, the failure of which can only be attributed to the influence of excessive wet and the absence of solar heat throughout the entire year 1879, succeeded by an unprecedentedly early and intense frost, that proved too much for young growths in their immature state, in many cases killing them back to the old wood. As a natural consequence, such trees produced little blossom of a perfect kind.

In enumerating the varieties of Apples which I have found in good crop, I must first mention Lord Suffield as the most certain cropper, appreciated by all for its cooking qualities. I found it in full crop in all parts of the Lothians, and along the banks of the Tweed from Peebles to Berwick, and also down through Northumberland and Durham. The finest example of a single fruit I met with occurred in the gardens of Mr Gregson, Lowlynn, near Belford. It measured $4\frac{1}{2}$ inches in diameter, stood 5 inches in height, and weighed 1 lb.,—a perfect model of its kind. Mr Gregson showed the writer this fruit with much satisfaction—as well he might, when he placed it in the centre of a group of others very little inferior in size and appearance. Warner's King claims second honours in regard to size and quality, for culinary purposes. The most remarkable specimen of this

variety I met with at Belford Hall Gardens: it measured $4\frac{3}{4}$ inches in diameter, and was one of upwards of fifty fruits gathered from a standard scarcely 5 feet high: forty of those fruits were 9 inches in circumference. Mr Anderson, the gardener, showed me fifty trees, Apple and Pear, all of uniform proportions, the cultivation of which reflected the highest credit on his care and judgment. All the Apple-trees were grafted on what is known as the "Paradise stock," which is less vigorous in its habit of growth than the "crab," sending out roots more disposed to spread near the surface of the ground, and therefore more within the influence of sun-heat than if descending deep into the subsoil. The Pears were on the "Quince stock," a less vigorous grower than the "Pear stock." Those trees are formed into handsomely trained bushes, which, Mr Anderson informed me, have been most productive ever since they were planted.

Many other examples of high culture and fruitfulness I came across, amongst which I must notice instances at Doxford Hall, belonging to Major Browne. The gardens here are in excellent order, well furnished with valuable plants, both outdoor and indoors. The plant-houses, which are numerous, are large and commodious structures, of fine appearance, and most convenient for plant-growth. Mr Bachelor, the head gardener, showed me into the well-furnished fruit-room, where there was a fine display of Apples, conspicuous amongst which was Warner's King: from one small standard he gathered upwards of seventy immense fruits, many of them more than 4 inches in diameter. At the gardens of Lilburn Tower, noted for their excellency and beauty, and also for the quality of the fruit-produce, Apple England's Queen is the favourite as a kitchen sort: in size and other qualities it ranks about equal with the other sorts mentioned. Mr Deas, the gardener, informed me of the heaviest crop being taken from a tree 5 feet high, known as "Stirling Castle." It produced upwards of 200 superior fruits. The other favourites at Lilburn Tower are Kerry Pippin, a medium-sized first-rate table Apple, which produces well both on a wall or as a standard; Thorle Pippin, which used to be so much esteemed as a dessert Apple in this country, owing to its rich and distinct flavour, and as an abundant and sure bearer as a standard, and worthy a place on a wall; Golden Rennet, much commended as a table Apple; Keswick Codlin, bears well, and is second to none for kitchen use; Ribston Pippin—the examples of which on this occasion surpassed all I have seen, so rich were their golden russet colour, although the crop was rather spare this season. Cockpit is a kitchen variety, much esteemed throughout Northumberland, bearing this year a large crop of fruit. Cellini ranks high also as a bearer in cold districts: I found a heavy crop on a wall in Miss Ballantyne's garden at Walkerburn, near Innerleithen, where scarce an Apple was to be seen on other sorts. Hawthornden is another good Apple for culinary purposes, seldom failing to produce a crop. Gravenstein is a sure bearer, and serviceable both for table and kitchen purposes. Irish Peach, a model table fruit, unsurpassed in quality as an early and sure cropper, ripe in August on standards. Golden Pippin is a certain cropper of the best table fruit. Manx Codlin stands in the first rank among kitchen Apples for autumn use. This is an immense cropper in the north of England, as also Yorkshire Greening, which is widely known for its long-keeping quality.

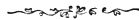
Of Pears I have a less number to enumerate. The Hazel showed the greatest profusion on very old standards about Morpeth. It is much prized in this district among market-gardeners, owing to the sureness of its crops:

tons of it are sent to Newcastle market by them in autumn. Moorfowl Egg ranks next as a standard amongst this class of growers. Speaking of Pears generally, I have seen few examples of heavy cropping this year, but the following have invariably had moderate crops: Beurre Rance, Beurre Diel, Beurre Hardy, Beurre Superfin, Brown Beurre, Citron des Carmes, Easter Beurre, Glout Morceau, Knight's Monarch, Jargonelle, Louise Bonne of Jersey, Williams's Bon Chrétien, and Beurre d'Amanlis. The finest example of the last named I saw at Fulton Hall on a wall-tree, the dimensions of which are 18 feet by 14 feet. The wall has a southern aspect: the produce, forty dozen large fruit, fit for use from November to January. Of Apricots, a fruit so much esteemed, I have still less to say: a fair crop of these this year has been the exception. The trees in general have been more prolific of dead branches than fruit. Moorpark maintains its character as a bearer, and when it ripens its crop is second to none in quality; but it is sad to see so many splendid trees dismembered of sometimes their main branches, causing large spaces of naked wall. In many instances whole sides of trees have succumbed to the influence of frost.

Amongst other hardy fruits, I have seen none suffer to the same extent as the Peach. It is a rare exception to meet with a tree unhurt. In scores of cases the gardener's labours of many years have been ruthlessly withered up, leaving only a wreck behind; and there is only one remedy, which is to uproot them and plant again.

Plums have not behaved so badly. I have met with a good many moderate, and very many indifferent, crops. Victoria among Plums is what Lord Suffield is among Apples: seldom is it seen without its complement of fruit. It takes rank amongst the kitchen sorts, but a well-ripened fruit is quite fit for dessert. Washington has also borne good crops in some places. It is only in well-sheltered, sunny aspects that crops of Greengages have been gathered. Magnum Bonum has borne but indifferently this season, owing a good deal to the fact that this variety is always placed in the coldest aspect in a garden. This fine dessert Plum has in some gardens borne heavy crops, and it ought to have a place in every garden furnished with a wall. Jefferson's, one of the very best yellow dessert Plums, has not borne very plentifully. It is a first-class Plum, and generally a certain cropper.

A. KERR.



BOTANY FOR GARDENERS.

NO. V.—LEAF AND FLOWER BUDS.

LEAF-BUDS consist of rudimentary leaves surrounding a growing vital point, which lengthens upwards and produces leaf after leaf upon its surface, and appear like a collection of scales arranged symmetrically one above the other. These scales are rudimentary leaves, and the centre over which they are placed, or the growing point, is a cellular substance coated with a thin stratum of spiral vessels; and these two parts answer to the pith and medullary sheath in Exogens: a very excellent example is found in the garden Asparagus (young shoots), which is Endogenous. Leaf-buds which are formed among the tissue of plants, subsequently to the development of the stem and leaves, and without reference to the latter, are called *latent*, *adventitious*, or *abnor-*

mal. *Adventitious* leaf-buds may be produced from any part of the medullary system, or wherever cellular tissue is present. Leaf-buds universally originate in the horizontal or cellular system, and are formed in the root, among the wood, and at the margin or on the surface of leaves, whether perfect or rudimentary. Regular or normal leaf-buds are only found in the axils of leaves, where they exist in a developed or undeveloped state. Practically speaking, leaf-buds are the means which nature has provided for supplying shrubs and trees with leaves and branches in autumn. Deciduous trees lose their leaves; but in the axil of each a little bud previously forms, from which fresh leaves are to expand the following spring. During winter the bud is enveloped in numerous imperfect leaves or scales, which are imbricated—that is, laid over one another like the tiles of a house. This envelope is termed *hybernaculum*, because it serves for the winter protection of the young and tender portions of the buds. The scales, though generally thin, are of a close membraneous texture, well suited to exclude the cold: in many cases they are also covered with a kind of gum. With the return of spring, when the sap becomes heated, or rather when the sap becomes faster in its circulation, the scales open and roll back, or in some cases fall off, to allow of the expansion of the true leaves that lie within them, curiously folded up round a kind of stem called the axis or growing point, which, as the leaves unfold, gradually elongates, and finally becomes a branch.

In the Beech and Lime the outer scales of the leaf-buds are brown, thin, and dry; in the Willow and Magnolia they are downy; in the Horse-chestnut and the Balsam Poplar they are covered with a gummy exudation.

Flower-buds are produced in a similar manner to those described above, from which they differ chiefly in containing one or more incipient flowers within the leaves—the flowers being wrapped up in their own floral leaves, or bracts, within the ordinary leaves, which have their outer covering of scales. The growing-point is generally developed when the leaves expand, but it is short and stunted, and unlike the branches produced from the leaf-buds. Every flower-bud, as soon as formed in the axil of the old leaf, contains within itself all the rudiments of the future flowers. If a bud be gathered from a Lilac or Horse-chestnut very early in spring, all the rudiments of the future leaves and flowers will be found within it, though the bud itself may not be more than half an inch long, and the flowers not bigger than the points of the smallest pins.

W. ROBERTS.



PARAFFIN-OIL A CURE FOR MEALY-BUG.

I WAS a little surprised to find such a noted plant-grower as Mr Hammond recommending in the 'Gardener' for November the utter destruction of plants of *Hoya carnosa* infested with mealy-bug; and

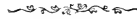
also, in a former paper on the *Ixora*, advising the use of cold water, applied with force from syringe or water-engine, as a means of exterminating mealy-bug from the plants. Such practices are now quite unnecessary since the discovery of the paraffin-oil cure. Plants infested with mealy-bug may be simply and safely cleansed by the judicious application of paraffin. My own experience in connection with its use has been mainly amongst indoor plants; and in order to divest the plants of the enemy, the course of procedure is as follows: First of all, secure a shallow wooden tray or tub, into which put two gallons of water, then add two wine-glassfuls of paraffin, which thoroughly mix with the syringe; then the liquid is ready to be applied. The operation is generally performed in the house where the plants grow, as this prevents the possibility of the enemy being carried to any other place where it would be likely to come in contact with other plants not affected. The water and paraffin being well mixed with the smart use of the syringe until the mixture assumes a slightly whitish appearance, the infested plants may then be taken from their positions in turn, one man holding the plant over the tray or tub, while another applies the mixture with the syringe. It is necessary to syringe every alternate syringe-ful sharply into the tray, to keep the water and oil well mixed, otherwise the cure will be worse than the disease. Plants of *Ixoras*, *Crotons*, *Gardenias*, *Eucharis*, *Stephanotis*, *Clerodendrons*, *Hoyas*, and others, have been thoroughly divested of the enemy by this means. *Dipladenias* are more easily damaged by the oil than the foregoing plants which I have mentioned, and I would advise half the quantity of paraffin for them—viz., one wine-glassful to two gallons of water. *Dipladenias* are also among the worst of stove subjects to cleanse effectively, as dozens of the enemy will lodge securely under the loose bark on the main stems while the deadly operation is being proceeded with. To overcome this difficulty an extra strong dose should be prepared and applied with a sponge—sponging carefully every part of the stem where they would be likely to harbour. The *Poinsettia* is also another plant that ought to be treated similarly to the *Dipladenia*. I have also used this light mixture for Cucumbers with perfect success, syringing them where they stood growing in beds in a Cucumber-house. The dripping of the oil from the plants on to the bed did not seem in any way to injure the roots of the Cucumbers; indeed, to convince any reader of this, I may mention that one large plant of *Croton angustifolius* was watered at the root with one wine-glassful of oil well mixed in $1\frac{1}{2}$ gallon of water, to exterminate worms, and another plant of *Allocasia macrorhiza* received a similar dose for the same purpose. The experiment was performed in spring. Both plants did remarkably well the following summer, the *Allocasia* throwing up prodigious, beautifully variegated leaves: the *Croton* also grew well,—the dose in no way affecting either the growth or colouring of these plants. Dipping the plants overhead in the liquid is a dangerous

practice, and will not be done twice by any experimenter. The plants should only be allowed to remain five minutes after syringing them with the oil and water, after which they should undergo a thorough drenching with clean water sharply applied by the syringe. After the operation is completed, it will be necessary to keep the top ventilators of the house open to allow the oily vapour to escape, as the oil evaporating from the floor and other places where it has been spilt during the operation can in no way be conducive to the health of the plants.

If the affected plants in any house are carefully treated in this way three or four times during the winter season, when they are at rest and young growing shoots few in number, little trouble will be experienced with the enemy the following season.

There are doubtless other correspondents of wider experience in the use of paraffin-oil as an insecticide, and the results of their experience would be gladly hailed by many who are as yet unacquainted with its use.

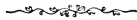
A. DEWAR.



CHICORY.

OF all winter salad plants, there are none more useful than this. Lettuce may "bolt" or fail to heart, and Endive decay before the winter has well set in, but Chicory may be had daily from October to May. A batch of plants of it should be raised annually. Seed sown in drills 1 foot apart, in moderately rich ground, in April, will soon produce plants, which must be thinned out to 6 inches apart as soon as they are large enough to handle; and if the ground is kept free from weeds after this, good carrot-like roots will have been produced by September. Any number of them may be lifted from that time onwards; and if they are covered up with any kind of soil and placed in mushroom-house, cellar, or any other dark place where the temperature is from 50° to 60°, there will soon be produced as great a quantity of beautiful crisp blanched salad leaves as anybody could possibly desire to handle or eat.

J. MUIR.



DUNDEE HORTICULTURAL ASSOCIATION.

THE ordinary monthly meeting of this Association was held in the Imperial Hotel, Dundee, on Friday evening the 7th ult.—the President in the chair. There was a large attendance of the members. Mr William Stewart, Cedarlea, read a paper entitled "Recollections of a Tour in the United States of America and Canada." His account of his travels was both instructive and amusing, and was listened to with great relish by the meeting. Mr T. H. Miln, Linlathen Gardens, read an able and highly interesting paper on "Hardy Border Flowers." This subject, he said, might embrace annuals, biennials, herbaceous perennials, and alpiners; but it was chiefly herbaceous perennials and alpiners he meant to speak of to-night. He then pointed out the difficulty of deciding what was actually a hardy herbaceous plant: in common usage the

name herbaceous embraced a great variety of plants, which, strictly speaking, did not belong to that class. Many plants, too, were truly hardy under skilful and liberal culture, which, under indifferent or unnatural cultivation, were merely annual or biennial. Many of our hardy mountaineers will not live in our borders if we overlook their natural requirements, whereas, with some forethought and attention, they will live and thrive for years. A plant whose native soil is bog-peat or rocky grit, cannot be expected to thrive in a stiff tenacious soil without some other preparation for its reception beyond making a hole of sufficient size to hold its roots, and then covering them, even with care. Yet this kind of cultivation, or some such closely akin to it, is by far too common. In any ordinary good garden-soil a considerable number of even our more rare hardy herbaceous and alpine plants will thrive fairly well, but there are others again that require to be specially cared for, and these well repay the extra labour expended to suit their individual requirements. Many plants (especially alpinists) which otherwise would perish, did well when planted in a mixture of leaf-mould and small stones, such as surface-rakings, placing a few flat stones round the collar of the plant, and covering them with a thin sprinkling of soil. The stones thus act as a mulch, and keep the roots moist and cool.

Mr Miln then spoke of the most approved methods of planting and arranging a herbaceous border, the distances required between the plants, and the necessity of thinning some of the more robust-growing kinds. He thought it best to thin out principally from the centre after the plants had attained a height of from 15 to 18 inches, then to gather the stems together and tie tightly at about a foot from the ground; in many cases no stake is needed as the stems tied thus act as so many supports, the one standing against the other in a slanting position. As the season advances it becomes requisite, for the sake of tidiness, to remove the haulm of some of the stronger-growing species. In this case it is sometimes necessary to make compensation, as the crowns of some plants will be too much exposed by being deprived of their natural winter protection; and for this purpose a spadeful of soil from a brake that has been well manured for kitchen crops answers very well, affording both a protection and a supply of nourishment at the same time. The speaker then made some remarks on behalf of those old-fashioned flowers, portraying the picturesque and interesting style of the mixed border, the favourite fashion of a flower-garden in the days o' langsyne. Hardy border flowers display a great variety in habit, much diversity and beauty of foliage, while they present a wonderful variety both in form and colour. Most of them bloom abundantly, and are excellent for cut-flowers, and by a proper selection a continual bloom may be kept up from early spring till late in the autumn. They are also to be recommended as meeting the wants of more people with limited means than any other class of plants. The speakers received the hearty thanks of the meeting; and after the usual vote of thanks to the chairman, the proceedings terminated.

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### RAINFALL IN 1880.

|                                             | Inches. |
|---------------------------------------------|---------|
| At Lowther Castle, Westmoreland . . . . .   | 32.54   |
| At Thoresby Park, Nottinghamshire . . . . . | 34.02   |
| At Drumlanrig, Dumfriesshire . . . . .      | 33.15   |

## THE WEATHER.

THE most severe frost experienced in this country since 1860-61 occurred from the 8th January to the 17th, inclusive. The ten days gave, at Drumlanrig,  $247\frac{1}{2}^{\circ}$  frost, and a trifle more than  $24\frac{1}{2}^{\circ}$  of frost for each day. On the 16th there were  $31\frac{1}{2}^{\circ}$ , and on the 17th  $34^{\circ}$ , or  $2^{\circ}$  below zero.

At Tweed Vineyard there were  $42^{\circ}$ , or  $10^{\circ}$  below zero. At Meadowbank, near Glasgow, there were  $35\frac{1}{2}^{\circ}$  frost on each of the mornings of the 17th and 18th. At Springwood Park, near Kelso, there were  $44^{\circ}$  of frost; and from all parts we hear of excessive cold. The results to plants must be disastrous, but cannot be fully ascertained until there is a complete thaw.



## Calendar.

## FORCING DEPARTMENT.

Pines.—When a really aristocratic dessert has to be made up, a Pine-apple is indispensable, and the season is at hand when it is more difficult to have a variety of fresh fruits fit for the table than any other; and Pine-apples are more useful and valued than at any other time of the year. There are two ways of getting ripe Pines in April and May. The one is to start a batch of Early Queens into fruit in December or January, and push them on as rapidly as weather and other conditions will allow. There is no other Pine that we know of so serviceable for this work as the good old Queen. Another way of getting ripe Pines at the time named, is to take good care of all the Smooth Cayennes and Charlotte Rothschilds that start into fruit in the late autumn—say in November. We invariably have a dozen or two come into fruit that month, and could have more with the greatest ease, if it were necessary. By keeping these in a bottom-heat of from  $85^{\circ}$  to  $90^{\circ}$ , and an air temperature of  $65^{\circ}$  when cold, and  $70^{\circ}$  when mild, they swell fine fruit, and ripen at the same time as Queens started early, as referred to above. For this method of getting spring fruit, we know of no sorts so suitable as the two named. All plants that have just started, or are swelling off fruit, should have the temperature named above steadily maintained; and the soil and air should be constantly moist. Put air on early in the day when the weather is sunny, but always shut up early, so

as to have the glass at  $80^{\circ}$  for a time. All autumn suckers that are well rooted in 6- and 7-inch pots should be shifted into their fruiting-pots before the middle of this month. We think pots larger than 11 inches lead to a waste of soil, expense in pots, and extra labour, without yielding any desirable result whatever. An 11-inch pot full of healthy roots, well fed, we have always found superior to any larger sizes. The soil should be a rather light loam, with a good deal of the finer particles separated from it, and a 6-inch potful of bone-meal to every bushel of soil. Use it in a dry warm state, and ram it firmly into the pots. One of the cardinal points in producing good fruiting Pine-plants, and swelling off large fruits, is to have a pot full of fine fibrous roots, to be well fed; and we always find this in light rather than in heavy tenacious loam. Any suckers potted during winter, and not yet filling their pots with roots, should be encouraged with a bottom-heat of  $85^{\circ}$ , and an air temperature of  $65^{\circ}$  at night. Keep them near the glass, and avoid crowding them. The batch of Queens to be started into fruit next month may have a slight increase of temperature, and rather more moisture. Smooth Cayennes, to start in summer, must not be kept too dry or cool, or they may start prematurely. Just keep the soil from being very dry, and let the temperature be as near  $60^{\circ}$  at night, all weathers, as possible. The bottom-heat for these should not exceed  $80^{\circ}$  for the present.

Vines.—Pot-Vines, as well as young Vines in borders, that have been subject to early forcing for the first time, very often break irregularly; and it is difficult to prevent their doing so, and at the same time force the growth so as to have ripe Grapes at a given date. The best way to counteract this tendency, and get obstinate buds to come away, is to pinch the growths that have started before the others just at the bunch, and prevent its running away so entirely with the sap from the others. When the others move, these closely-stopped shoots will soon push, and form a leaf or two beyond the bunch. Be very careful that pot-Vines are never allowed to suffer from over-dryness at the root. They should be carefully examined every day, and such as require water should get enough to wet the whole soil thoroughly. When the Vines come into bloom, keep the temperature about 60° at night, unless the weather be cold, when a few degrees less will do. Leave air on all night, and shut up early in the afternoon closely for an hour or two with a temperature of from 75° to 80°. This obviates the necessity for hard firing early in the night. Always put a little air on at dusk, to remain on all night. Remove all superfluous bunches from the Vines as soon as it can be seen which are the most compact and best to leave for the crop. Where proper Grape-rooms exist, all late Grapes will now be bottled; and if not already done, prune all Vines, and remove only the loose bark from the Vines. Unless there have been insects, such as bug, thrip, or spider, on the Vines last summer, there is no need for any dressing beyond scrubbing the stems with soap and water; but if there has been thrip or spider, dress with Gishurst's Compound. For bug more radical measures are necessary, as frequently described in this magazine. This is a month when many Vines are started. Begin with low temperatures at night, keep a thoroughly moist atmosphere, and syringe the Vines several times daily, until they burst into growth. As soon as the best shoots to leave can be discerned, rub off all the others from every spur, and avoid crowding the growths. A fruit-bearing shoot on each side of the Vine for every 20

inches is close enough. Crowding of growths, and having the foliage close to the glass, are two of the greatest evils in Grape-growing. If vineries were made high enough to allow of their being wired at 2 feet from the glass, it would be much better than 15 and 16 inches, which is the rule. A freer circulation of air would be allowed over and about the foliage, to say nothing of other desirable conditions. If a bed of warm leaves and stable litter was put on the outside borders of early vineries when started, see that the heat is not allowed to decline suddenly. Put in the necessary number of Vine-eyes, and place them in bottom-heat in a light pit or house. In growing young Vines for forcing early next season, there is, of course, no better sort than Black Hamburg; but it is astonishing that such a Grape as Buckland's Sweetwater should be chosen for the purpose, or even Foster's Seedling (which is certainly better), when such excellent forcing Grapes exist as White and Grizzly Frontignacs, with their exquisite flavour. Where new Vine-borders have yet to be made for planting this spring, let them be completed at once, so that they get a little time to settle before planting. When the Vines to be planted are ultimately intended for early forcing, plant them by the end of this month, and start them slowly.

Peaches.—With a proper selection of varieties and cautious forcing, few fruits can be forced early with more constant success than Peaches. For years in succession we have gathered Peaches from the same trees in the last week of April. The varieties were Royal George and Violet Hative—which are now superseded by kinds that can be brought to perfection in less time by nearly if not quite a month; but the two sorts named are not equalled in size and quality by the earlier ones, by which nothing is gained except the time; and it may be the opinion of many that April is early enough for Peaches and Nectarines. The sorts we would recommend now to those who are planting trees intended for early forcing, in houses where there may be space for two Peaches and a Nectarine, are Hales's Early and Violet Hative Peaches, and Lord Napier Nec-

tarine. To ripen these for end of April and May it is necessary to start early in December, and carry on the work of forcing slowly until the critical times of setting and stoning are past; and then the Peach and Nectarine bear smart forcing, especially when high afternoon and evening temperature can be maintained chiefly with the aid of sun-heat. One of the rocks ahead in early Peach forcing is the allowing of the borders, when roots are chiefly under glass, to get over-dry between the time the leaves have dropped and the buds begin to swell. Over-dryness for a length of time then causes the buds to drop off before they expand, and does the system of the trees much harm. The soil about their roots should never be very dry. When the fruit is set thoroughly, go over the trees and rub off a quantity of the smallest and most pointed looking, especially those on the under sides of the shoots. Let the rubbing off of a quantity of the wood-buds be also attended to early. The thinning of both fruits and shoots should be begun early, and finally completed at three or four times, ultimately leaving a shoot at the base and top of each fruit-bearing growth, unless they are of great length, on young trees, when of course some must be left to properly furnish the trees. Syringe the trees with tepid water in the morning and at shutting-up time. Advance the night temperature to 55° when cold, and 60° when mild. See that the inside border is kept moist—and the atmosphere also, by means of frequent sprinklings. Start a succession-house with a few degrees more heat than recommended for the earlier house, unless the weather prove very wintry, as it often does in February. But even then, more aid is generally available from the sun. All late trees under glass, if not already pruned, should be attended to at once.

**Figs.**—Now is a good time to start a Fig-house, furnished with good strong Brown Turkeys, for ripening their first crop in June and July, and their second in September and October. Start at 55° at night. Keep the air moist, and the trees well syringed, and allow a rise of 10° by day. Advance the heat for early trees in pots a few degrees. See that they are well

supplied with tepid dung and guano water alternately. It is scarcely possible to over-water Fig-trees in pots that have not been shifted for a few years. It is a good plan to let them root through and over the top of the pots into a mixture of turfy loam and horse-droppings. Few fruit-bearing plants are more grateful for liberal feeding than free-bearing Figs in pots.

**Melons.**—The early plants may be planted out whenever they are well rooted in their pots, and about 8 to 9 inches high. For early crops, it is a good plan to grow them in pots. A 12- or 13-inch pot will ripen three or four good fruits; and Melons at this early season should not have so much soil to ramble in as in summer. See that the loam used has no wireworm in it, or the plants will soon go the way of Jonah's gourd. That Melons may make satisfactory progress at this season the bottom and top temperatures should be respectively 85° and 70°, with the usual rise by day with sun-heat. Sow at the beginning and end of the month for succession crops.

**Cucumbers.**—Plant out those sown about Christmas. These should be placed in a light pit, with a good command of heat. The soil used should be rather light than otherwise, but rich; and instead of filling up the whole space allotted to the roots, begin with about half of it, and add to it as the roots extend. The same temperature named for Melons is sufficient. Sow some approved sort about the middle of the month.

**Strawberries in Pots.**—A good many forced Strawberries come into bloom this month; and if the weather be very cold, the setting of the crop is a critical point. Avoid, as one of the chief causes of disaster, high temperatures by mere force of fire. Let the night temperature sink to 45°, rather than have it high by singeing-hot pipes. Give air constantly, more or less, but beware of currents of frosty air among the blooms. Early crops swelling off, on the other hand, stand a good deal of heat, and, unless in exceptionally severe weather, may range to 60° at night. Water freely at the roots, but avoid having plates under the pots. Thin the fruits where they have set thickly. Bring on succession batches slowly, as recommended last month.

## KITCHEN-GARDEN.

WHATEVER may be left in the way of digging and trenching, preparatory for crops, we need hardly say demands attention without delay. Onion-ground may be about the first to receive its allotted manipulation. After being thoroughly turned over, broken, and well manured, the surface may again receive a preparation with fork, to make it fine and kindly. At one period when we made special efforts to get fine large small-necked Onions, the ground, naturally, was like powder at sowing-time: now we have it like boulders generally (but by adding turf, wood-ashes, and other fertilisers, it gets friable in a greater degree every year), but hope to have an opportunity of thoroughly breaking the surface before the third week of the month, and then sow when weather will allow, and cover with siftings from under potting-bench, or other waste stuff. It is surprising how well Onions finish as to size and quality on such land. A kindly start (in our opinion) is half the battle with most seedlings; therefore we would urge this extra preparation as a speciality, to be dealt with without delay. Sow as early as possible after the 20th, and make the land firm by rolling and treading. Parsnips and Leeks which are hardy may be put in at end of month; but rather than imprison seeds in battered soil, we would wait, if it was a month later. Beans and Peas may be sown twice at least during the month. Second early kinds, as described in catalogues, may have the preference now; but we know some good cultivators who sow later kinds at this season, especially the wrinkled Peas, which are generally high in flavour. The best Pea we had last year was *The Baron*—a splendid cropper, immense pods, and of fine flavour. Telephone and Telegraph were also fine, but barely equalled the former in all points. Peas coming forward in frames, &c., ought to have all the light and air possible—only excluding heavy rains and frost: a trifle of the latter does no harm if the plants have not been coddled.

Vermin, such as mice, slugs, &c., may be troublesome: red-lead dusted over tops of seedlings, which are not to be eaten (salads generally would be ren-

dered useless), and along with the seed at sowing-time, is a good preventive. Fir-tree oil appears to us to be a very suitable liquid to sprinkle over crops with a fine rose: on plants it is a most effectual destroyer of insects. Sow Broccoli, for an early autumn lot, to succeed late Cauliflower. We often have six small lots of Cauliflower, by sowing at short intervals, and by planting some in sun and others in shade. Brussels Sprouts may also be sown now in a pot or pan for early "Buttons;" but we have found the March sowings of these the best in every sense. Lettuce, Cabbage, Savoys, Kale, Parsley, Spinach, and Radishes may be sown on warm sheltered borders and ridges, formed with their backs to the coldest quarters, very often north and west: near a hedge, in front of a shrubbery, or other thicket, are good positions for ridges on which to sow early crops. Potato-planting may be done if desirable, but will do equally well in March: when ridges have been thrown up 2 feet to 2½ feet wide, and the bottoms broken over, then plant the Potatoes, and cover them with sifted ashes and leaf-mould (a few inches). Turfy soil is also excellent for covering early Potatoes. Garlic and Shallots may now be planted: a long period of growth tells well on their quality. Jerusalem Artichokes may be planted: single rows dividing crops is a profitable method of growing these. Rhubarb divided and planted now will give fine crowns for supply of next year: plenty of manure and abundance of room are of much service to secure large stalks of this most useful esculent. The forcing of herbs, such as Mint, Tarragon, &c., may be done: a pot or two, with a little soil to keep the roots moist, and warmth as one would desire in May, are all that is necessary to grow for early use all common herbs. Sow pinches of Celery twice in the month. Incomparable and its synonyms, Manchester or Leicester Red, Major Clarke's, are all good. Gentle heat, plenty of light, and no checks from drought, are requisite; but often, with every effort and means, "bolting" may take place. Forcing of Carrots, Radishes, and Potatoes may proceed as means will allow: plenty of light, free soil, air in

abundance, and moderate supplies of moisture, will insure success; even when ordinary hotbeds are used for these, the air and light are very necessary. Sow French Beans every twelve to twenty days, as they may be wanted, in pots or pits, &c. Sow Tomatoes for early supplies. Those fruiting may have plenty of manure-water if they are confined at roots. Seakale may be forced now with much ease if warmth (say "milk warm") can be afforded, and air and light excluded. Rhubarb will now be starting naturally, and can be forced any-  
 where with a little heat, soil thrown over the roots, and moisture given. Asparagus is often forced on floors and other positions in glass structures: a frame placed on leaves, with the roots laid closely therein and covered with a little leaf-mould or any light soil, will answer as well as any system we know of. Mushroom, whether grown outside on ridges covered with litter, or in proper sheds for the purpose, require nearly the same treatment all the year through — good horse-manure, fresh healthy spawn, and an even temperature, about 50° to 55°. M. T.

### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

F.—We know of no reason why *Amaryllis Ackermanii* should not do at the back wall of your greenhouse. It is a strong grower and very brilliant in colour. Take also the following: Brilliant, Holfordii, Johnsonii, Prince of Orange, Magnificent, and Regina.

R. M. T.—Plant four of Black Hamburg, two of Alnwick Seedling, three Gros Colmar, and three Muscat of Alexandria in one house, putting the two last named at the warmest end of the house. In the other house, four Black Hamburg, two Duke of Buccleuch, one White Frontignac, and one Grizzly Frontignac—the two latter at warm end of house.

NOVICE.—Your *Eucharis* have evidently got into a bad state from insufficient drainage and too heavy a soil. Shake them entirely out of the old soil, wash their roots, and repot with light turfy loam and leaf-mould in equal proportions, with a fifth of the whole of clean sand. Put four or five bulbs in a pot, and plunge in bottom-heat for a time.

THE  
GARDENER.

MARCH 1881.

THE ROSE-HOUSE.



IT is questionable if any glass structure in a garden can command such general admiration as a Rose-house, or if there is one where so much beauty and fragrance are to be found. Where choice flowers are in demand through the winter and spring months, no collection, however beautiful, appears complete without Rose-buds. Perhaps no plant-house can give so much satisfaction or afford so much pleasure generally, and none is so remunerative for the labour expended, as a Rose-house. Yet in private establishments it is seldom we find a house exclusively set apart for Roses. Houses are *frequently* occupied with far more unworthy subjects; and Roses in the majority of cases are largely required where quantities of cut-flowers are in demand. They have, however, to be produced in many gardens under great difficulties, causing much more labour, to say nothing of the uncertain results that may follow, than would be occasioned by devoting a house entirely to their cultivation. Where large supplies of Roses are required—either Teas or Hybrid Perpetuals, or both—say from Christmas onwards, the Rose-house is indispensable to meet the demand with any degree of certainty.

The kind of house best adapted for Roses is undoubtedly a span-roofed structure running north and south. The size entirely depends upon circumstances; but in a house 30 to 40 feet long, 20 feet wide, and 15 feet high, an abundance of Roses can be produced. A walk 3 feet wide should go all round, side stages 3 feet wide on either side and ends, and a bed in the middle 8 feet wide. The height the bed should be raised above the walks entirely depends upon different

tastes. It should not be lower than the side stages, or else the Roses at the bottom will not obtain sufficient light, when the side stages are filled with plants in pots, to be very satisfactory : 2 feet 6 inches is a height which leaves ample room for drainage and border above the level of the walks. Preparation should be made for a border under the side stages in which Roses can be planted to train up the roof under each rafter. It is not advisable to allow those planted to cover the entire roof, or else light will be too much excluded. It is essential that the borders should have a drain to carry away the water that would otherwise stagnate about the roots, and in time prove fatal to the wellbeing of the Roses. A quantity of broken bricks should be placed in bottom for drainage about 1 foot in depth : this will leave a space of 18 inches for soil, which is ample. The side borders can be made more shallow if the growth is kept in due bounds, as suggested. A turf grassy side downward should be placed over the drainage before the compost is put in. The compost most suitable is rich fibry loam, of rather a tenacious nature : a quantity of fine bones, charcoal, or wood-ashes is also beneficial, and coarse river-sand. It may be as well to say here that vegetable matter incorporated with the soil for the border is not advisable : it decomposes too quickly, and has a tendency to sour the border. When necessary, feeding is best done by the application of manure-water and rich top-dressings. An arched trellis should be provided for the centre bed, to train the Roses to, as they show themselves off to greater advantage thus than any other way I am acquainted with.

It is necessary to consider the preparation of the plants for planting. They can be readily raised at home, as the majority of Teas do well on the Manetti, upon which stock they can be grafted with ease. Stocks can be purchased cheaply, and potted in small pots ; and when root-action is well commenced, and the wood intended for the scion is half-ripened, the operation can be performed with success. They can also be propagated by cuttings from half-ripened wood, which undoubtedly is the best. They are preferable on their own roots : if on the Manetti, they should be potted or planted below where worked, so as to get them upon their own roots. Plants ready worked and growing freely can during April be purchased from any well-known nurserymen where Roses are largely grown. When obtained while growing, they frequently are considerably checked in transit, and stand still for a long time. Therefore, if possible, home-prepared plants are preferable. If rooted in early spring from half-ripened wood, it is surprising, when afterwards planted out, what progress is made in a season.

We will consider the plants in 5-inch pots, which should be the first shift after the scions are united to the stocks, or after the small pots are full of roots in which they would be potted after being rooted. If a slight bottom-heat can be given for a time, growth will be rapid, and flower-buds as they appear must be removed. When the young plants



become thoroughly established in their pots, they are in a good condition for turning out for planting, provided the borders in the house are ready, and the soil is well warmed. If the borders are not ready for planting, the plants should not be allowed to stay in the 5-inch pots to become checked, but should be transferred into a larger size. Bottom-heat is still serviceable, but the plants before planting-time should be removed from the bottom-heat. Those intended for the roof should be kept in pots until they have attained a sufficient size to reach from the border well through the stage: abundance of air should be given to the plants when favourable, to obtain a sturdy, compact growth. Airing, watering, syringing, temperature, &c., should be conducted as recommended in previous numbers of the 'Gardener' on Roses. Those intended to be planted out should be attended to with as little delay as possible, as under the planting-out system they attain greater strength and vigour, and cover much more of the trellis than if kept in pots through a good portion of the season. As the external air becomes warmer, artificial aid can be dispensed with. While growing rapidly, the house can be closed early in the afternoon, so as to allow the temperature to rise considerably by sun-heat.

When autumn approaches, the wood must be thoroughly hardened and ripened, and the plants brought to a complete standstill by keeping the house much drier and cooler. Ripened wood and a good season of rest are essential to the successful cultivation of Tea Roses when planted out under glass. The latter to a large extent has to be forced upon them, as they are rather perpetual in their nature, and continue to bloom and grow in autumn if means are not taken to prevent them. I have seen failure result from this constant-growing system. They continue to flourish tolerably well for a time, until their vital energy is exhausted. They then force rest upon cultivators, and when wanted to grow, decline, and if pushed against their will, soon dwindle and die. This will not be the case if a natural system of cultivation is pursued. The forcing of rest upon them need not be severe, but sufficient to bring them to a standstill, and nothing accomplishes this better than a low temperature. This is quite easy for a season or two after planting; but when rest is required much earlier in the season, to be ready for starting to produce Roses in winter, the resting period is not so easily accomplished by a low temperature. An early growth, dryness both in the atmosphere and at the roots, with abundance of air, are the only means that can be employed.

The young plants subject to winter maturation, after rest should be slightly pruned by removing weak and unripened shoots, and should be again slowly started into growth. It will be wise if all flowers are sacrificed the first season, and the strength of the plants devoted to the production of wood. The second season the growth should be rapid and strong, and should be ripened as early as possible, so as to again start them earlier into growth, in order that the plants may be trained

to make their growth earlier each year, until they can be rested, and be ready for starting towards the middle or end of October. Two rows of 4-inch pipes all round the house will be ample for maintaining the desired temperature. The side stages may be occupied with Teas or Hybrid Perpetuals in pots, which can be introduced in successional batches from Peach-houses or vineries, or any place where they have been started. These side stages are also valuable for growing a number of young Teas in 5- and 6-inch pots—"propagated every season"—for a few autumn flowers; or plants of Gloire de Dijon, Maréchal Niel, Rêve d'Or, and others of a similar growth, thinly trained under the roof—after the Hybrids are over, and Roses in abundance can be obtained from outside—to be eventually, when ripe, trained round four or five stakes, or any other form. A strong shoot should be selected, and one only grown, and allowed to extend without stopping. The two first varieties will often make shoots 20 feet long in a season. For some time I propagated in the spring for this purpose, but found they did not ripen sufficiently to produce real early flowers. The month of June is now preferred, and the young plants are nice stuff in 5-inch pots (on their own roots) before winter, which, if kept cool in a late Peach-house for a time, and then started, will ripen their wood early, and produce as many as twenty-six flowers from the shoot by the end of January, every bud along the shoot producing a flower. When sufficiently ripe towards autumn, they are placed outside for a time to further harden them. They should be made secure in some sunny position where the wind will not break them.

Such varieties as Gloire de Dijon, Lamarque, Rêve d'Or, Belle Lyonnaise, Cheshunt Hybrid, Maréchal Niel, Celine Forestier, are most suitable for training up the roof. The first mentioned is the best for early forcing. For early forcing to bloom during winter, the following free-growing, profuse-flowering varieties will be found invaluable: Saf-rano, Isabella Sprunt, Niphotos, Duc de Magenta, and Rubens (a fine old Rose). The following bloom well in the same house a little later: Alba rosea, Adrienne Christophle, Goubault—very free in spring—Mad. Falcot, Devoniensis, Homère, Jules Margottin, Louise de Savoie, Marcelin Roda, Marie Van Houtte, and Catherine Mermet. Many varieties of Teas, when subject to early work, soon die out; others are shy; while others refuse to grow until the season is far advanced,—for instance, Aline Sisley, Anna Ollivier, Bougère, Perle des Jardins, Perle de Lyon, and many others, do not appear to do well if subjected to much unnatural forcing: they should be grown in pots, and allowed to come on more naturally. The first mentioned for the Rose-house bed are unsurpassed, where delicate and fragrant buds are esteemed.

WM. BARDNEY.

**THE FURNISHING OF BORDERS OF MIXED  
HARDY FLOWERS.**

THOUGH the 'Gardener' has kept to the front in giving practical information on hardy flowers, and the different ways they may be employed with the best effect, yet there are always readers who desire information just at one particular time, and to whom previous papers on this subject have been of no use from their having no interest in them at the time they appeared. Therefore I find my apology for the following remarks in the fact, that those who are commencing the culture of these want information just at present above all other times. You will doubtless have heard the threadbare tale, how that borders of mixed hardy flowers are always interesting; how, day by day, from the time the Christmas Roses and Snowdrops brave the horrors of snow and hail and rain, with much darkness and little sunshine, till the Michaelmas Daisies close the floral year amid as much darkness and less sunshine, there are floral treasures unfolding their beauties without intermission. Before you plant a Daisy, do not believe in it. Your master and your mistress and yourself may be a little inclined to be sentimental until the novelty has worn off, and you may all have a slight return of the feeling every spring; but do not trust in it to last, and above all, do not trust it so much as to allow the flush of summer flowers to pass without having a reserve to come on throughout the autumn. If you do, instead of the "Oh, how sweet!" "Oh, charming!" "What a pretty dear!" of the spring-time,—you may expect, "Don't you think, Macbriar, that it would be worth while to stick something in these bare places?" and, "Mightn't we have a few flowers to brighten the borders up a bit?" If you commenced with sentiment, you have at that particular day and hour come down to fact, and have to acknowledge the requirements pointed out. But, alas for the means of filling the "bare places," and the power to brighten up! And you may be infected with that unfortunate feeling which unconsciously draws a line between "border" flowers and flowers which have been utilised as "bedders." Do not let that feeling cause you to exclude flowers which would be of the greatest service in making your borders effective. Because you have "bedded out" *Salvias*, and *Gladioli*, and *Sedum spectabile*, do not let that be a reason for excluding them from a place in the mixed borders. What we want in these is as big a display of flowers as can be had, and for as long a period as possible: how foolish it would therefore be to discard some of the best for our purpose, for no better reason than the above! Utilitarianism has got fast grip of gardeners. Weeding out of fruits which do not pay, and growing only a limited number of stove and greenhouse plants which yield the best and surest returns, is now the order of the day, and the principle must be recognised in the planting of these borders. I would therefore advise that such beauti-

ful flowers as *Salvias* (*patens* and *splendens*), the various sections of Dahlias, early flowering Chrysanthemums, Gladioli in variety, Lobelias of the cardinalis type, or any other flowers which, though not strictly hardy, are nevertheless of great value during the season they remain out, should have a place in these borders from the very first. Then we have what are known as florist's flowers to add greatly to the beauty of these borders. These are Hollyhocks, Pinks, Picotees, Carnations, Phloxes, Pentstemons, Pansies, Pyrethrums, Potentillas, Antirrhinums, Mimuluses, Sweet-Williams, Delphiniums, Ranunculuses, Anemones, Moss and other Roses, Pæonias, and German, English, and Spanish Irises. Then there are genera of plants, every individual member of which can be employed largely with the best results. I name the following: Campanulas in great variety, Alstrœmerias, Lilies, Spiræas, several Geraniums, Michaelmas Daisies, Saxifragas, Globe-flowers, Primulas, Delphiniums, Pentstemons, Crocuses, Narcissi, common Pinks, *Oenotheras*, *Lychnises*, Hepaticas, dwarf Phloxes, Irises, Funkias, Day Lilies, Veronicas, Erigerons, Scillas, Achilleas, Aconitums, Aquilegias, Cyclamens, Wallflowers, Fritillarias, Sunflowers, evergreen Candytufts, St John's Worts, Lupines, Lythrums, Forget-me-nots, Poppies, Statices, Verbascums, some Sedums, Foxgloves, and Tradescantias. I also note some species which cannot be dispensed with. These are—*Dielytra spectabilis*, *Sida malvæflora*, *Arabis albida*, *Aubrietia purpurea* and *A. græca*, Double Rockets, *Thalictrum minus*, *Heucheras*, *Doronicum caucasicum*, *Hieracium auranticum*, *Tritomas*, *Polygonum Brunonis*, *Pyrethrum uliginosum*, *Polemonium cæruleum*, *Rudbeckia Newmanii*, *Phygelius capensis*, *Corydalis solida*, Double Chamomile, *Monarda didyma*, *Linum perenne*, *Libertia grandiflora*, Everlasting Peas, *Harpalium rigidum*, *Geum coccineum fl. pl.*, *Gentiana acaulis*, *Erinus alpinus*, *Eranthis hyemalis*, *Sisyrinchium grandiflorum*, *Epimediums*, *Dodecatheon elegans*, *Dracocephalum speciosum*, *Colchicum autumnale fl. pl.*, *Cheiranthus alpinus*, *Stenactis speciosa*, *Asclepia tuberosa*, *Anthericum liliastrum*, Japanese Anemones, — all sorts which should be largely planted. If the greater space of the borders be filled with these, there will be no harm in giving others, which may turn out mere botanical curiosities, a place here and there amongst them; but these of themselves will make a border of great beauty throughout the seasons of growth.

As regards managing the plants in a mixed border, a good deal must be left to individual taste, and without doubt we will see some startling arrangements as the capabilities of the several plants become better known—ribboning, parterres, &c. But I would simply recommend a mixed arrangement as always being in good taste, and always effective. We have two long borders, each 450 feet by 13 feet, to plant this spring, and the arrangement will be Hollyhocks, Dahlias, and some of the tallest perennials in the backmost, 4 feet; then will come

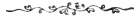
Phloxes, tall Campanulas, Salvias, and other perennials, about  $2\frac{1}{2}$  to  $3\frac{1}{2}$  feet in height; Gladioli will come immediately in front of these. Then a row of Roses will divide the back section from the front, which will have nothing taller than Pyrethrums, Antirrhinums, Sweet-Williams, down to the dwarfkest plants at front. Then, as a spring display is of importance, many dwarf spring-flowering subjects will be mixed with the taller plants well back in the border. Before commencing to plant, a catalogue should be consulted, and the heights of the several plants carefully noted. The necessity for this is apparent, if we take the Campanulas, which contain species from 4 inches to as many feet in height. If the border has been well prepared, the plants make great progress the first year; but some of them—as, for instance, Pinks and Carnations, and bulbous plants—should be planted not singly, but in clumps.

I commenced by saying that the ‘Gardener’ took a foremost place in pushing the claims of hardy flowers. I have now to state that these claims have always been honestly put before its readers. When it has been said, “Do away with some of your ‘bedding,’” you have at the same time been cautioned that to keep these borders in tolerable order you would not save in labour. Hardy flowers have been recommended on their own intrinsic merits without running down others, or holding out the hope that if “bedding” be curtailed, and hardy flowers put in their places, then so much labour would be available for other departments. It is only on the understanding that such a border as I have just given hints towards furnishing is recommended because it is a feature of great beauty and interest and use when well managed, though at the same time calling for a great amount of labour, without which its interest will sink very low indeed. Well, then, you may make up your mind for a certain amount of transplanting every year; a certain amount of preparation of the ground for such plants as Dahlias and Gladioli; a certain amount of propagation every season—such flowers as Pentstemons, Pinks, Carnations, and some others, requiring to be propagated often. Then you will find the necessity of periodically lifting the whole of the plants, dunging and trenching the borders, and subsequent rearranging of the plants. Then you have the ordinary routine work always on hand—hoeing, clearing off decayed flower-stems, staking and tying the plants to the stakes: this alone is no light matter. You will understand that if we plant 200 or 300 Dahlias, 300 Gladioli, 500 Carnations and Picotees, besides a Phlox every third yard, Pyrethrums the same distance, and other tall fellows about 4 to 6 yards apart, the staking alone means something. Of course, some readers may be in a locality where the wind does not disport itself unseemly,—where zephyr alone ever breathes on the flowers. If so, just excuse these remarks, for the wind occasionally behaves very rudely here. But there are two ways of staking a plant. If you have a Gladiolus, for instance, which

will reach 4 feet in height when the flower-spike is fully opened, there is no necessity to employ a stake to the out-top of the spike : if the stake is 2 feet out of the ground, it is quite long enough ; and this applies to most flowers requiring stakes.

Do not be in too great a hurry to get the plants into their places. If the weather is drying, wait till it gets showery : much faster progress will be made.

R. P. BROTHERSTON.



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

### NO. III.

ALTHOUGH calendars of garden operations are included in most horticultural periodicals, and some of them, doubtless, are instructive, it is questionable if they do not at times mislead many that are inexperienced. This is especially the case with that part relating to the kitchen-garden, written for annual, and even monthly, works ; seeing it is compiled, as a matter of course, without any knowledge of the weather to be experienced. When following instructions thus given, the learner should use some judgment in the matter, and not, as I have before remarked, sow or plant at a certain date, under the impression it is absolutely necessary, or failure will be inevitable, simply because advised so to do by the "oracle" consulted. This season, especially, much discernment must be used, owing to the cold and wet state of the soil, which at the present time (Feb. 7th) is again being saturated with snow-water. In our case, even if dry weather be shortly experienced, it would be altogether a mistake to commence sowing or planting till March ; and for our patience we anticipate much better, and quite as early crops, as any that might have been puddled in at any time previous.

Crops in the open are almost certain to be late, and for this reason pits and frames, with or without heat, glazed or unglazed, should be extensively used and utilised for forwarding many vegetables and also plants for the borders, by these means securing a supply of good vegetables, and also giving the outside crops more time to mature. Broccoli has been completely destroyed in many gardens by the late severe frosts, and I am afraid many Potatoes have been injured ; therefore Cauliflowers and early Potatoes will have to be forwarded as much as possible. Autumn-sown Peas have also succumbed, which goes far to prove my argument that autumn sowing is a waste of seed and labour, and ought to be discarded for the better plan of sowing in boxes and transplanting, as advised in the January number of this periodical.

*Potatoes.*—These are often planted before the ground is fit for their reception. More depends upon the proper preparation of the seed-

tubers, especially with the kidney varieties, than early planting ; home-grown seed being preferable, as that bought is seldom so well kept. If the central shoot be uninjured in any way, and all side shoots either rubbed off or picked out with a knife, an evener growth and an earlier and heavier crop will be secured than would otherwise be the case. Some carefully preserve these shoots till planting-time, only to be damaged by careless planting ; and for this reason I advocate drawing drills, and moulding over lightly with the hand, prior to a general levelling of the soil. Both the south and west borders are suitable for these early crops, and the soil should be as light and open as possible—heavy soils repaying for a good dressing of leaf or other light soils. I still recommend a liberal dressing of half-decayed manure, burying it in slightly below the tubers. Coarse tubers may result, which are objected to by many, and rightly so, perhaps ; but unless a few are obtained, the crop, as a rule, will be a light one. Manure freely used for Potatoes, will also be found sufficient for most of the successional crops. On light soils the rows may be placed 2 feet apart, and the tubers 9 inches asunder in the rows ; on heavier soils the rows should be 30 inches apart, and the tubers from 10 to 12 inches asunder, planting deeply in the former instance, and shallowly in the latter. Moulding up is necessary where shallow planting is resorted to, and it should be practised where deeply planted, if the locality is liable to late frosts.

Good varieties to succeed either Veitch's Ashleaf or Mona's Pride are Early Hammersmith and Rivers's Royal Ashleaf, both of which crop heavily and are usually of good quality. Extra-early Vermont, which much resembles Early Rose, but is superior to that variety, is recommended for light soils, as it crops heavily, is early, and good in quality. Of round varieties, I prefer Fox's Seedling ; and Alpha is also early and good. Early Oxford is of excellent quality, but the crops with me have been light. Early Coldstream makes too much haulm to please me, but is very good in other respects. Porter's Excelsior is an extraordinary cropper, but the quality, unfortunately, is generally inferior.

*Carrots and Radishes.*—A sowing of either Early Scarlet Horn or Nantes Horn, should be made on a south or west border, the first favourable opportunity, to succeed those grown in frames, or those of the latter sown at the foot of a wall. A light sandy soil is suitable ; and the shallow drills for Carrots may be drawn 10 inches apart, working in a row of Radishes between each. Sow rather thinly, and thin out early.

*Turnips.*—The earliest and most profitable crop of these will be obtained from an east border, the soil of which should be rich and firm. On the first favourable opportunity in March seed should be sown of the Early Munich, and more of the same variety, and also of a good selection of Snowball towards the end of March or early in April. It is a great mistake to crowd Turnips ; and to induce early

bulbing, the rows should at least be 15 inches apart, and the seedlings at the second thinning be left about 9 inches apart. An occasional dusting with soot and lime is necessary to preserve the young foliage from fleas.

*Lettuces.*—A salad of some description is at all times essential in most establishments, and if not forthcoming when required, it may prove vexatious to all concerned. Although good salads can be made without Lettuces, much better can be made with them; a well-grown Cos Lettuce, in my opinion, forming the very best of salads, and one which few would decline. Cabbage Lettuces are very good, but not to be compared with the Cos, especially if they have to be sent a distance, and, in addition, are supposed to keep good at least for three days. Cabbage Lettuces should be used quickly; even then they are invariably much too flabby in salads, and are only grown by me on account of their earliness, and their adaptability for late sowing also. The little Commodore Nutt is a very hardy, though not very early, variety; and a number of autumn-raised plants planted on a south border prove very serviceable should the Cos varieties be lost. If by any chance the stock of autumn-sown plants of either kind be small, seed should at once be sown of the Early Paris Market Cabbage Lettuce, and with this a good variety of the Paris White Cos. The seed may be sown thinly in pans or boxes, using fine light soil, and placing on a gentle hotbed till germinated, when they should at once be transferred to a shelf near the glass, but still in a growing temperature. When in rough leaf the seedlings may be pricked out in shallow boxes, placing these in a frame on a gentle hotbed; or if many plants are required, a layer of about 4 inches of fine soil may be spread in a frame over a slight hotbed, pricking the seedlings into this about 3 inches apart each way. Use tepid water for watering; and keep the frame rather close till the plants are established, when air should be given freely, hardening them off so as to be ready for their final quarters from the middle to the end of April, according to the locality. The Cabbage variety will be first fit for use, and by growing a good quantity the Cos variety need not be cut till it is near perfection. In mild localities, if a good breadth of spring-sown Cos Lettuces are planted, the seed of those to succeed may be sown on a south or south-west border, either where they are to mature, or for transplanting. In cold districts it is advisable to sow more seed early in March on a gentle hotbed, with or without glass covering, pricking the seedlings either into boxes or a sheltered spot, and finally transplanting to a warm border.

Lettuces delight in a deeply dug, heavily manured soil, which should be made rather firm. The small varieties may be put in rows 9 inches apart and 6 inches asunder in the rows, and the rows of the Cos varieties 1 foot apart and 9 or 10 inches asunder in the rows. Tying up hastens blanching, and is usually resorted to with the Hick's Hardy



White Cos and the Black-seeded Brown Cos, but is quite unnecessary in the case of the Paris White Cos varieties. The Black-seeded Brown Cos is not so liable to run to seed as the latter. For this reason, a few plants of it may with advantage be grown with every batch of White Cos, and at times may prove invaluable for the prevention of a break in the supply.

*Sowing Broccoli and other seeds.*—The wall-borders are very commonly utilised for raising the principal portion of Broccoli, Cauliflowers, Brussels Sprouts and other greens, and this I consider a mistake, simply because the space is much too limited, the consequence being beds of weakly plants—the reverse of what should be aimed at. By all means sow seed of a few early Cauliflowers, Brussels Sprouts, and even Broccoli, on these borders; but give the plants room. Sow the seeds of main and late crops thinly in the open, and thereby secure sturdy plants that will move readily at any time. W. IGGULDEN.



## GREENHOUSE PLANTS.

### NO. II.—CORREAS.

THESE plants are evergreen dwarf shrubs, of compact habit of growth, natives of Australia; and when properly treated, produce from the axils of the leaves, on the current year's shoots, their bright-coloured wax-like flowers very freely during the autumn, winter, and spring months.

Correas do not receive from gardeners generally the amount of attention that their decorative qualities entitle them to. About twenty-five or thirty years ago two or three varieties of *Correa* were to be seen in almost every greenhouse, but for several years past, for some reason or other, most gardeners have ceased to cultivate them. Possibly the present neglect of these and some other genera of beautiful-flowering greenhouse plants that were carefully looked after at the time mentioned, is owing in some measure to the great improvement that has been effected in the flowers of Zonal Pelargoniums. The latter plants are easily cultivated, and produce their large trusses of bright-coloured, well-formed flowers in more or less abundance all the year through, and consequently several other kinds of beautiful-flowering greenhouse plants, requiring a little more careful attention to maintain them in a healthy flowering condition than that usually bestowed upon Pelargoniums, have been in many instances crushed out of the greenhouse by the gay and easily cultivated Zonals. One difficulty, however, in the culture of *Correas* is in the matter of propagation, but this only applies to places where proper facilities for carrying out the process do not exist.

*Correas*, with the exception of *C. alba*, are somewhat difficult to propagate by cuttings,—at least, this has been my experience with most

of them. Cuttings of half-ripened shoots of *C. alba*, taken off in spring, and inserted in a mixture of equal parts of silver-sand and leaf-mould, firmly pressed in well-drained small pots or shallow pans, supplied with a bottom-heat of  $70^{\circ}$ , and covered with bell-glasses, will, if duly looked after in the way of shading from sunshine and supplying them with water, emit roots in from four to six weeks, and be ready for potting off into small pots in eight weeks from the time of being put in as cuttings. *C. alba* is the strongest grower of any of the species in cultivation, and being easier to propagate by cuttings than the others, it is employed as a stock on which to graft the weaker-growing kinds. In twelve months from the time the cuttings were put in, they will be strong enough, if rightly treated during that time, to receive the grafts of the sorts that it is desirable to increase. The methods of grafting and subsequent treatment up to this time, when the union of stock and scion is complete, are the same as those recommended in the case of Azaleas in last month's issue of the 'Gardener.'

Established plants should be repotted about the beginning of April, and when doing so, drain the pots efficiently and carefully, making the fresh compost moderately firm about the roots of the plants. Any cutting back or pruning of the shoots that may be thought necessary to keep the plants in shape, should be done at the same time. After being repotted, place the plants in a position where they can have a slight shade from sunshine, and where a temperature of from  $60^{\circ}$  to  $70^{\circ}$ , with plenty of atmospheric moisture, can be kept up. Let the plants remain in this position till the end of May, and then remove them to a cold pit or frame, plunging the pots in a bed of ashes, as near to the glass as the size of the plants will permit. A slight shading should be applied to the glass, and the pit or frame should be kept rather close for a week or so after the plants are placed therein. Here the plants may remain till the first week of September, when they will be commencing to flower, and should be taken into the greenhouse and have a position where they will receive as much light as possible. Correas require to be carefully attended to with water at all seasons. They are easily injured by over-watering, and stagnant water about their roots kills them in a very short time. While the plants are in the cold frame or pit, they will be benefited by an occasional application of liquid manure; the dose, however, must not be strong. As a rule, the roots of hard-wooded plants are much easier injured by an over-strong application of liquid manure than those of soft-wooded and quicker-growing plants.

Correas must also have due attention in keeping them free from insects. Brown scale will attack them, and must not be allowed to make headway on the plants. If permitted to do so, it is difficult to get the plants clear of the pest again. Correas when in flower may be employed as table-plants in the dwelling-house; and for this purpose, plants of the right size of *C. brilliant* and *C. Harrisii* are very

appropriate. *C. cardinalis* and *C. ventricosa* are also beautiful kinds for the decoration of the greenhouse or conservatory. They are, however, of a more slender habit of growth than the two former species, and require to be closely cut back at pruning time for the purpose of imparting to the plants a more compact and bushy shape than they naturally assume when not treated so. In conclusion, I would recommend those who have not yet cultivated *Correas* to get half-a-dozen each of the above four species from their nurseryman, and carefully attend to them during the coming summer, and I have no fear but the result next winter will be satisfactory to the cultivator.

J. HAMMOND.



### NOTES FROM THE PAPERS.

ANOTHER "burster" from John Wills, F.R.H.S., &c. We can never read those periodical "demonstrations" of Mr Wills without thinking of his bread-and-butter Vine-borders, which he made when at Huntroyde Park, concerning which he manifested the same characteristic energy. Mr Wills's Vine-borders were to eclipse all Vine-borders that had ever been made before; they were to last "not for five but for fifty years" at the least. They were five feet deep, and they were made on the "roly-poly" principle, and unheard-of results were expected from them; but the inventor's own account was the first and last anybody has ever heard of them. So far as we know, we regard Mr Wills's enthusiastic and somewhat obtrusive horticultural patriotism in somewhat the same light that we did his Vine-border exploit. In a late rambling communication to one of the papers, Mr Wills indulges, by turns, in humble and vainglorious rodomontade. His great concern, as usual, is the "future of horticulture"—and—the "General Horticultural Company," we suspect. Mr Wills hopes and believes he will live to see the day when "a flower-show will be held in every village;" and this consummation, we suppose, is likely to happen when horticulturists of all shades and degrees enrol themselves under the banner of the aforesaid "Company," of which Mr Wills is the great luminary. If Mr John Wills could by any means be projected into space, he would become a star of the first magnitude—shining by his *own* light. The following paragraph from the article in question looks very like fishing for compliments:—

"Reverting again to the future of gardening, I think many will give me credit for the part I have taken in trying to help the advancement of an art which is part and parcel of my nature. My writings, I think, will also show that I have devoted a considerable amount of care and time to its advancement, and that I have tried to do so at no trifling cost; and I solemnly affirm that in the change recently made in the style of my undertaking, I have been actuated solely by the wish to benefit my fellow-men, and not in any way to injure others. The impression indissolubly impressed

upon my mind is, that any one who can benefit horticulture by increasing its sphere of influence and prosperity must be the means of increasing the trade and considerably enhancing the pecuniary position of those who are engaged in it."

Good, this: cool, too. That Mr Wills, either by his writings or his actions, has promoted the advancement of horticulture more than, or even as much as, his neighbours, except, perhaps, in catering for the balls and routs of the "upper ten," and generally promoting his own interests, nobody, we think, is aware, and that is probably the reason why he every now and then reminds us of his doings, and his devotion to the cause of horticulture. The idea of a change from a private enterprise to a "John Wills (Limited)," all for the glory and future of horticulture, is too good by half. "I solemnly affirm," says our philanthropic friend, "that in the change recently made in the style of my undertaking, I have been actuated solely by the wish to benefit my fellow-men." Very likely! Are all the members of the "co-op." actuated by the same amiable resolves, we wonder? Because, if they are, we rather think the firm is wrongly named. It ought to be the "General Horticultural Benevolent Company *Un*limited; John Wills, Almoner." In short, it won't do, Mr Wills; thank you for your "priced catalogue," but "none of your blarney."

A correspondent has been writing to the genial and well-known "S. R. H." of Cauton Manor to suggest devout "thoughts"—sending coals to Newcastle. This correspondent has been gathering Violets, Primroses, Cowslips, and Aconites, &c., about Christmas season, in the pleasant land of Kent, and while these suggest hopeful anticipations to himself, they occasion him sad misgivings concerning his neighbours. "How few," he exclaims, "appreciate the beauty or the blessings which surround us! We speak of this poor dark world, and of this winter season as a dead, cheerless time (what a slander on the festive season!). Many seem to think there is nothing to see in a garden except in midsummer, and some cannot see it then. Nevertheless, though such blindness seems incurable, and we see no signs of a millennium, I feel sure that the spread of horticulture among all classes is doing something to cheer many a life." We devoutly hope horticulture is "doing something" in the direction indicated; but a more gloomy and ascetic view of the position of affairs we have never, we think, read; and we are perfectly sure the author of the 'Six of Spades' doesn't believe in it. We protest against the accusation of "incurable blindness," or of having obstructed the "millennium" in any way, because we cannot see Violets, Primroses, "yellow and pink, and double and single—Gentians, and Polyanthus, that are yet underneath the ground, and likely to remain there for a matter of six weeks to come, maybe. If we had them we would send some to S. R. H., but not as text for a sermon about our neighbours' failings. We are fain to confess, indeed,

that the winter, so far, has not yet suggested any thoughts of spring, "everlasting" or otherwise; and our reflections have been akin to those of the pathetic Tannahill:—

"The trees are a' bare, and the birds mute and dowie—  
They shake the cauld drift frae their wings as they flee,  
And chirp out their plaints, seeming wae for my Johnnie;  
'Tis winter wi' them, and 'tis winter wi' me."

We cannot, in short, quite enter into this correspondent's ecstasies—"we ain't in it." In our own pleasure-garden we have long since ceased contemplating the icicles on the trees, and have turned our attentions to "the footprints in the snow;" we traced them one by one, and our trapper's "thoughts" were principally running on the question of how "the darned beggars get on," for they are starving; but thieving hares and rabbits, my friend! In the kitchen-garden the prospect has been less monotonous, but of a nature to produce reflections akin to Swift's 'Meditations on a Broomstick;' and if we do not give them publicity here, it is because we have misgivings about that discriminating party with the scissors in the editorial den of the 'Gardener:.' for editors are not moralising animals, and it is not safe to trust them with fine sentiments; and as for poetry, they class it with the Potato disease, and topics of that nature.

Speaking of editors, we have a profound veneration for the marvellous circumspection and discrimination they display, as a general rule, in dealing with the contributions that come before them, but have never been able to fathom the mystery of "leading articles." We believe it is the object of editors to give the best articles the first place and the best type (we are speaking of horticultural editors generally, for they are all equally shrewd); but there is a suspicion abroad that they are a trifle weak on this point, and that the question of merit does not always rule in such matters. It has been indignantly suggested that the reason some contributions find their way into leading columns is that the poor creatures who wrote them might be well pilloried, and their conspicuous incapacity and failings, or their conceit and stupidity, the more effectually exposed. It is only charitable to state, however, that this explanation was offered simply because no other probable reason could be suggested. When Benjamin Franklin was an ill-used "printer's devil" in the newspaper office of his elder brother and his partner, his literary contributions were despised, and he was severely lectured, if not cuffed, for presuming to address the editor at all; but when he took to writing his articles in a disguised hand, and shoving them under the office-door at night—not forgetting to use a pretentious *nom de plume* at the same time—they at once became prominent "leaders" that created quite a sensation among the early Bostonians, and the editor became so anxious to know who their "able and highly esteemed correspondent" was, that poor Benjamin thought he might venture to confess to the imposition, and was kicked out of the office by the editor for his pains, and some days after was a homeless wayfarer in the streets of Philadelphia. Benjamin moralised much on this circumstance in after-life, just as readers of the horticultural papers do now when they see these issued occasionally, "wrong end first."

A remarkable exhibition of flowers that was from the Edinburgh Botanical Gardens in which those rare subjects the *Senecio vulgaris* and the *Leontodon taraxacum* were found. We once saw a magnificent display of the first in the trial-grounds of an eminent seedsman not far from Tooting. We clambered over the fence one Sunday morning to see it, and afterwards wrote to the proprietor to compliment him on his acquisition, and was assured that he believed he had the best collection of the kind in England. We believe he still has a fine stock of it.

Mr Wright, of the 'Journal of Horticulture,' has, we think, made rather an important discovery. For years back it has been perfectly well known that galvanised wire seriously injured the trees that were trained to it, under certain circumstances, but what the circumstances were was a puzzle. Mr Wright has, however, made out pretty clearly, from experiment and evidence which he has collected, that the injury is caused by a certain acid in the wire, but which becomes dissipated in time. New wire, it appears, is never safe, but after a few years it becomes harmless, while a good coat or two of paint prevents injury at all times.

The 'Journal of Horticulture' speaks highly of *Geranium Guillon Mangilli* as an unusually good kind, and particularly serviceable for winter-flowering; and we have ourselves heard its good character confirmed by excellent judges.

There appears to be something very like a famine this season in certain kinds of vegetable-seeds, and what seed has been harvested is of indifferent quality. We believe the seedsmen never had greater difficulty in getting in their stocks of some kinds, and they are issuing advice to their customers to sow thickly such subjects as Kidney Beans, Peas, Onions, Lettuce, and Radishes, &c. As might be expected, seeds are also dearer than they have been for some years.

READER.



### HINTS FOR AMATEURS.

It is a judicious practice, where young trees have been planted on walls or fences, to allow them to sink with the soil before training is performed; and now that dry weather may be expected (and probably March dust), these trees may be trodden firmly, the mulching adjusted, and training done at earliest convenience. Training, like many other operations, is a matter of taste—the methods are almost endless; but on walls of limited extent, if variety is wanted (as is often the case with proprietors of the amateur class), the extension system, as practised by some, cannot be recommended. Trees planted from 12 to 15 feet apart will meet the wishes of any class of cultivators; and if, for variety's sake, a cordon (upright) be put between each tree, a goodly collection may be grown. What we say might be done; we do not always advise its being put into practice. Rather get a selection of kinds, especially those which do well in the soil of the district, and which the climate suits. As an example, we visited the famous Dr Roden on the 12th inst., who is so successful in raising Strawberries and managing pyramid and dwarf Apple-trees. He has whole lines (from

fourteen to twenty-eight) in his borders, of individual kinds, because his soil suits them better than others. The ground is light and sandy; and to meet the difficulty, he lifts carefully and mulches till his trees are a mass of fibres, and then he troubles himself little in regard to seasons being cold, wet, or dry. Certainly his pyramids were as near perfection as may be met with. Apricots and Peaches he troubles little with, as these (we often have noted) fail with all the skill and manipulation experience can devise; and they seldom can be grown for profit where good suitable soil is not procurable. When the young trees are about to be trained, decide on the system: we have used many systems in years gone by, but probably fan-training is the best on walls. The side shoots should be kept down to the level desired, the centre ones cut back more or less, and all should be regulated to form three-fourths of a circle. Each shoot should be equidistant to begin with: the minor, or fruit-bearing wood, will be easily put in its place. I have long since abandoned the practice of much "cutting back." I often lay in full length the shoots as they come from the nursery, especially with Peaches and Apricots. Morello Cherries also do well almost uncut in winter pruning. In every case, for forming handsome trees, we prefer "maidens," and then there is comparatively little danger from canker. Trees with snags are abominable; and we lately saw some trees in beautiful form almost ruined by cutting high above the wood-buds, leaving pieces to die off.

Horizontal training answers capitally for every kind of fruit we know: Pears, Plums, Peaches, and Apricots we have trained in this form with the view of reducing labour. Upright training is most easily accomplished by taking a shoot, straight right and left at proper distance above the ground (say a foot to 15 inches), and rub off all buds except those which are best placed and nearest to equal distance from each other. They can be led upright as straight as the use of rod or line can direct their course. Many trees may be seen every year vigorous, and plenty of fruit on them, when no such pains are expended on them,—precisely just as seed will vegetate in crooked drills, or no drills at all, and come to perfection as well as if the lines had been straight and equidistant; but for all that, the man of taste will have his seed-lines straight, and his trees as straight as gun-barrels,—and thus trained, with fruit-buds from base to apex, who would say that such work would not give pleasure? We know it does to many amateurs, and the correspondence we have on such matters with men who are hundreds of miles apart justifies our assertion. I wish all practical men could do as they would in such matters.

Whatever remains unfinished, as formerly advised, we would urge the propriety of bringing to a close. Staking will require attention, as many will have experienced from the terrific gales which have visited us during the past season. Protection, whether by nets, wood or glass copings, or branches, should now be in position: keep-

ing back the progress of vegetation by such protection is of great moment. If the trees are not in good condition at root, all such protection is expense and precious time thrown away. Though we have our walls, outside and inside, with such glass protection, we put little value on it. Having nets all round is an expense which we could hardly expect to pay for good crops of fruit. A little disbudding may be necessary in early localities: let the wood-buds offering to grow straight out be rubbed off. We generally rub out all which are not required, as soon as they can be detected, from fruit-buds; and when the latter are superabundant, we do not mind rubbing off a large number. Weakly trees are far more likely to carry good crops by such a practice.

#### FLOWER-GARDEN.

The whole stock of plants should now be noted, and every means used to get such kinds as are weak in number or quality to meet the purpose for which they are required. At present amateurs (experienced ones will laugh at the nonsense) may be in a dilemma to know what to do with their flower-gardens, while opinions of "leading" practical men are so conflicting. Some of them seem to become desperate when they cannot pervert (it may be superior minds) to their petted notions. "A man of independent mind" can afford to remain in a thoroughly sound practice till his taste may mislead him into the fallacy of turning lawns, geometrical gardens, and well-kept borders into receptacles for weeds, and the various huge plants which are so fascinating to some. They bloom for a few weeks, then have the knife applied to give them a decent exterior. We go in for wild gardens, alpine gardens, herbaceous gardens, Rose gardens, spring gardens, and others; but to mix them all together (as we once saw a poor fellow in a northern asylum put all his groceries and other viands into his huge worsted blue-bonnet) is a practice we hope never to be perverted to. We are content to look quietly on at the amusing correspondence which may be seen in the various horticultural papers. Proceed with potting all such plants as Pelargoniums, Verbenas, Petunias, &c., which are to make a display when all the most useful spring and early summer flowering-plants have done their best. When pits or other structures can be spared in which such plants can be turned out instead of potting them, a great saving of labour and pots will be effected. Dahlias may be put into heat to increase their numbers by cuttings: place the latter into small pots in a little sandy loam, with a heel if possible; plunge the pots into bark or other beds before they are allowed to flag, and they will soon root, then they may be grown on slowly till danger from frost is past. All hardy and half-hardy plants may be increased without delay: nearly all are the better of a growing temperature under glass till they are ready to plant out. Carnations, Pansies, Phloxes, Pentstemons, and all hardy herbaceous plants, may now be planted out when the ground is in order. Hardy annuals may



be sown. Sweet-Peas, Mignonette, Stocks of choice kinds, Asters, Lobelias, may again be sown, cuttings taken off, and the stock got up to its proper quantity. All annuals requiring heat may be sown in pots. Balsams, Cockscombs, Marigolds, and such kinds, will do well together, but much heat without light and air will rear worthless plants.

Iresines, Alternantheras, and similar heat-loving plants, should be kept by themselves if possible: they may be propagated rapidly now, and be in good condition long before they can be planted out.

The herbaceous borders should be forked over; plants which are growing beyond bounds may be reduced, and all pieces not wanted carefully taken out of the collection. Trenching, manuring, renewing of soil, or otherwise preparing the flower-garden when not occupied with spring plants, may be attended to with all promptitude. Order should now prevail: weeds, tree-leaves, patchy lawns, and moss-covered walks, must not exist.

#### ROSE-GARDEN.

Try and find out all Roses which are killed outright, and replace them before there is a scarcity of plants to be purchased—as I fear there will be. The reports of Roses and shrubs which are killed are truly distressing; but Roses generally do not show the worst till growth takes place,—then (except suckers, which generally come from stocks of budded and grafted plants) deaths appear in every direction. When planting Roses the ground should be well drained, deeply trenched, and well manured. The plants should be placed in the ground to cover the junction of stock and scion. Mulching is always of good service. Roses on walls may be trimmed, thinned if necessary, and trained. Seldom can climbers have room to do justice to their growth; but many of the free-growing hybrid Perpetuals and Teas can be trained from 6 to 12 feet, and give a fine display. Gloire de Dijon; Souvenir de Malmaison, and several others of that class, do well trained to walls. All pruning, manuring, and dressing of Rose beds and borders may be finished as soon as weather will allow it; but by late pruning nothing is lost.

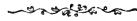
#### GREENHOUSE AND CONSERVATORY.

Abundance of plants are now in bloom, both hard and soft wooded. Hardy plants which have been forced are now very gay, and of great service where cut-flowers are in request. Successions, to keep a continuous supply till they are plentiful out of doors, must be put into warmth periodically. An ordinary frame or pit, shut up with moisture and sun-heat, will bring many useful things on rapidly. Rhododendrons, such as the nobleanum class, will turn in without such aid: outside they are in flower, but frost cuts them down very frequently. Deutzias, Spiræas, White Lilacs, Mock Oranges, White Thorns, Double Cherries (single ones are good, and may also bear fruit), along with

Roses of great variety, will go far to make up a good collection of white flowers. Azaleas and Camellias are most useful as show plants at this season. Azalea Borsig, of the semi-double whites, is of much value, and flowers readily with little heat. Camellias and Azaleas which are to flower in autumn should be encouraged to finish their growth and set their buds as early as possible. Healthy root-action is of great moment in the formation of flowers and their development. Oranges and all hard-wooded plants should have a general overhaul after they have flowered and are breaking into fresh growth. Some require cutting back, and, after they break into fresh growth, have their balls of soil reduced, and repotted into same size of pots. Good drainage and healthy soil made rather firm are indispensable for hard-wood plants. Nothing which is expected to grow into good specimens should starve for want of root-room. Cinerarias and Calceolarias to flower late may be shifted into larger pots, or be allowed to root through into soil placed in larger pots on which the plants are set. Pot on a quantity of plants for summer flowering: Pelargoniums, Fuchsias, Double Petunias, Kalosanthes, and suchlike, make a show. The last does not do with much pot-room. Air freely, but exclude frosty winds. A sprinkling of water may be necessary over the plants and on the floors during hot drying weather:  $50^{\circ}$  to  $55^{\circ}$  is warm enough without sun. Climbers may be moderately pruned, and not too stiffly trained.

#### STOVE.

Plants which have flowered must now be cared for to supply next season's flowers. Pot all plants requiring it in this structure; drain freely, and use well-broken turfy soil, whether loam or peat. It should not lie in solid lumps, which in course of time become sour and sodden. Sand and charcoal, mixed with turfy loam and peat, more or less of each, suit most of the ordinary stove-plants. Lycopods, Dracenas, Cyperus, Palms of species, &c., should be grown on in quantity where such things are required for rooms. Achimenes, Gloxiuias, Begonias, Gesnerias, and similar summer-flowering kinds, should be on the way. A free-growing temperature of about  $60^{\circ}$  to  $65^{\circ}$  at night, and the structures shut up during the day with sun-heat  $10^{\circ}$  or  $15^{\circ}$  higher, will do what is necessary. Water sprinkled about the paths and over the plants must be done judiciously. M. T.



### THE FRUIT-GARDEN.

#### NO. III.—THE GRAPE VINE (*continued*).

If all goes well, these shoots will soon push out, and after a short time will grow rapidly, and should reach the top of your house by midsummer, when their tops should be broken or pinched off. Side branches or laterals will also push at every joint, and these must be

allowed to grow for a foot or more, and then stopped, for it is not good to allow the growth to get crowded. From the time the Vines are planted, all through the summer and autumn months, ventilation, to cause a circulation of fresh air about the foliage, must be regularly attended to. In bright, warm weather, a circulation of air should be kept up night and day, for a high night temperature is a mistake. Without sun-heat, your temperature should always be from  $65^{\circ}$  to  $75^{\circ}$  by day during the growing season. If this cannot be obtained naturally, then it should be provided artificially. It does not matter much what it is during the hours of darkness. Our vineries are sometimes as low as  $40^{\circ}$  on a cold morning, and very often  $50^{\circ}$  even in fine weather. We are particular to have a good *growing* temperature by day, but if the temperature is anywhere between  $40^{\circ}$  and  $55^{\circ}$  we never bother ourselves, although the heat declines to the former figure. We will not refer to this point again, as that is all we have to say on the matter, except that, with bright sun and air on,  $80^{\circ}$  or  $90^{\circ}$  is not too much. Water will be necessary for the inside border occasionally during summer, and even the outside one, if the summer prove dry. At first, while the plants are small and few roots are in the borders, no great quantity will be necessary; but in a year or two thorough drenchings will be needed, for Vine-leaves evaporate water at an almost incredible rate, and the consequence is that Vine-borders get very dry in a short time. When this happens, the Vines soon lose their vigour, and red-spider comes to prey on their leaves, and the two, between them, soon turn strong healthy plants into weaklings. Care must therefore be taken that the Vines never suffer for want of water. Vines are rather liable to be attacked by red-spider, but complete and copious syringings, directed full tilt at the back of the leaves, will soon settle it. When the fruit is on the Vines, care must be taken not to dash the water *at the bunches*, but *past* them, or the beautiful bloom, which enhances their value and appearance on the table, will be washed off. Water which trickles off the leaves on to the bunches will not harm the bloom much, although it will not improve it. Of course, when red-spider is absent, syringing is not necessary, but a washing once a-week before the Grape begins to colour will not spoil the bloom, and will prevent spider making its appearance. At whatever stage it appears, drown it out, for that is the only way to keep healthy Vines; and although trickling water may injure the bloom a little, Vines which are weakened year after year by attacks from red-spider will soon cease to produce Grapes worth having, far less preserving the bloom on. You will know when it begins its work, for the leaves, when attacked, will appear as if they intended ripening off. If the leaves grow yellowish before their time, examine the backs of them carefully, and the downy webs which the creatures weave will soon be seen, and a little close examination will reveal the minute insects themselves. Sometimes thrip makes its appearance. In this

case the attacked spots look as if they had been scorched by fire, and if leaves having this appearance are examined, the thrips will be seen. They are small black insects—yellow when young—and are much larger than spiders, but still small enough to escape observation unless looked for. The mischief they cause soon betrays them. Sponging them off with soapy water is the only cure worth naming. Sometimes scale and mealy-bug get carried to Vines with other plants, and both are terribly troublesome insects. Their names describe their appearance. The sponge will remove the scale, but if they are allowed to establish themselves, it will take a deal of trouble. Mealy-bug must be sought for and killed individually; such a task we hope you may never have, and therefore we advise their immediate destruction the moment any insects appear. It costs much less work than to leave them alone until winter, and then attempt to destroy them. Insects must be destroyed in summer, or they will not be destroyed at all. That is our experience. At the same time, a good scrubbing with a hard brush and warm soapy water, after the Vines are pruned, will help to destroy any lingerers. Don't paint them over with nasty mixtures which do no good, but which get washed off with syringing during summer on to the leaves, glass, &c.

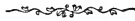
By the end of summer and beginning of autumn the wood will get brown and hard. When this takes place, more air should be given, especially in bright weather, and the heat may be allowed gradually to decline. If, however, the wood is not brown, the heat must be kept up until it is, for if winter comes before the wood is ripe, it will come too soon. After it is ripe and the leaves turn yellow, you should thatch your outside border to prevent its being kept soaking wet all the winter, for any young roots that may be in it will very likely get spoilt. After the leaves have fallen, no more heat will be necessary than will just keep out frost; but you will likely be keeping Pelargoniums over winter in the house, and will keep the frost out for their sake.

A week or two after the leaves have all fallen, the Vines will need to be pruned. Now you will need some courage to do this properly, for although the operation is in itself very simple, it may cost you a pang to cut away the whole of the growth which you have been at so much pains to produce; and yet you will not do right, unless the Vines be very strong, if you do not cut down the rods to within 6 inches of where they started last year. (We ought to have said sooner that each plant should only be allowed to produce one rod, and that the advice given to allow two buds to remain on the young cane at planting-time was for fear of any accident occurring. As soon as one takes the lead the other should be pinched, and prevented from growing further.) After they are pruned the cuts should be dressed over with a little shell-lac varnish, to prevent any sap escaping—or bleeding as it is called—for this sometimes happens, and it is very weakening. After pruning

is over, the surface of the border should be broken up an inch or two with a fork, and if the soil has subsided below what is the intended floor-level, more soil should be added. This soil should contain an extra allowance of manure and bones, for the roots of Vines travel towards where their food is, and it is highly desirable to attract them to, and to keep them at, the surface. Over all, a few inches of decayed manure should be placed, and this should be kept always moist, so that, when waterings are given, its manurial matter may be washed into the border. Its continual moisture will be an attraction to the roots besides. When this is done you will be ready for another year's start.

J. H.

(*To be continued.*)



## NOTES ON DECORATIVE GREENHOUSE PLANTS.

### LUCULIA GRATISSIMA AND L. PINCEANA.

WHY is it that one so seldom sees these fine plants in cultivation? Even in many large places where ample accommodation and suitable positions could easily be found for them, they are rarely met with. A well-grown and well-flowered plant of either variety, but especially of gratissima, is a sight not easily forgotten, and only requires to be seen to be appreciated: the deliciously sweet perfume, and delicate shades of the flowers, are all that one could desire in a flower. The plant is of rather a straggling habit to be effective as a pot-plant for house or table work, but is very effective thus grown for conservatory decoration. The position most suited to it is against the back wall of the conservatory; and planted out in a suitably prepared border, it is here quite at home, and will be a most welcome addition to flowering-plants used for this purpose. The flowers are of a reddish-pink colour, and are borne in clusters on the points of the young shoots, so that in adapting it as a wall-plant, it should be trained up in the usual way to cover the space allotted to it, and the young lateral shoots encouraged to make growth, which, after flowering, should be spurred back. It is not at all a difficult plant to cultivate—rather the reverse, in fact—so that it cannot be on that account it is so seldom met with. It is a native of Nepal.

The *Luculia* is propagated by cuttings of the half-ripened wood, which should be put in during the month of June. The pan for the cuttings should be well drained, and filled three parts full of peat and sharp sand, and the remaining part with pure silver sand, in which the cuttings should be inserted so that the base may just rest on the peat and sand without entering it. Cover with a bell-glass and set the pan in a close pit, where a gentle bottom-heat can be maintained. When they have made roots, shake them out carefully and pot them up singly in 3-inch pots, using a mixture of equal parts of good turfy loam and peat,

with sufficient sharp sand and a few small pieces of charcoal to keep all open. Keep them close for a time after potting until they emit fresh roots, when they should have a moderate allowance of air given them. They may probably require a shift into 5-inch pots about the end of August; but unless it is found desirable to force them on into good-sized plants quickly, they should be wintered in the small pots, and they will be ready to rush away in the spring. They should be pinched a few times when young, as they require it in order to get a good stool formed at first. A temperature of about 50° will suit them well during winter. About February, when they begin to move, they may be shifted into 6-inch or 8-inch pots, using the same kind of soil, only rougher in proportion to the size of pot used. They should still be kept in a warm pit until they get fairly established in the pots, but as the season advances into May and June, they may do without fire-heat, by paying due attention to ventilation, and closing the pit rather early, in order to husband some of the sun-heat. After the pots are fairly filled with roots, those intended for planting out may be put into their permanent places, being very careful to secure sufficient drainage, as they will not thrive in stagnant or soured soil, so that it is necessary to have ample provision made for all surplus water to escape readily. A drain should therefore be carried away from the bed in which they are to be planted; from 9 inches to a foot of rubble-stones should then be put in the bottom, and a few inches of lime-rubbish on the top, which will form into a kind of crust, and prevent the drainage from being choked with the soil, and yet will allow the water to escape readily. The soil should be used in the rough state, and may consist of the same kind as that used for the pots, only much rougher. In planting, press the soil pretty firmly round the ball, and water with tepid water. In a short time they will begin to grow rapidly, and will soon cover the space allotted to them. Their season of flowering is in the autumn and winter, being then doubly welcome, when flowers are somewhat scarce and generally most in demand; and the sprays are very useful for mixing with Ferns and suchlike, for vases. *L. pinceana* is in all respects similar to the other, only that the flowers are white, and therefore makes a very useful variety. The same treatment applies to both, and both are worthy of a place in the most select collection of greenhouse plants.

#### ERYTHRINA CRISTA-GALLI.

The *Erythrina Crista-galli*, or coral-tree, is one of the really neglected greenhouse plants: we cannot recollect having ever seen it cultivated except at two or three places; and why it should be so is hard to say, as it is a very handsome and striking plant when in flower, has beautiful foliage, is easily cultivated, and requires little room during winter, as it is then dried off, cut back, and may be put away along with Fuchsias and suchlike. It suits very well also for house work,

though hardly adapted for the table, but it makes a grand exhibition plant when well grown.

There are several varieties of *Erythrina*, mostly from the East and West Indies, Brazil, and South America—the gum-lac of commerce being obtained from one of the species. The *E. Crista-galli*, however, is the best known, and, in fact, except in botanical collections, almost the only variety one meets with in general cultivation.

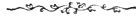
The *Erythrina* is propagated by cuttings, either of the ripened stems in autumn, cut into lengths, as is sometimes done in the case of *Poinsettia pulcherrima*, or of the young shoots in spring, after they have made about 2 inches of growth, taken off with a heel. In either case the cutting should be put into a properly drained pan, half filled with soil, and then filled up with sand. The cuttings, at any rate the young growths, should be covered with a bell-glass, and the pots plunged in a mild hotbed, or other place where a moderate bottom-heat can be obtained. As soon as they have made roots they should be potted off at once, and not delayed until the roots have got too long, else they may get broken off in the handling. The pots used may be about 3-inch ones, and the soil may consist of equal parts of loam and peat, with some old dried cow-dung added, and sufficient sand to keep it open. Until the young plants get established they should be kept in a temperature of about 60°, and syringed daily on fine days. As the season advances they may be removed to somewhat cooler quarters, and shifted into larger pots as they require it. They come into flower about June and continue flowering a considerable time. After they are done flowering, and in order to get the wood properly ripened, they may be set in a sheltered position out of doors, and exposed to the sun, until the autumn, when they can be cut over and stored away for winter, where they will be safe from frost. They must be kept rather dry during this time, and started again in spring, according to the time they are wanted to flower. They are somewhat subject to the attacks of red-spider, which can be kept under by the use of the syringe. Thus treated, they will be found a welcome addition to our list of flowering greenhouse plants, and will well repay any care bestowed upon them.

#### EUPHORBIA JACQUINÆFLORA.

The above stove-plant is well-known and highly appreciated on account of its flowering from November on throughout the winter months, when its bright flower-wreaths are especially welcome. I desire just now to draw attention to it as a most suitable plant for covering the back wall of stoves, planted out, instead of being grown in pots. Of course it is best to grow in both ways; but though it is very fine in pots, it cannot for a moment be compared to those planted out and trained to wires on the wall. I have here a fine plant of *Bougainvillea glabra*, which covers most of the gable of the stove—said

stove being a span-roofed structure — and the wall is 16 feet high, with the glass rising 7 feet above that, so that it is a pretty lofty structure. The Bougainvillea blooms gloriously here, as it gets the full sun the whole day ; it was rather bare, however, in winter, when it was pruned, so in 1879 I planted a few plants of the Euphorbia, and allowed it to run up along with the Bougainvillea. The Euphorbia has reached nearly the top, and is now a perfect mass of flower ; some of the spikes will measure fully 3 feet in length ; the flowers, also, are much larger than when grown in the pot, and brighter in colour, and the foliage is both larger and richer-looking. Of course it is kept growing on, only partly pruned back : some of the shoots are as thick as a man's finger. The border is about 2 feet wide, and is bounded by the pathway on the opposite side, and along and under this path runs the feed-pipes from the boiler, so that both the plants have the benefit of the heat from the pipes at their roots, which may partly account for their vigour.

J. G., W.



#### THE BEDDING-OUT SYSTEM.

IN the 'Gardener' for February, under the above heading, occurs the following passage from the pen of "J. H., B." :—

"Any species or varieties, however beautiful their flowers may be, if they require support in the way of stakes, are reluctantly admitted into the 'hardy brigade ;' and, as a consequence, the greater number of the most beautiful, showy, and useful of our hardy herbaceous plants are not admissible in the ideal flower-garden of those who advocate the abandonment of the bedding-out system.

"Fancy the result of excluding from the herbaceous garden the stately Delphiniums, the beautiful Asterlike-flowered Pyrethrums, several species of the Lily family, Carnations, all the taller kinds of Phloxes, and a host of representative members of other families that in this windy island of ours it is absolutely necessary to stake, in some way or other, if we would see them in all their beauty, and not as bedraggled, bespattered, betattered objects—highly illustrative of their fitness for admission into the ragged brigade!"

If your correspondent had used the word "curtailment" instead of "abandonment" he would have been nearer the truth ; but that is a small matter. What I want to draw attention to here, is his statement regarding the objections which, he says, the opponents of the bedding-out system have to the "beautiful species and varieties" of those hardy plants that need support in the way of stakes. I have only to say, that if "J. H., B." will lay his finger on any published statements of the advocates of the "hardy brigade" where it is said, or anything to the same effect is said, that they *object* to "any species or varieties, however beautiful their flowers may be," for the reasons assigned, or where it has been proposed to exclude "Delphiniums, Pyrethrums, Lilies, Carnations, Phloxes," &c., because they require support, I will pay the Editor of this paper the sum of £5, to be used for any good horticultural purpose he may think fit, on condition that "J. H., B." pays the same amount if he fails to make good his statements ; and at the same time I hope he will see fit to withdraw an assertion which I consider in the light of a slander.



How any man could venture to make such statements as the above, who had the least knowledge of the subject he writes about, I cannot conceive. The advocates of hardy plants, and of a freer and more natural style of gardening in which all the various subjects could be effectively displayed, have continually, by articles without number, by illustrations, and by lists of the most copious description, in season and out of season, advocated the great claims of *all* good hardy plants, quite irrespective of their size or habit, and have never so much as alluded to any trouble connected with their culture in the way of staking till the question of the cost of such work was raised by the bedding-out brigade themselves, *who alone have used that argument as an obstacle to the culture of hardy plants*. I do not profess to know who the "gardeners of the arm-chair type" are to whom "J. H., B." alludes, but I think it is probable that your correspondent is casting his innuendoes at men about whose knowledge and abilities he is in all probability absolutely ignorant. The author of these remarks has, for nearly twenty years, known some at least of the most noted advocates of hardy plants and their culture, and who have had, perhaps, more to do with the present revolution in flower-gardening than any others; and he can tell from accurate knowledge, that it would become some to sit at their feet and learn a portion of that special knowledge which has been gained in the field of actual practice, and under the very best facilities, and which has been amplified and matured by opportunities of study and observation that fall to the lot of few.

ONE OF THE ADVOCATES OF THE HARDY BRIGADE.

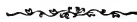
[As the question of staking was first raised by us, we must point out that our correspondent misrepresents our object in doing so. We did not raise the question of expense connected with much necessary staking and tying "as an obstacle to the culture of hardy plants." Our object was to show that in our experience—and in a great measure on account of staking and tying—we did not find herbaceous plants cheaper than bedding plants, as some represent them to be. Any one by referring to our remarks in the 'Gardener' of last November will see what our object was, and by a glance at the last paragraph will find a recommendation of herbaceous plants, and not an obstacle to their culture. We might also appeal to the facts of our practice as a still more forcible refutation of our correspondent's misrepresentation, for we propagate and grow more of a few genera of hardy herbaceous plants than would suffice to fill the whole of an ordinary-sized flower-garden. We could also "instance many important families in which stakes are not required" that we grow in quantity.

We take this opportunity of referring to a recent issue of the 'Garden' where also comments are made on "J. H., B.'s" article, and where "the resorts to which we are driven to defend our position" are sneeringly alluded to. The writer in the 'Garden' is in perfect ignorance of our position, so he manufactures one to suit his purpose. Long before the editor of the 'Garden' came to this country, we had devoted for years much of our spare time to hardy herbaceous plants, and we could show him a herbarium of them that was formed

before he knew a Rose from a Thistle. Before the 'Garden' was in existence, we wrote of hardy herbaceous plants that they were indispensable for certain styles of gardening ; and for years before and after the advent of the 'Garden,' this magazine continued to devote no inconsiderable portion of its columns to the description and culture of these plants. That is part, and only part, of our "position" in relation to herbaceous plants.

We may further add that it may perhaps be considered as much in the interest of careful gardening and good order to refer to the proper support—with stakes that shall be the least possible offensive to the eye—of plants that cannot be made to stand erect without them, as it is to write—as has been written in the 'Garden'—of a border composed of those plants that do not require support, and to include Picotees and Carnations ; or to state—as has been stated in an article quoted into the 'Garden' from the 'Field'—that when well grown, stakes are not required to support them against the elements ! These are statements that may fitly be coupled with others suggesting a litter of leaves and long grass as fitting adornments for gardens,—suggestions which may "do for the marines but not for the line," and that sound more like the utterances of some phenomenon who has never had charge of a garden establishment, who has no standing in either the science or art of horticulture ! and who in consequence supposes apparently that he is the embodiment of all horticultural wisdom ! Our gardening and "position" are before the public, and whatever they may amount to, we want nothing more than that they be judged on their merits. Will the writer in question tell us where his gardening could ever be judged of ? We leave it to others to say whether we have ever been an optimist or an obstructionist in regard to any branch of gardening ; but we do not aspire, and refuse to be chained, to this writer's chariot-wheels, and this is just the secret of these kind of references to our "position."

This magazine and its aids—sneeringly referred to in the 'Garden'—have brought out quite as many acceptable writers on gardening as our contemporary has done, and their writings have been used to pad its pages, so that its sneers are not quite graceful in this respect. For the capacity of growing hardy herbaceous plants, a very towering position is claimed by our contemporary. We never condemned that capacity ; and if it pleases it, we have not the slightest desire to dim the lustre of its fame in that branch of horticulture.—Ed.]



### PLEIONES.

THE Pleiones are not so extensively grown as their merits deserve, either for decorative purposes or for cut bloom, seeing that they bloom at a season when flowers are so scarce, and the flowers themselves are not

to be excelled by any winter-blooming plants we know. The fact that they are Orchids need not prevent any one from growing them, as they require no special accommodation. Comparatively few Orchids are grown for cut blooms in private establishments, being generally considered more difficult to cultivate than most stove-plants; but we have found them quite as easily managed as any other family of plants that we have had to do with. Every one knows that without care and attention no class of plants can be grown satisfactorily; and Pleiones, when properly managed, will give quite as satisfactory returns as any other plants that are grown for winter decoration.

The varieties we find most suitable are *P. Wallichiana*, *P. lagenaria*, and *P. maculata*, especially the last named, with its pure white sepals and petals, and most beautiful lips. To grow them well they should be potted every year directly the blooms fade. Although terrestrial Orchids, we give them much the same compost as Epiphytes, which consists of three parts living sphagnum, one part peat and turfy loam, with some small crocks and charcoal—the peat and the loam to have all the smaller particles shaken out—mixing the whole thoroughly. If put in pots, they should have a small inverted pot over the hole in the bottom, and filled at least three parts full of crocks a little rounded on the top. A good layer of clean sphagnum should be placed on the top of the crocks. Fill up with the compost, pressing it rather firmly together to as near as possible a half-circle from the inner rim of the pot. Pull the decayed blooms out of the young bulbs, shaking them out of the pots to separate them individually, and fix them over the pot with a piece of copper wire in the shape of a staple to keep them in their places. They should be at least  $2\frac{1}{2}$  inches clear of each other. In placing them, care should be taken that the young growths are as near as possible that distance apart: it does not matter so much for the parent bulb, as it will almost disappear by the time the young ones are matured. Put a little more of the compost over the roots, and finish off with a layer of clean sphagnum, so that when finished the whole is as near as possible to a half-circle with the outer rim of the pot. Give a good watering, and with a sharp-pointed stick dibble in the sphagnum amongst the bulbs. As Pleiones are shallow rooters, the growing sphagnum helps to cover the roots that come to the surface. After the first watering they will want very little until they begin to make roots. Sprinkle them overhead occasionally through a fine rose until they have got a good start, then, if properly drained, they can scarcely be over-watered, especially in their growing season. Red-spider is their worst enemy, but they will stand the syringe as well as any plant I know, so that pest can be guarded against. A shelf near the glass in an ordinary plant-stove suits them very well; in fact, they can be grown in any place where there is plenty of heat and moisture, and shade from the direct rays of the sun. After they have finished their bulbs and the leaves are turning yellow, withhold water gradually; place them in a

cool vinery or greenhouse, where they will get as much light as possible. After they have shed their leaves just give them as much water as will keep the bulbs from shrivelling. When they begin to show flower take them into heat, dip each pot for a minute or two in water to thoroughly moisten the compost : in fact, they should be dipped very often in their growing season, as the small roots interlace the compost so much that if they happen to get dry the water will not go into the pot unless they are dipped. This applies to a great many Orchids, especially those that have been at rest for some time. When a lot are grown singly in 4-inch pots, they look very nice standing round a collection of Orchids or stove-plants, or for furnishing purposes. When taken into heat, if a few pieces of Selaginella are dibbled into the sphagnum it makes up for the absence of their foliage. They can be taken into heat in batches to prolong the flowering season. Most people grow them in pans : as they root near the surface this plan suits them very well ; if in pots, they want more drainage. W. S. P.

[This paper came to hand just after F. W. B.'s paper in last month was sent to the printers.]



#### ROSE NOTES FOR AMATEURS.

IT is often said, no flower is a greater favourite with all classes than the Rose. We have only to look about our own doors for proof of the correctness of this, as we fail to find a garden where flowers are grown that does not contain Roses. When we go from home and meet with amateurs interested in gardening, eleven out of every twelve of them will speak about Roses before the shortest horticultural conversation has been finished, and many will introduce their remarks with a reference to the Rose. Such has been our experience : only the other day an esteemed lady put a host of questions to us about Roses, and we referred her to the 'Gardener' for information on this and kindred subjects.

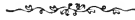
The kinds to plant, how to plant, and when to plant, are leading questions. If I named one dozen Hybrid Perpetuals and one dozen Teas, I daresay I would have some falling out with me about my selection, and wanting to substitute or add to. This is an evil, as it is just by increasing our varieties that we make them *collections*, and in doing so very often lose sight of *selection*. It is the latter that amateurs should always aim at, not only in Roses, but everything in their gardens. Collections are interesting, but selections are more satisfactory. The following are the twenty-four Roses we would recommend to amateurs, under the generality of circumstances, as most likely to be really useful ; and where numbers were wanted, we would have the same kinds twice or more times over : Hybrid Perpetuals—

Marie Baumann, John Hopper, Alfred Colomb, Baroness Rothschild, Charles Lefebvre, Duke of Edinburgh, Fisher Holmes, General Jacqueminot, Jules Margottin, La France, Madame Victor Verdier, Senateur Vaisse; Teas, &c.—Gloire de Dijon, Niphetos, Safrano, Perle des Jardins, Marie van Houtte, Madame Levet, Jean Ducher, Homère, Belle Lyonnaise, Goubault, Solfaterre, Jean Sisley. These are all intended for open-air culture. They have variety of colour, fine forms, and, above all, vigorous constitutions, to recommend them. They are all sweet-scented, too, with the exception of Baroness Rothschild; but it produces such a splendid sized continuous bloomer, is such a favourite colour, and is so easily grown, that I cannot leave it out. Some of the Teas are useful for planting against walls and pillars, but I have noticed they change this habit sometimes in different parts: and to make sure, I would advise that they be all planted in beds at first; and when they grow, and it is seen which are going to climb most readily, let them be moved to such positions. It is surprising that Tea Roses are not more grown by amateurs. I am told by those who ought to know, that the demand for them is trifling compared to others. They are more tender, of course, than the Hybrid Perpetuals: but it is not always the hardiest things we grow most of in our gardens; and I am sure, were Tea Roses of the kinds named grown more extensively, that their possessors would be highly gratified with them, as, although the flowers of some of them are not large, the buds are simply exquisite. In their case, winter protection would in most localities need to be included as part of their culture; but all Roses are benefited by this, especially in Scotland. We lately saw large numbers of them thatched up with straw and fern there; and when covered over like this in autumn, and left so until spring, the trouble is little and the gain great, as the arctic winters we are now having are injurious to Roses of all kinds. We generally plant Roses here in November; but farther north, March would be our planting month, as then we could plant every one with the certainty of its growing; but in autumn we would be afraid of the winter spoiling our work, and killing our plants into the bargain. From this it will be gathered that we do not think those who may not yet have planted their Roses are too late. They can be planted with success all through March. Those who have bushes growing too close, may lift them all, manure the same bed well, dig it over deeply, and replant thinner. Old plants with long fibreless roots should have all such cut in to 6 inches or so from the stem. New Roses to be purchased from the nursery should be ordered at once. Have everything ready to plant them the day they arrive. The sooner the roots are under the soil the better. Laying them in by the “heels” in one place, and shifting them about two or three times before finally planting, does them much harm. Whenever Roses have to be planted, the soil should be good—as good as possible; and let the soil be what it may, plenty of manure should be worked up with it. No one will

ever do wrong in following up this where a bed is made new altogether. When old soil is taken out and entirely replaced, we would give one good barrow-load of manure to every three of soil. Attention to planting, soil, and manure makes a vast difference in after-years. Like other things, if carelessly done, it will always want seeing to ; but when well done, there is an end of it. Do not plant deeply but firmly : this is very important. Deep planting ruins the plants ; and when they are loose, they never root well : 3 or 4 inches is quite enough of soil to be over the roots. Never prune before planting. A week or two, or a month after, is much better. When the roots are beginning to lay hold of the soil and the buds are seen to be swelling, but before they come into leaf, is the time to prune. From the time they are planted until they are growing and firm in the soil, they should have the support of a short stake. After planting, should very dry weather set in before the buds are swelled and the flowers open, they will be benefited by a heavy watering ; and if no plants are growing about to shade the soil, a slight mulching of manure, short grass, or leaves is beneficial.

J. MUIR.

MORGAM.



### THE FLOWER-GARDEN

THE end of this month should see all hardy bedders into their places. It is better for the plants to have them established early ; and it is easier to manage than to leave all plants, irrespective of hardiness, to be put out with the tenderer flower. Just try putting out the quite hardy flowers now—Echeverias, East Lothian Stocks, and Calceolarias in April ; Geraniums and other tender bedders early in June, and the very tenderest, as Coleus, a month later,—and you will find how it eases the crush at bedding-out time. Practically there is no “hurry-scurry” at all at any one time. Such a system of planting requires to be arranged beforehand ; but a plan is necessary in any case to get the work done with certainty and speed, and should have been at least roughly prepared the previous autumn. Always remember in propagating tender bedders that it is better to leave them till the latest moment, than to strike them slowly and to have the young plants dwindling in hothouses. Leave as much of the striking of cuttings therefore till the end of the month and April. The great majority of our plants pass only thrice through the hand in spring : first, cutting of the slips, then inserting them in boxes where they are struck in a few days, then transplanting them into frames. What a business it used to be when almost every plant, even to the Calceolarias, were potted singly ! What an amount of watering, and what shabby plants after all ! That used to be heaping up work with a vengeance.

R. P. B.

## BOTANY FOR GARDENERS.

## NO. VI.—INFLORESCENCE, &amp;c.

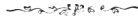
INFLORESCENCE is the ramification of that part of the plant intended for reproduction by seed, and the reproductive organs of plants are the flowers. Extremely varied indeed are the forms of inflorescence, in some cases simple, but in most cases compound. In the Tulip it is simple, and the peduncle supports but one solitary terminal flower. A *raceme* has an inflorescence in which the flowers are arranged singly on distinct pedicels along a common axis,—*ex.*, Wallflower, many of the Leguminosæ, such as common garden Pea and Glycine (*Wisteria*) *sinensis*, *Veronica* (garden varieties). A *spike* differs chiefly from a *raceme* in having its individual flowers *sessile*—that is, they are not supported by a stalk as in *racemes*, but lie close upon the body that supports it,—*ex.*, the common Plantain. A *compound spike* consists of a collection of spikes arranged in a racemose manner. A *spikelet* is a term used exclusively in describing Grasses, signifying the small terminal collection of florets. A *corymb* is a form of raceme, in which the pedicels are gradually shorter as they approach the summit, resulting in a flat-headed inflorescence,—*ex.*, Candytuft. An *umbel* is an inflorescence in which the flowers expand first at the base and last at the end or centre (*centripetally*), with stalks radiating from a common point,—*ex.*, British Umbelliferæ, such as Hemlock, Parsley, Carrot. A *cyme* is a kind of inflorescence produced by the rays of an umbel forming one terminal flower, and then producing secondary pedicels from below it, the flowers opening first at the end and last at the base,—*ex.*, Chickweeds, Stichworts, common garden Laurustinus. A *panicle* is an irregularly branched *raceme*,—*ex.*, Bramble, Horse-chestnut.

Usually, though not invariably, the *corolla* forms the most ornamental part of plants, the parts of which are termed *petals*, which are extremely varied and numerous in form. In some the corolla or petals are polypetalous—that is, each part is separate from the other: those of the *Ranunculus* are polypetalous, and are regular in form, shape, and size. All representative British orders of the division *Thalamifloræ* have their petals polypetalous, including such orders as *Ranunculaceæ*, *Cruciferae*, *Violaceæ*, and *Caryophyllaceæ*, the greater portion of which contain regular flowers. Those of *Violaceæ*, and a few others, including *Fumariaceæ*, have their flowers irregular. In the common Primrose the flowers are *gamopetalous*, and still regular. In some cases the flowers may be *labiate*, as in the Mints (*Menthæ*), Deadnettles, (*Lamiums*), &c.; *calceolate*, as in *Cypripedium calceolus*; *campanulate*, as in the Harebells (*Campanulas*); *ringent*, as in the *Linaria vulgaris*; *papilionaceous*, as in *leguminous* plants—Pea, Bean, &c.; funnel-shaped, as in the *Polyanthus* and many others. Some plants do not possess any petals or sepals whatever, but are included in the division *Achlamydeæ*, which contains several of our native trees,

such as the Birch, Willow, Scotch Fir (*Abies excelsa*), &c. In some cases the female (*pistil*) and male (*stamen*) flowers are borne on a separate plant, which is termed *dicious*: when borne on the same tree, but in different flowers, it is called *monoecious*. In the *Arum maculatum*, a common British plant, the stamens and pistils are protected by a *spathe*.

The blossom is doubtless a beautiful part of the furniture of the plant. Sometimes iridescent with the tints of the rainbow, it revels in the sunbeam, the pride and ornament of vegetation. In respect to size, the flower varies from a microscopic point to a circumference of 9 feet—*Rafflesia Arnoldii* being quite that. In the shape of many Orchises can be seen the forms of various insects and animals, such as the lizard, frog, wasp, spider, man, grinning monkey, fly, bee, &c., presenting the forms mentioned to perfection. W. ROBERTS.

(*To be continued.*)



### SOLANUM CAPSICASTRUM.

FAMILIAR as this old plant is to most gardeners, and considering its usefulness in the winter season, it is strange to notice what reluctance is shown in private places to its culture. Perhaps it is owing to the fact that on the Continent it is grown extensively and to great perfection, and is sent over here at very moderate prices. Grown as these imported plants generally are in 5- and 6-inch pots, so thickly studded with their bright red berries, they are very useful and attractive objects. They command a ready sale, especially at Christmas time, when they are prized for room decoration, &c.

Seeds sown now and placed in a temperature of 65° to 70° will soon be ready for pricking or potting off; and I would recommend those who wish to be successful in the culture of this *Solanum*, to grow it freely or without a check at any stage of its growth; it is therefore important that the plants are not allowed to remain long in the seed-pan in a crowded state. Perhaps no better plan can be recommended than potting them, when fit to handle, into 2½-inch pots, using a light rich compost. If plunged in bottom-heat, they will start all the sooner, and move freely into growth. When they have filled their first pots pretty well with roots, shift them into 4½-inch pots, giving them a compost of fibry loam, leaf-mould, and well-rotted cow-manure, in about equal proportions—to this a dash of bone-meal may be added. If kept in warm quarters for a few weeks they will soon be ready for shifting into what may be termed their fruiting-pots, which should not be larger than 6 inches.

In this country they do more satisfactorily if grown throughout their first year in cold frames; for if placed in the open air, and the season be not very favourable, they are not likely to set a good crop of



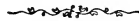
berries. The shape into which the plants are to be trained depends on the tastes of growers. Suffice it to say, that the more they are pinched in the early stages of growth, the more dense and bushy they become ; but if pinched too late in the season, the crop of berries is likely to be small. I never pinch after the end of May, and those that are pinched then I do not expect to colour their berries in time for Christmas. I may remark that by ceasing to pinch the plants at different times a succession of crops is kept up.

This is a moisture-loving plant, and must not at any time be allowed to suffer for want of water, or it will receive a check that will stunt its growth for the season, and will most likely be at the same time attacked with red-spider. If this pest puts in an appearance on the foliage, let it be at once dealt with by the vigorous use of the syringe, using water into which some sulphur has been mixed on two or three consecutive evenings. Green-fly, however, is the most persistent enemy of the Solanum ; and I find that if the plants are syringed at intervals of a fortnight with Gishurst's Compound and paraffin-oil, at the rate of 6 or 7 ounces of the former and a wine-glassful of the latter, to the gallon of water, at 80° or 85°, green-fly does not molest the plants. When they have thoroughly well-filled their fruiting-pots with roots, they should be watered with manure-water nearly every time they require watering.

Those who may be impatient of the care and attention necessary to rear plants from seed, can purchase plants, and as soon as the berries have been cut, or have dropped off, can prune the plants into shape : cutting them well back, they may be placed in a temperature of 60°, where they soon break into fresh growth. They should then have all the old soil shaken from their roots, and the latter pruned, when they may be potted into pots just sufficiently large to hold their roots comfortably, and afterwards shifted into any desirable size of pots. To make their chief growth, they should be placed on a well-sheltered border, where they will have all the sunshine possible. The pots should be plunged to the rim in coal-ashes, taking care that there is ample drainage to keep them clear of stagnant water. In other respects the treatment necessary for young plants is applicable to these.

J. PROCTOR.

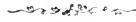
THE PRIORY GARDENS.



### PTERIS UMBROSA.

CONSIDERING the great demand for ornamental plants for all sorts of decorative purposes, it is matter for surprise that this most useful and ornamental Australian Fern is not cultivated to a greater extent. It can be grown into large plants in comparatively small pots, and is, consequently, a most suitable Fern for furnishing vases and baskets. It grows, when shifted on into 10- or 12-inch pots, 3 feet high. Its fronds

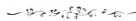
are pinnate, and the lower pinnæ also become pinnate. Its colour is of the most vivid glossy green. A great recommendation to it is that it can be grown in a cool house; and it is singularly free from the attacks of insects, such as thrips, which are so troublesome in the case of many Ferns. It is also a Fern of the easiest possible growth, thriving well in a mixture of loam, leaf-mould, and a little sand. J. M.



### AGAPANTHUS UMBELLATUS.

THE Agapanthus, or African Lily, is a plant that one very seldom sees in any collection of greenhouse plants, and yet in its own way it is a very useful and decorative plant for entrance-halls, lobbies, or conservatory, and associates well with palms or other foliage-plants, the light blue of its flowers being a very attractive colour. It only requires to be protected from frost during winter, and will grow and flower freely in any sheltered position out of doors during summer and autumn, but generally speaking, is all the better of being under glass. It throws up a strong flower-stem, about 2 feet high or so, with umbels of flowers at the top, which continue to expand one after another for a considerable time. The Agapanthus are strong-rooting plants, and therefore they require a moderately rich soil, of which good turfy loam should form the staple, enriched with some old cow-manure, and sufficient sharp sand to keep it open. There is also a white variety of the Agapanthus, named *A. umbellatus albiflora*, which is deciduous, and of course should be dried off and allowed to rest during winter.

J. G., W.



### ROYAL HORTICULTURAL SOCIETY.

FEBRUARY 5TH.

PRIMULAS, Orchids, and Grapes constituted the chief features at this meeting, the first-named occupying a large space, and forming an attractive group. There was a large attendance of the members of the Committees.

FRUIT COMMITTEE.—W. Paul, Esq., in the chair. Mr J. Wallis, The Gardens, Keele Hall, sent a box of Grapes consisting of Gros Colman, in fine condition, and Golden Queen, which was not so good; a cultural commendation was awarded. Mr G. T. Miles, Wycombe Abbey Gardens, sent samples of new and old Grapes, the former being Black Hamburg, and the latter Lady Downes; the Black Hamburgs were very fine: a cultural commendation was awarded. Mr Hudson, The Gardens, Gunnersbury House, Acton, sent twelve bunches of very handsome Lady Downes Grape, they had been kept in bottles for five weeks; a cultural commendation was unanimously awarded. Mr Miles also exhibited three very fine specimens of Lord Carington Pine Apple, for which a cultural commendation was awarded. Messrs Saltmarsh & Son exhibited a seedling Apple, of deep yellow colour, with an orange cheek marked with broken streaks of crimson; it had a tender flesh and an agreeable sub-acid flavour. It was not of sufficient merit to obtain a certificate.

Mr Miles, gardener to Lord Carington, exhibited eight handsome fruits of Petch's Favourite Cucumber, to which a letter of thanks was awarded. Mr Gilbert, The Gardens, Burghley, sent a pair of Montrose Seedling Cucumber—a cross between Sion House and Kenyon's Freebearer; it is a pretty Cucumber, about a foot long, and very symmetrical. Another seedling called Verdant Green was exhibited by Mr J. M'Indoe, The Gardens, Hutton Hall, Guisboro. Messrs Backhouse & Son of York again exhibited a seedling Onion which had been sent to a former meeting; the Committee were still of the same opinion as they expressed on a former occasion, that there is no difference between it and the Red Spanish. Mr John Clarke, Sycamore Gardens, Rowledge, sent a dish of Tomatoes. Mr Lyon, gardener to Sir Edward Scott, Sunbridge Park, Bromley, sent a very fine dish of Mushrooms, which were much admired, and to which a cultural commendation was awarded.

FLORAL COMMITTEE. — Dr Denny in the chair. Messrs James Veitch & Sons, Chelsea, exhibited a handsome group of Orchids in flower, among which *Odontoglossums* strongly predominated. Some examples of *O. Alexandræ*, *O. cirrhosum*, and *O. Pescatorei* were particularly noticeable. The charming little *O. blandum* was well represented. *O. Roezli* and the variety album, with *O. nevadense*, *O. Andersonianum*, and *O. triumphans*, were also well shown. A central plant of *Ada aurantiaca* had seven fine spikes, and a specimen of *Anthurium Andreanum* was staged with one of its peculiar brightly coloured spathes. A specimen of the *Chimonanthus*-like *Hamamelis virginica* var. *arborea* was shown in flower. A silver Flora medal was awarded for this collection. Mr W. Bull, King's Road, Chelsea, sent several new plants, including two Palms, one named *Astrocaryum Malybo*, and the other *Kentia Lindenii*, the latter rather elegant. A variety of *Rhipidopteris peltata*, appropriately named *elegans*, was also staged, together with a plant of *Vriesia Falkenbergii* and *Maranta crocata*, described below, for which first-class certificates were awarded.

Mr B. S. Williams contributed a grand collection of Primulas—dwarf, of good habit, and bearing fine trusses of bloom. *P. fimbriata coccinea* and *fimbriata alba* were especially noteworthy—the former for the size of the flowers and deep colour, and the latter for the purity of the white and the large trusses. *P. fimbriata alba magnifica* was in the size and form of the flowers remarkably fine, but the trusses were not sufficiently developed to show the variety to the best advantage. *P. fimbriata Chiswick Red* were very bright, *P. fimbriata rubra* and several others being particularly fine. A group of *Cyclamens* was also contributed, the plants well flowered and of good habit, *C. persicum Brilliant* being remarkable for their intense crimson of the blooms. A silver Banksian medal was awarded for these handsome groups.

Mr W. Taylor, the Gardens, Longleat, Warminster, was accorded a vote of thanks for cut flowers of *Pelargonium Guillon Mangilli*, which has been referred to so many times recently. Mr John Odell, florist, Hillingdon, Middlesex, sent specimens of a large-flowered variety of *Primula sinensis* named Purity; but it was not considered sufficiently distinct to merit a certificate. Mr H. Boller, Kensal New Town, was accorded a vote of thanks for a group of miniature succulent plants. Mr John Matthews, the Royal Potteries, Weston-super-Mare, sent some ornamental flower vases and small Orchid pans similar to those employed in Messrs J. Veitch & Sons' nursery at Chelsea. From the Society's garden came attractive groups of double Primulas, *Cytisuses*, Azaleas, Ferns, and Selaginellas. Mr J. Osborn,

gardener to H. J. Buchan, Esq., Wilton House, Southampton, sent a plant of *Odontoglossum Wallisi* bearing a spike of yellowish flowers with a pink-tinted lip; and Mr A. Wright, gardener to J. Brightwen, Esq., The Grove, Great Stanmore, exhibited a plant of *Aerides cylindrica*, closely resembling in stems and habit the peculiar *Vanda teres*, but differing in the flowers, which were of moderate size and white.

First-class certificates were awarded for the following plants:—

*Maranta crocata* (Bull).—A pretty species, with elliptical leaves 3 or 4 inches in length, shining green on the upper surface and purple beneath. It is dwarf and compact in habit, and produces scapes 5 to 6 inches in height, terminating in a small head of orange-coloured imbricated bracts, in the axils of which the flowers are borne; but the beauty of the plants rests in the bracts.

*Vriesia Falkenbergi* (Bull).—One of the plants which Mr Bull staged in his collection of new plants at the last summer exhibition of the Royal Horticultural Society. It has dark green leaves  $1\frac{1}{2}$  inch in breadth, slightly recurving, and purplish beneath. The spike is about 8 inches high, with large closely imbricated crimson bracts, with white apices at the upper portion of the spike.

*Primula Dr Denny* (Cannell).—A variety of *P. sinensis* with very large flowers  $1\frac{1}{2}$  inch in diameter, very rich crimson colour, good form, and distinct yellow eye.

*Lachenalia Nelsoni*.—This was stated to be a seedling cross between *L. luteola* and *L. aurea*, and was exhibited by the Rev. J. G. Nelson, Aldborough Rectory, Norwich. The scape was 8 or 9 inches in height, with pendulous tubular yellow flowers, with a tint of orange in the buds and at the upper portion of the spike. It combined in a marked manner the characters of the two parents, but was superior to both in vigour of habit and size of the flowers.

*Cineraria William Jennings*.—This and the following were exhibited by Mr James, gardener to Mrs Watson, Redlees, Isleworth, and occasioned some discussion as to the advisability of certificating varieties of *Cineraria*, but the majority were in favour of doing so. The variety named above had handsome symmetrical flowerheads about  $1\frac{1}{2}$  inch in diameter, and in colour a remarkably rich purplish crimson self.

*Cineraria Master Colvin* (James).—Also of excellent form and substance; the colour being a warm shade of purple with a narrow clearly defined ring of white near the centre.

*Hamamelis virginica* var. *arborea* (Veitch).—A peculiar *Chimonanthus*-like plant, with dense clusters of small flowers clothing the leafless branches. The flowers are small individually, but collectively they produced a rather pretty effect owing to each having four long narrow petals and the same number of short reddish sepals.—*Journal of Horticulture*.



## HORTICULTURAL EXHIBITIONS.

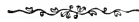
“GRAND” Horticultural Exhibitions are likely to be more than usually plentiful this autumn. Foremost and most important—judging from the very liberal schedule of prizes—is that to be held under the auspices of the Manchester Botanical Society, in its gardens at Old Trafford, on the 24th, 25th, 26th, and 27th of August, and it is to be an International affair. Liberal

prizes are offered ; and, under the usual good direction of Mr Bruce Findlay, this is sure to be a great gathering of horticultural produce, appliances, and horticulturists from all quarters. Among the chief prizes for fruits are—£45 in three prizes for fifteen kinds of fruit, £30 for twelve kinds, £20 for nine kinds, and £15 for six kinds ; £25 in three prizes for ten varieties of Grapes. The General Horticultural Company, Limited (John Wills), offers first and second prizes of £30 and £20 for six kinds of Grapes, two bunches of each ; and for twelve kinds of fruit, the same as for the Grapes. If these prizes do not bring out a splendid display of choice fruits, they ought to do so. £45 is offered in three prizes for twenty miscellaneous plants (open). To amateurs, £16 for eight Orchids, and the same amount to nurserymen in three prizes. The vegetable section is dealt with in an equally liberal manner, and so are cut-flowers. There is also a section for foreigners, and one for cottagers. Altogether it is a liberal and well-got-up schedule. One unfortunate mistake has eluded the notice of Mr Bruce Findlay when correcting proofs at p. 22—John Wills, Limited. The prize is said to be “for the best collection of twelve kinds of fruit, including two Pines, two kinds of Grapes, two Melons, and six other kinds of *Grapes*.” The last word Grapes should no doubt be *fruits*.

The Dundee Horticultural Society is to hold “a grand Floral Fete” on the 1st, 2d, and 3d September. Place of exhibition to be afterwards announced.

The South of Scotland Horticultural Society is to hold “a grand Autumn Show on the 2d and 3d September, in the Barrack Square, Dumfries.” The schedules of prizes offered by these two societies are very comprehensive, and encouraging to competitors ; and it is to be hoped the efforts of all these societies will be successful.

The Royal Caledonian Horticultural Society, by way of husbanding its resources for a splendid effort in 1882, has dropped the Summer Shows out of the programme for this and next years.



#### NOTICE OF BOOK.

THE TOMATO, WITH CULTURAL DIRECTIONS FOR MAINTAINING A CONTINUOUS SUPPLY: including also Chapters for Amateurs and the Growers of Fruit for the Markets, an Estimate of Varieties, and a Complete List of useful Receipts. By William Iggulden, Gardener to the Right Hon. the Earl of Cork and Orrery. Journal of Horticulture Office, 171 Fleet Street, London.

The above title is a comprehensive statement of the contents of this little work on a now very popular product of gardens. We have seldom or never read a similar work with more satisfaction and approval. As is well known, the writer has been a most successful grower of the Tomato at all seasons of the year, as well as one of the most successful exhibitors of them. Like everything that comes from Mr Iggulden's pen, it is thoroughly practical, and cannot fail to be a most complete guide to those who have not had much experience of keeping up a continuous supply of ripe Tomatoes. We give the following extract on “Successional Crops” as a sample of this useful treatise:—

“Those who are enabled to grow their earliest Tomatoes in beds with bottom-heat are not under the necessity of starting more plants, at all events till some time later, to grow for successional crops ; but to keep up the supply where no such accommodation exists, it will be found necessary to sow again

early in February. The plants obtained from this sowing, if treated in the same manner as advised for the earliest crop, would be ready to place into their fruiting quarters in about seven weeks. With us, some of this batch, as before stated, are placed in boxes at the coolest end of small span-roofed forcing-houses, and are the first to ripen. Others are placed in similar boxes and grown under the same treatment at the extreme ends of the earliest vinery and Peach houses. It must be understood that, although we have grown large quantities of early fruit simultaneously, our aim is to keep up a moderate and continuous supply in accordance with the available room. We once grew a large quantity in various positions, in a newly-planted vinery; and others may well follow this example without any fear of injuring the Vines. If the produce is not wanted for home consumption, it will sell well in the London markets, especially during May and June. In our case we grew a number of plants singly in 12-inch pots, which were arranged thickly along a strong and high back shelf, a good distance below the wires stretched across the rafters; and were therefore suitable, both for training the Tomatoes down the roof and the Vines up. The former in this position set their crops very freely, the consequence of receiving abundance of light and air; and when the fruit was ripening, formed a very attractive sight. The pots being exposed to the sun, much water had to be given to the roots—one watering a-day not always being sufficient; yet they were no more trouble than are Kidney Beans and Strawberries when grown in these positions, and are certainly not so liable to leave a legacy of green-fly, red-spider, or mildew behind them. In the majority of vineries it would be difficult to train the plants down the wires; but in many instances, with a little scheming, they might be trained along the back wall.

“Another plan adopted by some gardeners, and which I have also tried with fairly satisfactory results, is to grow a row of plants, either in pots or planted out at the foot of the back walks of vineries and Peach houses: when in the latter, the trees are not grown on the back wall. The situation, however, should the Vines or Peaches overhead be rather thickly trained, is not a very good one. The Tomatoes do not receive sufficient light in this position, as a rule; and to obviate this difficulty somewhat, and also to prevent them, when planted out, from exhausting the borders, we enclosed a space between the pathway and the wall, and above the border level, about 18 inches wide and 3 feet deep, with strong boards. The boards were painted the same colour as the house; and the strong upright stakes to which they were nailed being inside, all unsightliness was avoided. Galvanised wire was stretched across laths nailed to the wall, and to this the Tomatoes were trained. Nailing the plants to the wall would of course be objectionable. Stakes would have answered the purpose; but the wire, after being fixed, is no further trouble, and stakes are not always to be had in quantity. The soil employed was principally obtained from the garden. To every two barrow-loads of this common garden-soil was added one barrow of turf and manure from an old mushroom-bed, this mixture being considered quite rich enough for the position. When grown in this manner, crowding must be avoided, or very great difficulty will be experienced in setting a crop. The plants should be about 18 inches apart; and if well attended to in watering and disbudding, they will continue fruiting far into the summer—in fact, till those on the walls are, or should be, coming into use. If extra large fruit are wanted, it is advisable to top the plants, and also to mulch over the roots with good manure, and give liquid manure frequently.

“I once obtained an extraordinary crop of fruit from a single plant placed in a large tub at the foot of a flued wall in an early vinery. It was trained on the ‘extension system’—that is to say, several main branches were laid in, and wherever there was room a lateral was fruited, each being stopped beyond the bunch of fruit. This plant eventually covered a high wall, and was taken down the wires on the roof about 4 feet. We gathered the first fruit from it only in April, and the last, which formed a good dish at a metropolitan show, in November. Rich food, in the form of liquid manure and top-dressings, was frequently given, but we were well repaid for our care. As a rule, I do not find it advantageous to keep old plants, preferring the extra trouble consequent upon rearing fresh ones, well knowing that these will give heavier crops of fine fruit. Old plants are apt to become unsightly, and a small white fly, *Aleyrodes vaporariorum*, often takes possession of them, and is with difficulty destroyed by fumigation: young vigorous plants are less liable to be infested with this pest.

“Where the Peach-trees are trained over a circular trellis, and a staging runs round the front of the house, a few Tomatoes may be grown in pots on the latter, and either be trained up the rafters or staked uprightly at about 3 feet apart. No kind of manure, whether in a liquid or solid form, seems to come amiss to the Tomato, provided it is applied sensibly and moderately. One thing is certain—some kind of fertiliser must be used when the crops are heavy, on account of the rapidity with which they exhaust the soil. Those who have the run of a farm may collect materials for making liquid manure of a powerful description. We put about two pecks of sheep droppings, one peck of chicken dung, one gallon of soot, with a smaller quantity of hot-lime, into a coarse-textured bag, which is tied up and placed in an eighteen-gallon butt of soft water. In about a week the liquid manure is fit for use, and one gallon is found of sufficient strength to require diluting with about three gallons of water. The butt is kept filled with water, and the manure continues to be strong for several weeks—much, however, depending upon the quantity daily used. After a time the bag is pressed whenever the liquid manure is wanted.

“Guano, applied with caution, proves a powerful invigorator; but if used to excess it is very harmful in effect. A smallest-sized flower-potful of good guano, well squeezed with the hand in a three-gallon can of water, is a safe quantity to use. A very powerful manure consists of a mixture of one-third of nitrate of soda with two-thirds of superphosphate of lime, used as advised in the case of guano. Clay’s Fertiliser, if applied in moderation, is equal in effect to any of the foregoing, and therefore strongly recommended. All that is necessary is to sprinkle it lightly over the soil, and water in—about three applications being sufficient for a crop.”



## DUNDEE HORTICULTURAL ASSOCIATION.

THE ordinary monthly meeting of this Association was held in the Imperial Hotel, Dundee, on Friday evening, the 4th ult.—the President, Mr D. Day, in the chair. There was a full attendance of the members. After the usual preliminary business, Mr George Johnstone, of Glamis Castle Gardens, read a paper, entitled, “A Few Practical Hints to Young Gardeners.” He said that young gardeners who could do their work well mechanically, and had gained a good knowledge of the nomenclature of plants, were not to consider themselves as finished tradesmen. The gardener required tact and much forethought. He had the seasons to consider, and how and when to do the dif-

ferent kinds of work so as to give a return at a certain given time. A correct and methodical note-book ought to be the constant companion of every young gardener, noting the dates of sowing of the different kinds of vegetables and seeds, their produce, and their time of maturity for the kitchen. The same attention should be paid to both fruits and flowers, so as to insure the required result at a certain time. While it was not absolutely necessary for the horticulturist to be either a chemist or a botanist, a knowledge of these sciences would be much to his advantage, and he advised every young man to make himself conversant at least with the rudiments of them. Mr Johnstone concluded by suggesting that the Dundee Horticultural Association should devise some plan whereby young gardeners could be examined in the various branches of horticulture, and certificates granted according to their respective merits.

Mr W. S. Watt, landscape-gardener, Broughty Ferry, followed with his first paper on "Style in Suburban Landscape-Gardening." Mr Watt said he had been for upwards of thirty years an anxious student of nature, and he was confessedly an admirer of the picturesque. Under certain circumstances, however, nature required assistance from art ere she could assume that beauty of form, harmony of dress, or sweetness of face which captivate and add additional charms to the landscape. Mr Watt then briefly described the various styles carried out in different European countries from the earliest period of history to the present day. He recognised only three styles as being really pure and distinct from each other in their details of arrangement. These were the architectural, as applied to flower-gardens in the vicinity of the mansion; the gardenesque, geometric-picturesque, and the purely picturesque, as adapted to lawns, shrubberies, and parks. The gardenesque was a favourite style with some; it admitted of pleasing outline in curved walks and boundary-lines, and in clumps in beds on the lawn. The style was very suitable for villa grounds of from one to four acres in extent. The geometric-picturesque style, where it could be carried out in grounds of from four acres and upwards, he believed to be the perfection of modern English landscape-gardening. A favourable locality admitting of hill and dale, cascades, rivulet, lake, rockery grottos, &c., would enable the clever landscape-gardener to produce effects at once diversified and attractive. Although an admirer of this particular style he thought that landscape-gardeners should try to produce originality of design. He ridiculed attempts to imitate natural scenery on a small scale when the landscape-gardener should have called to his aid artistic design, and mentioned that there were no less than thirty-six landscape-gardeners, so called, in Dundee. He regretted that some aspired to practise the art who had not learned even its rudiments; and he condemned the building architect's interference, as he considered his proper sphere lay in an opposite direction.

Mr Watt concluded his very able and interesting paper with an appeal to young gardeners who might desire to make landscape-gardening a branch of their profession, to begin its study early.

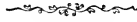
Mr M'Arthur, Kinbrae Gardens, Newport, exhibited splendid specimens of Welch's Giant Brussels Sprouts, Williams's Magnum Bonum and Blood Red Onion, which he recommended for their keeping qualities, splendid Leeks, and six exceedingly handsome fruits of "Warner's King" Apple, grown on a west wall. The Brussels Sprouts were exceptionally fine, and were pronounced by the entire meeting to be second to none that had ever come under their notice.

Mr M'Arthur stated he got the seed originally from Messrs Cutbush & Sons, London, about six years ago, and that he had selected the best stocks for seed



every year since. His practice was to sow in a box early in February in greenhouse temperature, and gradually to harden them off for planting in the breaks.

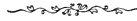
I may say that I saw the several varieties grown in the Chiswick Gardens last season for trial, and can testify as to its superiority over them. Mr M'Arthur received the hearty thanks of the meeting for his splendid exhibits; and after a vote of thanks to the speakers and the chairman, the proceedings terminated.



### THE FROST.

At Elemore Hall, Durham, there were 336° of frost from the 14th to 25th of January. The lowest temperature—41° below freezing—took place on the 25th, that being the lowest ever registered at Elemore.

At Brayton Hall, Cumberland, 2° and 4° below zero were registered on the 14th and 16th of January, and the total frost for the month was 440°.



## Calendar.

### FORCING DEPARTMENT.

**Pines.**—Presuming that the necessary number of early Queens have started in due time after they were subjected to increased temperature at the roots and in the atmosphere, the most of them should be nearly done flowering the first week of this month. True, the severe weather may have retarded their progress, but at all events they will soon be ready to push on rapidly. The night temperature, unless during very cold nights, should be kept as steadily as possible about 70°: and when shut up with sun-heat in the afternoon, 85° for a short time, with a corresponding amount of moisture in the air, will not be too high. It is of much importance that the soil be kept steadily moist—avoiding over-dryness on the one hand, and a wet, sloppy condition on the other. The amount of water required depends very much on whether the pots are plunged over hot-air chambers or in beds of leaves and tan; in the latter case they do not require nearly so much water. In proportion to the amount of fire-heat required, the atmosphere must be charged with moisture—never allowing the air to feel dry when the house is entered. Syringe the plants about the axils of the leaves on fine afternoons, when the house is shut up, but

do not carry this to excess, or it will cause a numerous and unnecessary progeny of young suckers. Use guano and sheep-dung water alternately when the plants are watered. Successional fruiting plants intended to start soon should now have a rise of 5° by night, say 65° to 70°, according to the weather, with a bottom-heat of 85°. As a rule, these make a growth before starting and yield the finest fruit of the season. Probably the severity of the season may have prevented many from getting the earliest batch of succession plants shifted last month into their fruiting-pots. No time should now be lost in getting this done. Plants that are somewhat later should also be shifted before the end of the month. If they show plenty of young healthy roots among the crocks and round the sides of the ball, they should not be allowed to remain unshifted for any length of time now, or they may start prematurely into fruit. We always prefer to partially shake out all plants when shifted into their fruiting-pots—preserving the roots as entire as possible. Firm potting ought always to be practised in Pine-culture. The soil is generally full of fibre, and with loose potting it holds water like a sponge,

and admits more air, especially when it does get dry, and the water and air rot the fibre much sooner than when firmly potted. If the soil is dry, we ram with a wooden rammer. It is of importance that the organic matter in the soil should be as little exhausted as possible when the strain of fruit-producing takes place, and this is best secured by firm potting. At one time when practising under the clearer sky of East Lothian, we put early Queens into 11-inch, and Cayennes and other strong growers into 12-inch and 13-inch pots; but in a dull moist climate we would never exceed 10-inch pots for early Queens, and 11-inch pots for Cayennes and others. We have proved these sizes give quite as fine fruit, and the plants yield more readily to the application of means for starting them into fruit. In plunging the plants, and presuming that full space can be given them at once, do not place Cayennes and Rothschilds closer than 2 feet each way: Queens will do at 22 inches. Nothing is gained by crowding but drawn and unfruitful plants that never yield fine fruits. Give them a bottom-heat of 85°, and a night temperature of 65°. If the soil be dry at potting time, and the weather be March-like, water them in five or six days after they are potted. Keep the atmosphere moist, and in very bright days sprinkle the plants gently at shutting-up time, letting the heat run to 80° for a time. Do not give much air for a short time, or until the plants begin to grow, when it must be gradually increased and regulated according to the state of the weather. See former Calendars for directions about fruits that are ripening.

**Vines.**—Crops in pots that have been required to ripen early, may be pushed forward freely as soon as the stoning process is complete. Advance the night temperature to 70° when the weather is mild; but if the generally cold east winds of March prevail, and the days be sunless, it is better to force more gently, and make up time afterwards. Take advantage of every sunny day to shut up early, and husband the sun-heat for the night, so that the least possible fire-heat may be required. This rule applies to Vines in all stages. We consider it much more preferable to push the Vines on in the interval between the stoning and the

commencement of the colouring than at any other stage before or after. Nearly all Grapes, and especially black ones, colour better in a moderate temperature, and well shaded with foliage, than under circumstances the reverse of these. As soon as colouring begins in very early crops, give air a little more freely, and gradually decrease the air moisture, leaving the air on continuously night and day. A constant watch must be kept over Vines in pots, to see that they never get a check for want of water. They should be nourished by rich top-dressing, and waterings of guano, soot, and sheep or deer dung water alternately. Attend to all Vines in different stages of growth, according as they may need disbudding, stopping, tying down, or thinning of bunches and berries. These operations should always be promptly attended to; then the energies of the Vine are not needlessly expended. Heavy cropping should be avoided as one of the greatest evils and mistaken practices of Grape-growing. In the first place it usually defeats the end held in view by those who practise it, for the Grapes are never so large and good in quality as under moderate cropping; and in the next place, the Vines always succumb to the strain sooner or later, and oftenest sooner. It is difficult to give rules for weight of crops. Vines planted 4 feet apart, and allowed to carry plenty of foliage, can carry a much heavier crop with impunity than Vines at 2½ feet. Vines at the latter distance apart should never be allowed to carry more than a pound of fruit to every foot length of rod. Pay particular attention to inside borders of early vineries that have a good proportion of roots, and see that they are never allowed to get dry. On the other hand, where heavy sprinklings are given several times daily, take care that the soil is not kept in a too wet puddly condition. This constant heavy sprinkling is in our opinion an evil practice that does much harm to the roots and foliage of Vines, especially if free ventilation is not attended to. If any late Grapes are hanging on the Vines they should now be removed to a dry room, where, if there be only a few bunches, they will keep for a time without being bottled; but if there be more than a score of bunches, bottle them by all means. Now is a good

time to plant young Vines where new borders have been prepared for them. Shake the soil entirely from their roots, and wash them thoroughly in a pail of water before planting them. If the plants have unfortunately been grown in large pots, in ill-drained, rich, pasty soil, the roots will be few, long, and destitute of those short twiggy fibres which are so desirable. Cut them back a bit, so that they may send out a batch of young roots nearer the stem. Spread the roots carefully out, and cover with some of the finest soil to the depth of 6 inches. If near to hot-water pipes mulch them with some horse-droppings to keep the moisture from evaporating rapidly. The system of growing Vines for planting in pots any larger than 7-inch ones is one of the greatest mistakes in Vine-culture. As a rule, Vines in small pots ripen their wood much better and make more fibrous roots—and these are very important conditions to secure. Then how much easier nurserymen could pack them, and how much less the carriage would be. Give us a well-ripened cane from 4 to 5 feet long, as thick as an H.B. pencil, and a good potful of twiggy roots, and any one may have the large topped and rooted ones.

**Peaches.**—If the weather be cold and sunless, force with the same caution recommended last month. To force Peaches at a high temperature from fire-heat is never desirable, far less so until the stoning period be passed. Do not exceed  $55^{\circ}$  to  $60^{\circ}$ , according to the state of the weather, until they begin to swell after stoning. Then, if the fruit is required as early as possible,  $5^{\circ}$  more may be given in ordinary weather, especially when the house can be shut up early with sun-heat. See that the inside borders are kept properly moist, and syringe the trees at shutting-up time on fine days. Keep a sharp look-out for green-fly, and fumigate with tobacco when any sign of it appears. Last month's directions can still be carried out in succession and late houses. All trees under glass, where there is unfortunately no fire-heat, should be kept as open and cool as possible to keep them back, for if brought on quickly into bloom, a late frost may do them serious damage.

**Figs.**—Increase the night temperature of the earliest to  $60^{\circ}$ , with  $10^{\circ}$  more by day. Figs like a moist atmosphere, and should be syringed twice daily when the weather is fine. The air should never be otherwise than moist until the crop begins to ripen. Attend carefully to the matter of watering, especially when the trees are in pots, or shallow, well-drained inside borders. To stiffen the young growths and prevent the leaves from being thin and tender, give air early and shut up soon in the afternoon. At one time we followed the orthodox practice of stopping the young growths at the fifth or sixth point for the second crop. Now we do not stop any more than is necessary for furnishing the trees with wood, and find that 10 or 12 leaves produced 10 or 12 fruits, just as well as 5 or 6 leaves produced a like number of Figs. Start later trees for successional crop. The 1st of March is good time for starting trees with the view of getting two crops from them by the end of October.

**Melons.**—Those planted last month will now be growing freely. Train the plants up the wires to within 15 inches of the top of the pit before stopping them. Water sparingly, and supply only a moderate amount of moisture to the air. Range the night heat to  $70^{\circ}$ . Give air as soon as it rises above  $80^{\circ}$  early in the day, and shut up early with sun-heat. To grow melons at this season with much moisture and little air produces thin sickly foliage that becomes a prey to insects, and is easily scorched when the sun becomes more strong. Plant out successional crops, and sow more seed as previously directed, both at the beginning and end of the month, according to demand and accommodation.

**Cucumbers.**—Do not exceed  $70^{\circ}$  at night for the present month. Cucumbers do with more moisture at the root and in air than melons, and should never be allowed to become dry. If sudden bright sunshine succeeds a period of dull weather, it may be necessary to slightly shade the foliage for a time at mid-day, or the plants will flag and may get scorched. Stop the young growths at every joint, and thin off all deformed fruit, not

letting the plants exhaust themselves by bearing over-many at a time. Keep a sharp look-out on thrip and green-fly, and keep them down by timely fumigation with tobacco, taking care that the plants are dry and not subject to too strong doses of smoke. It is better to use it moderately on two successive nights, than to give one strong dose. Sow and plant for successional crops.

Strawberries.—If all has gone on well these will now be an interesting crop, and one that will be most acceptable at dessert as a companion dish to late Grapes and Pine-apples. Crops that are swelling off will do with a night temperature of 60° to 75°. When colouring commences

they should have more air, to give flavour. After this season we have often moved crops out of Pine-pits into cooler quarters in which to finish, with much advantage; and when required to hang a few days after being quite ripe, they keep much better in a cooler and more airy house. Plants coming into bloom should have a temperature of 55° to 60° at night—never higher; lower is safer than higher. Put succession batches of plants into Peach-houses and vineries now being started. Keep a sharp look-out on red-spider and green-fly, fumigating and syringing to keep them in check. Do not, however, fumigate plants in bloom, or it will injure them.

#### KITCHEN-GARDEN.

To have the vegetable garden well cropped, and to be otherwise creditable to cultivators, the work must now be carried forward in earnest: every opportunity should be turned to the best account in bringing forward arrears. Digging, trenching, and manuring of the ground, according to the requirements of the crops which are to occupy it, must now have prompt attention. Surfaces may be broken over finely preparatory for seeds; and when ground is fit to be trodden upon, the drills may be drawn, and the seeds sown and covered, using fine soil over the seeds where land is heavy and tenacious. Peas and Beans may be sown and planted out from frames, boxes, &c., on deep rich soil, and covered with rotten manure and loam. Plenty of room for the seeds, and the rows standing wide apart, are matters which will show themselves to advantage by-and-by. Sow kinds twice in the month which are termed second early in catalogues. Dickson's Favourite and Champion of England are always favourites; but soils change the character of Peas very much. Stake Peas when a few inches high. Jerusalem Artichokes should now be lifted, if not done, and the necessary quantity planted as formerly advised: single rows wide apart are generally suitable. Globe Artichokes may be freed from rough manure, and the

shorter portion forked in and mulch over the roots. Crowns, if at a crowded, should be reduced to two or three; but the intense frost may have destroyed many, and it may be necessary to procure young stock by sowing seed,—a system we have found as easy as any other in getting up plants. Asparagus may be sown on well-trenched, richly manured soil, in rows of 1½ or 2 feet apart. Large Asparagus is produced by having the plants wide apart on deep rich soil, and abundance of liquid manure during the growing season. If small-growing crops are not to be grown on the surface, a sprinkling of salt may be scattered over, which will kill weeds and nourish the plants. A pinch of Beet for an early crop may be sown towards the end of month. Cauliflower may be sown twice during the month. Plants potted or growing in frames may be planted in rich well sheltered ground. If they are planted between ridges they may be protected there: evergreen branches stuck among them are of service as protection. Those under hand-lights and protectors may be benefited by stirring the soil and mulching with rotten manure. Cabbage, Savoys, Kales of sorts, Brussels Sprouts, and other green crops, may be sown early in the month for first crops. Broccoli of the early classes may be sown towards the end of

the month. Lettuce and Radishes may be sown between Potatoes or other crops,—the former for transplanting, and the latter to be off before the Potatoes shade them. Divide and plant Rhubarb: rich well-drained soil suits Rhubarb. Seed may be sown to raise stock. The main crops of Potatoes may be planted forthwith. Opinions as to time of planting vary widely. Some maintain early in March is best, others prefer the middle of April. We consider it the right time between those periods, when the soil is dry and warmed by sun-heat. Parsnips, like Onions, may be sown any time from end of February to beginning of April; the former on deep soil free from rank manure, and the latter on very strong rich soil. Parsley may be sown on early borders; and the plants which have been raised in pots, &c., and are ready to turn out, should get attention as early as possible. Successions of Spinach may be sown between bushes, Peas, or any other crops. Turnips cannot be sown with safety for main crops, but small patches may be sown every week on warm borders. Gentle hotbeds may bring them to a useful size, but very early sowings soon run to seed. The planting of Cabbage from store-beds may be done as early as ground is fit to receive them. Though many crops have suffered from frost during the past winter—winter and early spring Broccolis especially—the plots of young Cabbage are left in capital condition. Rosette Coleworts, which we were cutting from before frost came, are, with few exceptions, uninjured by frost, and quite tender and useful for present use. The forcing of vegetables is at this season a simple matter, but to neglect them causes a gap in the supplies: better to have some to spare than too few.

Asparagus (whether by lifting the

roots or by glass and manure in the beds) should have constant additions made to the stock being forced. The demand can alone regulate the supply. A lightful started every week will give a moderate supply. It is seldom, when other things are plentiful, that it is relished every day. Give Potatoes in frames and pits plenty of air and light; only keep frost and cutting winds from them. When they are ripe in pots, they may be placed anywhere in safety from frost and wet till they are used. To have the use of pots and frames, we have often covered the tubers with dry sand or soil till they were used up. Orchard-houses are of much value for storing such things. More Celery may be sown in gentle warmth. Avoid letting the young seedlings suffer from drought and want of air. French Beans may be planted in pots or pits. The latter plan gives the best produce with least labour. Thin Carrots in frames, and allow neither them nor forced Radishes to suffer from want of moisture. We often allow warm showers to give them their supply of moisture. Capsicums may be potted off and grown on in heat, with plenty of light and air when suitable for the latter. Ridge Cucumbers may be sown if they are to have glass protection till danger from frost is past; but towards the end of the month, or in April, is early enough for most purposes. Tomatoes should be treated with care till they are ready to plant out: seed may be sown for succession. Those under glass should not be shaded or cooled unnecessarily. Sea-kale may be covered in the ground to blanch it: fine soil, leaf-mould, or sand answers for blanching. If there is not room for Mushrooms in sheds, &c., ridges may be formed and spawned outside.

M. T.

## Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to,

be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

E. L. S.—*Berberis aquifolium*, *Daphne laureola*, Common Laurel, *Cotoneaster microphylla*, *Gaultheria shallon*, *Euonymus*, Box, Ivy, Periwinkle, Privet, *Laurustinus*. These will suit your purpose unless the shade be very dense.

J. RUSSEL.—Your question arrived too late for a reply in February, and we wrote to you at the address you gave, but the letter was returned from dead-letter office. Keep your grafts back in a cool place, and graft as you propose, after the shoots have broken into leaf in the stock—not before, or the stocks will bleed. Another method is “bottle-grafting,” which is to put the end of the scion or graft in a bottle of water and splice it to the stock. If you have young plants, the most perfect union is formed when green wood is spliced to green wood.

A. Y. S.—The best *Odontoglossums* for cut-flowers are *O. Alexandria*, *O. cirrosus*, *O. pescatorei*, *O. nebulosum*, *O. pulchellum*. They thrive in a temperature slightly above that of an ordinary greenhouse.

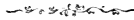
JOSEPH ALLAN, TASMANIA.—Your specimens arrived all broken to pieces, and we cannot recognise them.

NOVICE.—Cut away entirely the last year’s crop of fronds, and then the young ones, now springing, will get more light and air and come away stronger. Shift into larger pots as soon as the young fronds are a few inches high, but do not disturb the roots over much. For soil, take loam and leaf-mould in equal parts, with a little sand.

T. W. S.—*Populus Candicans*, the grey or common white Poplar. William’s book on Ferns will probably suit your purpose.

F. F.—Get some common blotting-paper and put the fronds between the leaves, allowing two leaves to be between each specimen. Then place the paper between two strong pieces of smooth board and put some weight on the top. Look at and turn the specimens every second day—and iron the paper to dry it—until the specimens are dry and stiff. In order to preserve the specimens get a herbarium book.

G. R.—We cannot throw any light on the case of your *Camellia* if there has not been any budding or grafting.



# THE GARDENER.

APRIL 1881.

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## SOME NOTES.

“CONSIDER THE LILIES.”



ONE of the first things that occurs to a would-be Lily-grower is how and where to procure bulbs. If cost is no object, he has only to write out an order for large sound bulbs from any of the numerous catalogues or advertisements at hand. In most cases this simple plan succeeds, so far as the getting of good bulbs goes; but if he who plants Lilies, like the wise builder of houses, first sits down and considers the cost, he will—he will do well! In the beautiful coloured plate of Lilies presented to the readers of the ‘Gardeners’ Chronicle’ some time ago, a lovely long-tubed Lily is figured. Its name is *L. neilgherense*. It is barely hardy, but may be started in a pot and planted out in May or June, and is so lovely that it ought to be grown by the dozen in all good gardens. If you write an order for a dozen bulbs at 15s. each, it only comes to £9; but if you want really good strong bulbs, you pay a guinea each for them, or a trifle of a guinea or so more if the very finest bulbs are desired. I believe the best bulbs are preferable—sure to bloom, you know.

*Lilium Wallichianum* is another nice kind, rather tender and difficult to grow, as a rule. You plant it in a pot very carefully: sometimes it comes up, sometimes not. The price is pretty much what you like, up to three guineas a bulb. Nothing less than 15s. will get you a decent bulb of this kind; and if you want to make quite sure of ever seeing it in bloom, pay £20 to £36 for a dozen bulbs, and you may be gratified. Nothing like a good start in plant-growing: order a dozen bulbs at once.

In the 'Garden' of February 12th of the current year there is a lovely plate of a lovely Indian Lily—*L. polyphyllum*. It is moderately hardy on warm well-drained soils, but it is more safe to grow it in pots. You can get a dozen strong-flowering bulbs of it for £50, or perhaps for a little less. It is a little expensive, perhaps, but it is a pretty thing—very nearly a hardy flower, in fact, so of course it is valuable. Bedding-plants are vulgar. Orchids are dear. "Consider the Lilies," my friend:

#### CYPRIPEDIUM MAULEI.

This is one of the most welcome of all the kinds known, and in growth and flower is quite distinct from *C. insigne*, of which it is undoubtedly one of the very best forms. The leaves are straight and shapely, and the flower has a more finished appearance, the upper sepal being nearly all white, blotched with lilac purple. Of the four or five varieties of *Cypridium insigne* which I have, this is by far the most welcome and effective, and a flower of it which has been fully expanded for six weeks is still quite fresh.

A friend who was fortunate in obtaining a good importation of Orchids from Assam sent me a batch of them, and amongst the number which have bloomed is a variety I never saw before. In growth it resembles *Maulei*, but it is more robust: there is a good deal of pure white on the top sepal, and the spots or blotches are nearly black, as in *C. Boxalli*. I am very pleased with it, as a most interesting variety of the free-blooming and useful winter-blooming *C. insigne*.

#### HARDY FLOWERS.

I am glad to see these shooting up out of the ground in the beds and borders everywhere. Bulbs are especially robust, as indeed is the rule after a sharp winter with much snow. The new seedling kinds of *Narcissus* sent me by Mr Peter Barr are spearing upwards rapidly after the rain. This is their second season here, and so we anticipate a great show of them. The large-flowered *N. Emperor* and *Empress*, planted last season in a 4-foot-deep border of loam and leaf-mould, have both pushed up leaves like those of *Amaryllis* in size; and the great golden-chaliced *N. maximus* is also very robust, and is already showing its buds. When fully developed, this kind under good culture attains a height of from 2 to 3 feet, each individual flower being nearly 6 inches across. For contrast with these we have the tiny little *N. minor*, of which "wee mite" old Parkinson speaks lovingly in his 'Paradise' of nearly two centuries and a half ago.

Hellebores of sorts are the most showy of the present hardy or open-air flowers. Snowdrops and Crocuses are enlivening nooks and corners or walk-margins, and the Winter Aconite opens its golden bosses to the sun. These are the vedettes of a glorious host which the golden trumpets of the Daffodils will usher in. Golden Jasmine and *Chimonanthus* still "hang their banners on the outer walls," and



of hardy blossoms of promise and great beauty the cry is "still they come!"

#### CAPE PONDWEED.

*Aponogeton distachyon* is not uncommon in good gardens as a hardy aquatic plant. We force a dozen or two of its Artichoke-like tubers every winter, and find them a great addition to the winter blossoms of the intermediate house or conservatory. Pans of earthenware 2 feet in diameter and 8 inches in depth hold three tubers. We plant in sound lumpy loam surfaced with sand. A layer of loam 3 inches thick, covered with half an inch of sand after the tubers are planted, is ample, after which fill up with clean water to the rim, and keep it fresh by raining a potful of water over the pan every morning. We plant early in November, and have plenty of flower-spikes from Christmas until April. In May we place the pans under a warm south wall, emptying out the water, and here, exposed to air and sunshine, the earth is baked dry. The tubers thus are induced to rest from May until planting-time, and start into growth as readily as Roman Hyacinths. Having a quantity of small tubers the size of Walnuts, we this season tried some of them in 6-inch pots, three tubers in each. The pots were placed in saucers, and the loam was kept saturated by watering overhead; thus treated in a temperature of 45° to 65°, they have flowered well, with from seven to fifteen spikes fully expanded at once. For permanent results and large well-developed spikes for cutting, however, pan-culture in water is best; and to all who have to provide choice and uncommon flowers for finger-glasses or vases in the drawing-room during the winter months, I can confidently recommend this charming water-weed. The drying-off or baking process is, however, very, essential, in order to obtain a good simultaneous development or "crop" of spikes and fresh green leaves at the desired season.

#### ROOT-CUTTINGS.

Cuttings of the root often give better results than other means of propagation. Three plants just occur to me that may readily be increased by cuttings off their thick fleshy roots. Their names are *Senecio pulcher*, *Stokesia cyanea*, and lastly, that beautiful fair maid of autumn, *Anemone japonica alba*. The mode to follow is to dig up the roots from November to February, cut them into 1½ inch lengths, and insert them in pans of sandy earth, which may be placed near the light on a shelf in a cool house. Nearly all rare Anemones and many other plants succeed well propagated in this way. When leafy growth and roots are produced, pot off in May, and place in a close frame for a few days; and finally, give air on fine days, and plant out in the end of June, or earlier. In this way it is easy to keep up a stock of sturdy, young, free-blooming plants for cut-bloom, or for border or conservatory decoration.

## HINTS ON ORCHIDS.

A friend deeply interested in Orchids tells me that he finds cocoa-nut fibre and charcoal the simplest and best compost for all such Orchids as *Cypripediums*, *Dendrobium*s such as *D. nobile*, *D. heterocarpum*, *D. macrophyllum*, and others, and even for *Vandas*, *Ærides*, and *Angræcums*. He is particular to say that the pure coir fibre is the thing he employs, and not the refuse. One great advantage is the cleanliness and rapidity with which Orchids may be potted on this plan. The fibre and nodules of charcoal are surfaced with fresh sphagnum. Perfect drainage is insured. The roots fasten themselves on the fibre greedily, and retain their life and freshness much longer than in peat. One part of his secret remains to be told. When the hungry roots have filled the pot, they are fed with a solution of peat made by washing lumps of good peat in a tub of rain-water until all except the fibre is held in solution by the water. This is strained previous to use, and allowed to settle until it is clear. To this mixture, and a modicum of soot washed from the roof, he attributes his success in growing and flowering many Orchids with which he used to fail under a peat-compost *régime*. For such Orchids as grow best upon blocks he has another plan: not only are they dipped in the solution of peat, but when wet, finely powdered peat is gently shaken over their aerial roots. I must say I have been agreeably astonished at the results of a two years' trial of Orchid-growing under this novel *régime*, and have much pleasure in here putting my friend's practice on record for the information of all whom it may concern.

## A NEW PLANT.

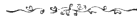
Perhaps not really new—certainly not to botanists—but assuredly so to most gardens, is *Senecio cruentus* of De Candolle, a stately greenhouse composite of *Cineraria*-like habit, sent to me by Mr Smith, manager of Messrs Roger, M'Clelland, & Co.'s nurseries at Newry, Ireland, who raised it from imported seeds received by him under the name of *Doronicum papyraceum*. It is a charming plant of robust habit, and a most profuse bloomer, each branched stem being surmounted by clusters of flowers each individually as large as a sixpence, having a deep purple disc and delicate lilac ray florets. Although somewhat resembling a stately *Cineraria* in fort and flower, this plant has an advantage which many cultivators will appreciate. Seedlings raised in the spring in gentle heat may be pricked into small pots, planted out in June, and finally be dug up and repotted for blooming in the conservatory during January and February. Either for decoration, or for the supply of cut-flowers at this season, it will be both useful and ornamental.

## EUPATORIUMS.

*Eupatorium riparium* is a good early spring-blooming plant. *E. glaucophyllum* is also most useful, but the best and most generally

effective of all the kinds is *E. grandiflorum*, a robust large-leaved species, which, if struck from cuttings early, and planted out in a sunny border in June, will now give plants 2 feet high, and as much in diameter, its slightly drooping branches being clothed with snowy clusters of flowers. We used to plunge these plants, *Solanums*, *Marguerites*, and *Salvias*, out in their pots, but now find planting out cuttings a better plan. Towards the end of September we cut round each plant pretty closely with a draining-tool to form a ball; afterwards, if the weather is hot and dry, we water freely, and in a few days new roots begin to appear around the ball. The plants are then lifted and potted up for the conservatory, and the results are most satisfactory always.

F. W. B.



### ASPARAGUS CULTURE.

No vegetable cultivated in our gardens is more valued than Asparagus. It may not be found in many small gardens, but it is quite indispensable in every garden of any importance. Its successful culture is not a recently acquired accomplishment. Probably many of your readers may think in this respect we are going back rather than forward; as many Asparagus beds might have been found twenty years ago that would equal any to be seen at the present time, if the latter are not decidedly inferior to the former. If such is the case, there are no good reasons why it should be so, as our appliances in every shape, including tools, manures, and knowledge, are all supposed to be improved; but probably less attention is paid now to making the beds and preparing the ground than many old hands were in the habit of devoting to this part of its culture. No plants are easier raised from seed than Asparagus, and it will grow readily on any good piece of soil which has been merely stirred and manured on the surface; but its progress here will not be lasting, and after a year or two the crop will gradually dwindle away, until it is not worth the ground it stands on. Roots which we have seen bearing well when about twenty years old, and that on the same piece of ground on which they were first planted, had the ground thoroughly prepared for their reception at first; and this must still be the case if good and lasting results are desired. Although Asparagus is often thought to be particular as to soil, it really is not; but whether the soil be heavy or light it should be well prepared, and success in most cases is sure to follow. We have had quantities of old sand carted to make "natural" Asparagus beds, and devoted a good deal of attention to their formation too; but the result was no better from this than we had from others planted in ordinary garden-soil well tilled. A very wet place or soil for the bed or plantation must be avoided, but any ordinary dry land may be selected; and the soil should not be less than 2 feet deep—if it is 3 all the better; and in beginning to make it ready for a permanent Asparagus plantation, it should be trenched

down to the first of these depths, and the second if possible. If the subsoil is very hard, keep it in the bottom, only loosen it well up, and the worse it is, mix the more old vegetable refuse with it. If good manure can be put in at the same time it will not be lost.

After trenching the required space over in this way, a coating of good manure should be placed all over the surface and dug in deeply, and a good sprinkling of salt may be thrown over it previous to burying it. This will help to clear the soil of insects, and nourish the young plants as well; but more about salt by-and-by. The best of all ways to propagate Asparagus is from seed, and the proper time to sow it is early in April. Every year we sow a small bed of seed at this time, and we have always a quantity of young plants in hand ready for any purpose if wanted. The seed is sown in drills about a foot apart; only a small quantity of soil is placed over the seed, and it never fails to grow. During the summer a few of the plants may be drawn out if they are very close together; but with 2 or 3 inches between them they develop nice little crowns the first season, and the shoots run up 2 feet or more. The hoe is run between to keep weeds down, and when the stems have withered in autumn, they are cut over and a slight covering of light manure placed over the crowns. Like this they remain until March, when the manure is taken away, and the young plants soon afterwards begin to push up fresh shoots. It is just when these are seen peeping through the surface of the soil that the roots may be transplanted with the greatest success. So that, besides being the best time to sow the seed, early in April is also the best time to plant. Where the roots have only to be taken from one part of the garden to another, we would make sure that growth had begun before shifting; but were we buying in roots from a nursery, and they had to come a considerable distance, we would try and get them about the end of March, or just before growth was fairly started. They would get little or no check then—a thing at all times to be avoided, as Asparagus roots do not bear being much dried up. For this reason we would recommend every one to raise their own plants from seed, when they can be transplanted on a suitable day, and in the shortest time. Following this plan, the seed would be sown twelve months before it is necessary to have the permanent bed ready; but the ground may be trenched some weeks before planting, and when the time comes for this operation, it will only have to be decided which way to plant. Two ways may be chosen—either make the ground into beds, or plant in rows without forming a bed of any kind; of the two ways, we decidedly prefer the latter. It is much the more economical for space, and gives the finest produce. In fact, we like the row planting plan so well that nothing will be said about the bed system, as we have given it up, and do not intend taking to it again. I believe the greatest of our authorities on Asparagus call our plan of planting the “improved one,” and it is so. In making the rows, the plants should

stand 2 feet apart each way. Many add a foot more to this, but we would only advise this distance where ground was plentiful. The wider the plants stand, the finer does the produce generally become; but fairly good produce, which need be despised by no one, may be had from plants at 24 inches and 30 inches apart. The soil having been previously well prepared, no great digging need take place at planting time. On the site of each plant, a patch of soil about 1 foot square, and three inches deep, should be taken out with the spade. The roots should then be placed singly in these with all their strong fibres spread out, putting the soil gently back over them again, and finishing up with treading firmly all around the crown, but not on the top of it. Row after row may be put in like this, and the soil levelled down after all has been finished. The young growths will soon show where the rows are; but as many may not be able to afford so much ground to remain empty between them, a single row of Spinach, Lettuce, or any close-growing crop may be run between each row of Asparagus. This may be done for two or three years after planting, and then it is better to leave the Asparagus in full possession of the ground. For some time after planting, the roots will require no more attention; but as soon as weeds appear they must be destroyed with the hoe, and frequent hoeings throughout the season will keep the ground clean and open. Somehow or other Asparagus beds or plantations are always inclined to become very dirty and weedy; it adds much to the wellbeing of the plant, therefore, if the weeds are never allowed to make any headway. As the situation of the Asparagus plantation should always be open, the young stems the first and second years may probably be blown over: when they are seen to go in this way, a stake about 2 feet high should be put to each, and one or two ties will keep them secure. Each season as the canes ripen and wither they should be cut over. A small handful of salt shaken round each plant, and then a light covering of manure, should be placed over all. About the end of March, when the heads are beginning to push up, the manure may either be cleared off or left on. We generally leave it on, and another handful of salt is thrown over each plant as growth is commencing. The same dressing may be given them when cutting the produce ceases. No manure is better than salt for Asparagus, and the applications of it we have named, and the covering of manure given in autumn, will keep any plantation in good bearing condition for many years. We have cut heads from Asparagus when the roots were only two years old, had good stems from it at three years, and a full crop the fourth season. When to cease cutting should be regulated by situation and climate. In late sunless districts, late cutting may prevent the crowns from developing fully and maturing thoroughly in autumn, and this oft repeated will soon cause degeneracy. Here we usually do not cut long after the Peas come in, which is early in June. With regard to forcing Aspara-

gus, little need be said at the present time ; but by way of preparing for this, I may say that well-grown roots will always yield freely to forcing from the end of October onward. J. MUIR.

MARGAM.



## GREENHOUSE PLANTS.

### NO. III.—ERIOSTEMONS.

A GENUS of evergreen dwarf shrubs, natives of Australia, producing their flowers in great profusion in this country during the spring and summer months. All the species in cultivation are of a free and compact habit of growth, and under good management the plants retain a neat shape, and continue in vigorous health for several years. The flowers of all the species that I am acquainted with are white or pinkish-white in colour, and spring from the axils of the leaves on the previous year's growth. The individual flowers are not large, but the profuse manner in which they are produced on healthy plants compensates for their want of size individually, and renders the plants when in bloom objects of much beauty. The flowering season of the various species extends from February to September ; and plants of particular species keep up a constant succession of flowers for at least two months from the time the first blooms expand on the plants.

Amongst the first to open their flowers in early spring are *E. scaber* and *E. pulchellus*. Both these species are extremely free-flowering. *E. cuspidatus* is the latest to flower. As a rule, this species does not commence flowering before the end of April or beginning of May. It and *E. buxifolius* are of a more vigorous habit of growth than most of the other species, hence they are employed as stocks on which to graft the less vigorous kinds.

As plants for greenhouse and conservatory decoration during spring and early summer, *Eriostemons* are deserving of all the attention that can be given them, and when large enough, and in good condition, they are amongst the best of exhibition plants. Their symmetrical style of growth and profuse flowering qualities, combined with the length of time the flowers retain their freshness and beauty on the plants, render them highly suitable subjects for the purpose of the plant-exhibitor. Like some other genera of New Holland plants, *Eriostemons* have been partially neglected in recent years, both for the purpose of home-decoration, and as exhibition plants. I am of opinion, however, that at present a desire is becoming prevalent amongst gardeners generally, to give more attention to the culture of the class of plants indicated than they have been doing for several years past ; and the desire is in the right direction, and should be encouraged.

The quickest, and, all things considered, the cheapest way to get a stock of the plants under consideration, is to procure them from a nursery. Nice little healthy plants, in a flowering state, can be pur-

chased for about 5s. each. When they arrive from the nursery they should be in a healthy condition—if not, the purchaser should return them at once. The reason why I advise this is, that these plants, when through any cause they get into an unhealthy state, seldom become healthy again; and therefore healthy plants only should be selected to start with.

The compost which I have found *Eriostemons* to thrive best in consists of sandy loam, and bits, about the size of large peas, of broken sandstone, in the proportion of three parts in bulk of the former to one part of the latter. It is very necessary to supply them with ample drainage at the roots. It matters not how careful the cultivator may be in attending to their wants in other ways, if he neglects to provide a ready exit for superabundant water from the roots of the plants, the result in the end will be disappointing to him.

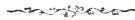
If the drainage keep in good order, the plants will not require repotting oftener than once in two years, and the time to do so is soon after they cease flowering. When they are being repotted, the fresh compost should be made firm about the balls containing the roots, and the latter disturbed as little as possible during the process. After being repotted, they should be placed where they can be shaded from direct sunshine, and where they will not be subjected to draughts of dry air for a week or two. A cold pit or frame is a suitable place for them at this time; and indeed a structure of this kind is as good a place as any in which to grow these plants during the summer months. The principal things to be attended to while they are in the cold pit or frame are, to see that they are supplied with water at the roots on all occasions when it is necessary, and that, after the first two weeks, a supply of fresh air is continually admitted to the structure. About the end of September the plants should be removed from the frame or pit to the greenhouse, and placed in as airy a position and as near to the glass as circumstances will admit of. During the winter season the cultivator must be careful in the matter of applying water to the roots, as an over-supply is fatal to the health of these plants: on the other hand, the soil about their roots must not be allowed to become dust-dry. The plants should therefore be carefully examined at short intervals, and the condition of the soil at the time, as regards moisture, should determine whether water at the roots is required or not. Of course the decision in this matter rests with the cultivator; and the more correct his conclusions are on this point, the more success will attend his efforts in the culture of these and other plants under his care.

In the matter of staking and training, *Eriostemons* require little labour. A central stake to each plant is generally all that is needed. In some instances it may be desirable to employ more than one stake—the fewer, however, the better; and whatever number is used, they should be arranged so that they will be as little seen as possible.

As regards insects, Eriostemons are not exempt from them. Greenfly, thrips, and brown and white scale will attack these plants. The two first are not difficult to keep in subjection, as strong fumes of tobacco kills them ; and as the plants are not easily injured by tobacco-fumes, the latter can be made strong enough to vanquish the enemy. The scale is not so easily got rid of if it once gets thoroughly established on large plants. With the aid of paraffin-oil, however, mixed with water, in the proportion of a wine-glassful of the former to a gallon of the latter, scale can be prevented from injuriously affecting the plants. The best time to apply paraffin-oil as an insecticide to all plants is when they are in the least active state of growth. If I am not mistaken, it was the editor of this journal who first brought paraffin-oil as an insecticide under public notice, and since then I have been using it as such. I find, however, that much caution is required in applying it to all plants, and especially to soft-wooded subjects, when in a growing condition.

According to Mr Dewar's remarks on paraffin-oil as an insecticide, in the February issue of the 'Gardener,' he has had much success with it as a destroyer of mealy-bug, and I have found it of great service in the same direction ; but I cannot say that our "plants of Ixoras, Crotons, Gardenias, Hoyas, and others, have been thoroughly divested of the enemy by this means." And I am of opinion that nothing short of "utter destruction of the plants" would entirely rid large plants of Gardenias and Ixoras of mealy-bug, when it has got thoroughly established on the plants.

T. HAMMOND.



#### ANNUALS.

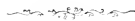
THERE is one feature of present-day flower-gardening which we are not so thankful for as we ought to be, and that is, that there is no necessity for any one to attempt to follow the style of his neighbour, as he was obliged to do a dozen or twenty years ago, at the risk of being set down as altogether behind the times if he failed to do so. Nowadays, any one who has a liking for strong colours can satiate his appetite for these ; or, if bedding in greys and greens is his *penchant*, he can satisfy his mental liking for these. He can go in for beds of Cannas, Castor-oil plants, Wigandias, and other sub-tropical subjects ; or he may more cheaply get fine-foliage effect by planting Rhubarb and Globe Artichokes. He may pin his gardening creed to Daffodils and "fair Lilies," or he may broaden the borders of his likings by taking in one and all of these ; and even then he may with some advantage add to the number of his styles of flower-gardening by adding the very easiest of flowers to cultivate—Annuals—without in any degree violating public taste. Now and again we come across a bed or two of common hardy Annuals in conjunction with other flowering plants ;



and some of them have long been admitted and recognised as standard bedding-plants; but the list may be largely increased, even at the present day, when so many fresh flowers have been added to our gardens. There are instances where bedding is entirely carried out with Annuals; but these cases are of limited number and not generally known, though those who have seen such gardens at the height of their beauty agree in estimating their effect as bedders. But setting aside the suitability of many Annuals for effect in masses, a selection of good sorts should be a feature in every well-stored garden. Their cultivation is of the simplest. Half-hardy Annuals, also, are amenable to a much simpler mode of cultivation than is commonly practised. The following list of hardy and half-hardy Annuals, all of which may be sown any time during the first half of the present month, is made up of sorts which are certain to please when properly managed. The under-named form the selection of hardy Annuals: Double Dwarf Scabious, *Collinsia bicolor*, *Clarkia integripetala limbata*, *Clintonia elegans*, *Convolvulus minor* (dark-purple var.), *Delphinium cardiopetulum*, *Gilia tricolor*, *Godetia*, Lady Albemarle, *Leptosiphon roseus*, *Limnanthus Douglasi*, *Linum grandiflorum rubrum*, Love-lies-bleeding, Dwarf Blue Lupine, Mignonette, *Nasturtium Ruby King*, *Nemophila insignis*, Double White Pyrethrum, *Saponaria calabrica* and white variety, Blue Stonecrop, Venus's Looking-glass, *Oxalis tropæoloides*, Sweet Peas, and *Viscaria cardinalis*. If the following conditions are followed out, these will not cease flowering until the approach of winter stops them. They require, as a primary necessity, a deeply-worked and rich soil: though Annuals are short-lived, they require high living for that short period to secure continued success till the last. Thin sowing is another item of importance, with small seeds especially—the percentage of seeds sown over what is necessary is something enormous. Next to a rich soil, room for the plants to grow is of most importance; and if a swarm of seedlings are allowed to fight out amongst themselves the battle of the fittest, all preparation of the soil will have been thrown away. This applies to all the plants named—Sweet Peas with the rest. Mignonette is a common instance of the evil effects of thick sowing. In such circumstances wiry, little, single-stemmed plants are produced, which flower and ripen their tiny crop of seed as if they were in a hurry to get the business done, and then the Mignonette-bed is a blank, or worse than a blank, for the remainder of the season. But in rich soil and a thinly-seeded bed, plants 18 inches to 2 feet through will be produced before they have stopped growing, and very little urgency shown as to the production of a crop or seed. This tendency of Annuals to run to seed makes it a necessity, in dry seasons more especially, to go over the plants and gather off all seed-pods at least once in the season. This is not such a formidable undertaking as it may appear, and it adds in a very material degree to the continued prolificness of the plants.

Of half-hardy Annuals, which do better in our northern climate raised in frames than by any other means, the following sorts are all well worth growing as decorative plants: Dwarf Chrysanthemum Asters, Dwarf Helichrysums, African Marigolds, Phlox Drummondii atrococcinea, Dwarf Mimulus, Dianthus Heddegi and double Indian Pinks, common Sunflowers. Antirrhinums and *Eurotia Lamarckiana* may be treated in the same manner with the others. These, like the hardy Annuals named, will, under good cultivation, keep on flowering as late in the year as ordinary bedding-plants. The way I treat them is to set apart a sufficient number of frame lights; to prepare the bed of Mushroom-dung and light soil in equal proportions; to sow the seeds very thinly over the entire surface of the beds, covering slightly with some fine soil, which is patted down gently with the back of a spade. Then the sashes are put on, and the whole covered with mats until the seedlings appear. The mats keep everything underneath them in quite equable conditions, and save all bother. As the seedlings progress and the weather gets warmer, more and more ventilation will be required, until the sashes are removed altogether. If sown during the first half of this month, in the end of May they will be ready for removal into their flowering places. Choose a dull day. Make a mixture of soil and water, and dip the roots of the plants in this, a handful of plants at a time, and plant them with a common dibber, giving each plenty of room to grow. If the weather breaks out strong the next day or two succeeding the one on which the plants are set out, they may require watering. I find in the hottest weather that one watering is sufficient, only it is better to hoe the ground the next morning. In moderately sunny weather, the plants take care of themselves without being watered.

R. P. BROTHERSTON.



#### MIGNONETTE-CULTURE FOR AUTUMN, WINTER, AND SPRING.

IN nearly every garden, large or small, Mignonette is found during the summer; and this is scarcely to be wondered at, as it is as worthy of a place as the majority of sweet-scented flowers. During autumn, winter, and spring the case is very different, and it is only found in a small percentage of gardens where sweet flowers for decoration and cutting are in demand.

The cultivation of Mignonette is comparatively easy, yet care and particular attention must be bestowed upon it if success is expected. Any neglect sufficient to cause a check while growing brings the shoots into a hardened and woody condition, and success afterwards can scarcely be looked for. To grow plants trained upon umbrella and pyramidal trellises for next autumn and winter blooming, a start must be made during the present month. It is a mistake to sow too early, and many cultivators fail on this account. If plants are raised

early and pushed forward rapidly, they frequently go off in early autumn. Besides, their growth—which should always be strong, vigorous, and sturdy—when made early entirely by artificial aid, with an insufficient quantity of air, is weak and puny, and constantly showing flower.

The varieties best adapted for forcing are Parson's Tree Mignonette and Miles's Hybrid Spiral. The latter is a very excellent variety, and becoming a general favourite. It is more fragrant than the former, and produces larger spikes when a good strain can be obtained—(this is rather difficult, as there are already inferior forms of it in the market). When true, it is unquestionably the best for growing in 6-inch pots through the winter. For spring use I have always found the common garden variety valuable.

The seed should be sown in 2-inch pots, which should be clean and well-drained, as these are important items in the culture of Mignonette. The roots cling more to the pots than any plants I am acquainted with, "Orchids excepted," if not thoroughly clean, and renders turning them out of their pots difficult without pulling off a quantity of their roots. The pots should be filled with a light rich compost, and a few seeds sown in the centre of each, slightly covered with light soil. It is a good plan to sow double the quantity of pots required, as many of the plants may turn out inferior. Those with small leaves should be destroyed, as they never produce good spikes of bloom. After the seeds are sown and watered, they should be placed in a temperature of 50° to 55° at night, when they will soon germinate. A pit with a hot-water pipe round it is the place for them, where they can be close to the glass, and receive plenty of air on all favourable occasions,—at the same time cold draughts must be avoided. The pots should be plunged if possible in cocoa-nut fibre or any moisture-holding material. Failing this, they can be started in a vinery or Peach-house, but must be placed where they can receive plenty of light, and the small pots can be plunged into a box. When the seedlings are up they are thinned out to two or three, which are allowed to grow together until the best and most promising plant can be determined upon, which alone should be retained. When about 2 inches high they should be supported with small stakes. By sowing late the plants can be pushed on with all possible speed conducive to their wellbeing. Quick growth is essential to healthy plants and large spikes of flowers. When the small pots contain a mass of fine white healthy roots, the plants should be transferred into 4-inch pots. The compost should consist of rich fibry loam, a portion of thoroughly rotten manure, leaf-mould, a little soot, and sufficient coarse sand to render the whole porous. After the two first pottings the leaf-soil can be dispensed with: it is good for the young plants, causing them to make a quick growth. In potting, the soil should be pressed firmly into the pots, and the plants shaded from bright sun until they com-

mence to root into the new soil. When the plants are from 6 to 9 inches high, it must be decided whether they are to be trained pyramids or on umbrella trellises, or staked for bushes, or any shape that suits the taste or requirements of different cultivators. Those that have the greatest inclination to branch should be selected for pyramids, while those of upright growth will be most suitable for the umbrella trellises; and as soon as side shoots are produced on the latter, they should be removed until the desired height is attained, and then be allowed to branch and cover the trellis allotted to them. Care must be taken not to neglect the operation of potting, which must be attended to from time to time as they fill their pots with roots, giving them a shift of 2 inches each time until placed in 9- and 10-inch pots, which is large enough for the final shifts. On each occasion the frame should be kept close for a time, and the plants well syringed two or three times a-day. They must have more air as the season advances, and artificial heat gradually dispensed with. When well hardened they should occupy a cold frame, with a northern aspect if possible, where the direct rays of the sun will not strike upon them. If the hot sun strikes upon the frame, shading must be resorted to, but not so as to exclude light, which is very important. Mignonette likes a cool moist bottom, and the pots should stand upon ashes. If placed in a favourable position, the young growths will develop with great rapidity. When transferred into their flowering-pots, the various trellises can be placed to the plants, and the necessary training commenced at once. The flowers must be removed as they appear, and more attention will be required in tying and stopping.

Watering is of the greatest importance, and must be attended to with care and discretion. If there is any secret in the production of good Mignonette, it is in a judicious use of the water-pot. I have invariably observed that if watering Mignonette has been intrusted to one person over the greater portion of the season, and then is transferred to another, a number of plants generally go wrong, in spite of all directions. They should never become saturated, or, on the other hand, too dry; a medium condition should be aimed at. If allowed to suffer for want of water, the foliage soon presents a sickly appearance, the wood becomes hard, and the progress of the plants is brought to a standstill. When the pots are well filled with roots, weak stimulants may be given occasionally. Clear soot-water acts quickly upon the plants, and the foliage presents a fine dark-green hue when it is used. By all means, strong doses of liquid manure must be avoided, or failure is inevitable.

Referring again to the summer treatment, syringing, watering, picking off the flowers, and training, must be attended to. Close training should be avoided, as the plants do not look so natural, nor are their spikes of flower so large and shown to such advantage. They should have abundance of air night and day during summer, and remain in

the pit until the nights commence being cold—towards the end of September or October. Some cultivators place the plants outside during summer, but I have been more successful by keeping them in the frame. When outside, they are frequently exposed to such extremes—either saturated with rain, or at other times too dry; and the hot dry air playing about them is prejudicial to their proper development.

The plants, when removed from the cold frame, must be placed in a light airy position in a house where frost can be excluded. The picking off the flowers must be discontinued, according to the time the plants are wanted to bloom, and be allowed time so as to develop them under cool treatment. When brought into bloom in heat, the flowers are not nearly so fragrant; and when the atmosphere is rather close in winter, the Mignonette soon grows weakly, and the flowers produced are small. A temperature of 45° is ample until the flowers are formed, when a little more heat could be given, if circumstances compel them to be pushed forward faster to maintain the supply. A succession can be maintained for a long time by trained plants, if care is exercised in removing the flowers from some plants later than others. Those that produce their flowers early should, when flowering is over, be taken care of, and again tied closely down, when they will produce flowers again during February. It is a good plan to make a second sowing about the end of May or early in June for training on umbrella trellises, which is allowed to come forward gradually, and housed during winter in a cool vinery, or any light, suitable place. These plants, under real cool treatment, will cover their trellises by the month of February, and produce magnificent spikes of flower after that date. This second sowing for trained plants is scarcely necessary if plants only are required for conservatory decoration and cutting. But when trained plants are required for room decoration, many of them are considerably injured, and never recover sufficiently to be worth keeping for their second supply of flowers, consequently a second sowing has to be resorted to to maintain the supply of trained plants. The supply here has to be maintained from the beginning of November until the first of May, and for cutting only after that date until it can be gathered outside. Quantities are grown in 6-inch pots, and the first sowing is made about the middle of July, and treated as described for trained plants,—only six or seven plants are allowed to remain in each pot and never stopped. The seed is sown in the 6-inch pot. The variety is Miles's Hybrid Spiral, which commences to flower in November, and continues for some time. When the first flowers are removed, the plants are kept, and soon produce many more from the side shoots, which, although not quite so fine, are useful for cutting. These are succeeded by other batches sown about the middle of August, again early in September, and towards the end of the month. These supply flowers as long as they are required. As mentioned above, the common garden variety is used for the last two sowings. The last sowing is kept through the winter

in cool airy positions close to the glass. In fact they are kept here on the shelves in our late Peach-houses, which are used for Strawberries in their season.

The soil should be pressed firmly into the pots. The plants with me grow dwarfer, and produce better spikes of flower, than when potted lightly.

If the supply is likely to run short, we sow early in a cold frame, to come in between our pot-plants and those outside. The earliest outdoors here in every case are what are termed "self-sown plants."

WM. BARDNEY.



## HINTS FOR AMATEURS.

### GREENHOUSE AND CONSERVATORY.

WITH useful selections of flowering-plants, at this season of the year, show-houses, we think, are more interesting than at any other period. What are known as spring flowers always create a charm: and for cutting purposes good things are always abundant. The kinds need hardly be mentioned, as those of well-known popularity have been noted in past months. Abundance can be had with very little forcing, so that proprietors with a few pits, or a glass shed or two, may have plenty of floral beauty around them. The numerous kinds of hardy flowers which can be lifted to make a display are very attainable, and look well anywhere. While one has plenty of flowers for the present, it is well to give a reminder that the display at the end of the season, and early part of next, depends on steps being taken now to secure a harvest of floral beauty. Azaleas and Camellias are always telling, and much valued. To get their flower-buds set early, and the plants to flower at the desired time, they should be in a mild moist temperature (shutting up early with sun-heat), kept clean, carefully watered, kept free from worms at the roots, in healthy soil, with free drainage, and shaded from bright sunshine: a vinery, moderately forced, or Peach-house at work, suits well till shade is too much. Then a pit shaded judiciously is a mode of treatment congenial to these plants, and when the buds are prominent they may be aired more freely, and placed outside (choosing a dull day) in June, behind a thick hedge or wall. But in structures where they are planted out, the preparation for early display is much more simple, and the plants do better.

A similar treatment suits early-flowering Heaths till their wood has a good start, and after this they must not be coddled. Epacris and Cytisus may now be pressed into growth for winter flowering. No greenhouse plant should suffer for want of pot-room. Over-potting is a great mistake with any plants in pots, and makes them more difficult to water. Pot firm, encasing the ball of roots all over with the new soil. Most hard-wood plants require abundance of air when

growth is active, plenty of water, and no surface-dribbling. Soil suitable for most of them is peat, sand, and charcoal. If the peat is fairly mixed with sand it is generally enough: a little pure maiden loam with some of the kinds is advantageous. To judge of soils, it is well to examine what the plants are growing in. If they have done well, get soil of the same kind for them. Plants of Liliiums, Fuchsias, Pelargoniums, Heliotropes, Double Petunias, may now be on the way for summer flowers; and seed may be sown of Balsam, Cockscombs, (especially of the feathered Cockscombs), and Globe Amaranthus, for decorating structures. The latter does well with gentle bottom-heat, kept well to the light, and air increased as the plants advance in growth. Stage Pelargoniums require watching to keep them free from aphid. Stake them out, keeping the "crutches" out of sight as much as possible: use no more than are absolutely necessary. Give clear manure-water to those which have plenty of feeders to consume it. Surfacing of turfy loam, mixed with a little rotten cow-manure, may be of much service to all the Pelargonium class with pots full of roots. Calceolarias, of the shrubby kinds, which have been wintered in small pots, may have a liberal shift into rich soil before they begin flowering. Liliiums, of kinds, may be staked, surfaced, and got ready for flowering. In the show-house, climbers ought to be regulated—not trimmed or tied out of natural outline, but to prevent matting or undue monopolising of space. Good soakings of water may be required by plants growing in the conservatory borders. Specimens should stand clear of each other; and clean surfaces of every description should be the rule. Plants going freely into growth should be kept clear of their old decaying foliage. Insects may be kept off by syringing quassia-water over the stock of plants. The syringe may be used lightly with clean rain-water, morning and evening, before and after the sun is powerful on them.

Fire-heat may be used to keep out frost, if it should unfortunately visit us; and if a damp period should occur, the heating apparatus may be used to keep the house healthy, but we never would use fire-heat if we could avoid it.

Plants which are going out of flower should be carefully placed out of the reach of frost, and hardened gradually for turning out in their summer quarters. This applies to Roses, Cytisus, Rhododendrons, Kalmias, Lilacs, Deutzias, Spiræas, and suchlike. Primulas and Cinerarias may be saved if they are worth it. A few named kinds of the latter, of distinctive merit, may be useful to get good seed from, and also cut into pieces to form plants. Sow seed of these and Primulas, also of Begonias, and grow Fuchsias and Coleus from cuttings.

#### STOVE.

If the stock of plants in this structure have been overhauled, roots placed in healthy soil, and well drained, they should now be in free

growth. Abundance of atmospheric moisture and increased heat will cause a healthy leafage ; and those which are to flower will be in condition to do their part well : starvelings never give satisfaction. Baskets with air plants must have the syringe well applied ; shade judiciously, but overdoing it is a slow system of destruction. Achimenes, Gesnerias, Gloxinias, and Begonias, for summer and autumn blooming, may be on the way. Where means are plentiful, these can be had in flower long before this. A pit separate from the stove to bring such things forward is very essential ; indeed, where all have to be huddled into one structure, justice to the large bulk of the plants is impossible. Fine-foliaged plants must not be syringed with dirty water. In districts where lime abounds, it is almost impossible to get clean handsome specimens. Clean rain-water is best for all purposes, and should be used of the same temperature as the plants are growing in.

Fire-heat, about 65° at night, 70° by day ; and when sun is bright the heat may rise to 80° with safety. Shut up in good time in the afternoon, dewing all over : a chink of air on at night when structures are close is advantageous. Crowding is a general evil, and where such is the case, one may say farewell to handsome specimens.

#### FLOWER-GARDEN.

Alterations and renovations may now close as soon as possible. Flower-gardens should now assume a dressy appearance. Mowing, rolling, sweeping, clipping, and other operations should have due attention. Any attempt at display is labour lost where untidiness prevails. Better a small patch of well-kept garden than acres of rough unkept ground. Grass should not be kept at all except it can be well done. Grass-seeds may be sown to improve lawns. Box may be clipped : it is not too late to plant it if a soaking of water is given afterwards ; but dribbling outside is as great an evil as it is an apology for watering inside. Tulips and other bulbs will now be flowering well. If they are a speciality, they may be protected with canvas. All spring flowering-plants should be kept in good trim. A display of choice flowers at this season is no mean item in a garden, whether large or small. Sow Mignonette and Sweet Peas in the borders, where they are to flower. Sow in a gentle warmth, Stocks, Asters, Marigolds, and others, to be afterwards pricked out under protection, and planted when all danger of frost is past. Hardy bedding-plants, where ground is ready, may be planted according to taste. Keep in view what tender things are to be associated with them. Other bedders may be kept on growing steadily, increasing air as the plants are gaining vigour. Exposing the stock of plants to drought and heat is a means of getting a weak stock, and many losses must be sustained.

Calceolarias may be planted into frames, turf-pits, or other make-shift structures (good substantial pits are always the cheapest structures in the end), using good turfy loam (a little leaf-mould will do no harm) ; they can then be planted out in May. If kept hardy by light and air, they are not crippled if exposed to a little frost. Pansies, Stocks which have been wintered in pots, Carnations, Pinks, Violas, and other hardy kinds, may be planted in well-prepared rich soil, free from stagnant water. Dahlias may be potted on, and if large and healthy, they will flower early in August (we have seen a tolerable show of them early in July). Any herbaceous plants, either from seed, cuttings,



or divisions, may be planted in their flowering quarters. These useful plants either should be done well, or not grown at all. The amount of work some require is considerable; but there are others, again, which need almost no attention after being well planted.

Auriculas, Carnations, Picotees, and similar plants to flower in pots, should not be kept coddled. Fill the lights up back and front when weather is wet, and when dry take them off altogether. Surface them with rich loam and rotten cow-manure. Worms and bad drainage will soon ruin the stock, should such exist. A shady but airy position suits them well. Chrysanthemums should be grown with plenty of air and light, and not allowed to become pot-bound. These easily-grown plants are often ruined by coddling them, and undue stopping of the shoots.

#### HARDY FRUITS.

It is expected, as a matter of course, that all training, staking, and other requirements of fruit-trees have been attended to. Rather than leave undone such work, do it "late" in preference to "never." Gooseberries, Currants, and all bush-fruit should be mulched if practicable. Caterpillars are often supposed to be cleared off and the trees saved for the season, by taking a quantity of the soil away from, say, 3 or 4 feet round the collars of the bushes, and replacing it with old tan, good manure, or something else. We last season did this, and mulched well with cow-manure, but never had such attacks of aphid and caterpillar before; and the attacks were repeated till late in the season. Mulching of Raspberries is a good practice, especially where soil is light and exposed to the south. Disbudding may now have due attention: take off all growing outwards first, and go over the trees at intervals of a week in preference to clearing off all at once. Sudden checks mean soliciting the company of aphid and other vermin. Young trees may require a soaking of water, if soil is light and dry; but seldom is this the case during April. If they are sending out unequal shoots, pinch the tops out of the strong ones to aid the weakly growths. Now is the time when dying off is seen among Apricots, and with gross free-growing trees it is generally more common. We have more than once referred to wholesale dying of branches. A few weeks ago we visited a number of gardens of fame (among the amateur class), and all had more or less been under the lash of Apricot disease—whole walls cleared to the stumps of the trees; indeed scarcely an Apricot was to be seen, and the more thrifty growers had changed their tactics, and, giving up Apricot and Peach growing, had planted in their stead Cordon Pears and Plums; others had filled the borders with Pyramid Pears, and left the wall to keep out prowlers (plenty of them being in the adjacent towns). The soil, we observed, was light and gritty, evidently spongy and loose—the very opposite of what we have examined where growers in Oxfordshire have gained their fame for fine Apricots. If lime is deficient in the soil, it may be added with advantage. It is singular that Apricots are often seen doing well on cold exposed positions, while in favoured districts the tantalising disease is often worst; but we would advise the "afflicted" to give up the growing of these stone-fruits, and try Pears, Morello Cherries, and Plums in their stead; and enough Apricots might be purchased with the overplus of the Pears, if sold in a proper market. If aphid appears among Peaches, Plums, or Cherries, which it often does, "Fir-tree oil" may be found a simple remedy, as prevention and cure. Tobacco-powder, mixed in soft-soap water, syringed over the tree before the flowers and leaf-buds burst, might prove a friend in need.

M. T.

## THE FRUIT - GARDEN.

NO. IV.—THE GRAPE VINE (*continued*).

SEEING that you have a good aspect, it would not be advisable to start your Vines into growth too early. March is a good time. Do not run up a great heat all of a sudden whenever you see the buds push.  $50^{\circ}$  by night, should never be exceeded by means of fire-heat ; nor yet  $60^{\circ}$  by day, until the shoots are pushed 6 or 8 inches. Of course, if the sun shines brightly, the right thing is to allow the heat to run up to  $70^{\circ}$ , or even  $80^{\circ}$ . We need not say anything more on this head, as our directions for the first year will also do for the second, in every particular except one, and that is, that instead of allowing the lateral growths to run out, they should be stopped, and kept stopped at one joint. The reason for this is, that when the laterals are allowed to run too far out, the main buds (which are to produce fruit next year) remain flat and undeveloped ; whereas, when the lateral growth is restricted, the buds plump up and become round. Now this is a point of some importance, and the best gardeners are quite unanimous on it ; although some few allege that the more growth that is made, and the more leaves that are allowed to develop, the greater is the strength of the Vines. This is more apparent than real ; for when the growth is restricted, the leaves swell to a size and assume a substance unapproached by the leaves of Vines which are unrestrained in their growth ; and experience teaches me that quality in leaves, as in everything else, is of greater importance than mere quantity without it. We may see here that it is the leaves of the plants which do the work, and therefore they must be kept in health, or otherwise the plants will fail.

After the leaves have fallen, pruning must be again done, and this simply consists in cutting the rods back to about 5 feet from where they were cut last year. This will leave room for six pairs of shoots, or spurs as they are termed, for we advise your following the spur system, as it is called. The spurs should be at least 15 inches apart, and as evenly distributed along the rods as possible. To secure this, it is well to slice off the buds which are not wanted with a sharp knife. Besides the buds left for spurs or side growths, one must be left for a leader, of course. An inch of wood should always be left beyond the buds when they are pruned, otherwise they may be weakened. After scrubbing the rods carefully with soapy water, the cuts should be dressed as advised for the first year, then remove any loose soil on the surface of the border and replace it with fresh soil ; and over all a fresh mulching of manure, in the same way as formerly directed, and you are again ready for a start.

Before there are any signs of the buds moving, the rods should be bent over, along the side of the front wall, so that their points may be on a level with the floor. The object of this is, to cause all the

buds to break (grow) together, and so be of uniform strength, as those which are uppermost are apt to start first and absorb any sap which may be ready for use, and thus cause the lower ends to break weakly. For this reason, also, it is not wise to try to get the Vines to start too many spurs. In regard to temperatures and time of starting, the advice given before applies here. We ought to say, however, that it is good economy to aid the plants with artificial heat in the early spring months, so that the fruit and wood may have a chance of ripening early. We do not like the practice of keeping up the heat by means of the fire-shovel late in autumn. The results are never equal. Aid them with fire-heat in spring, for the ripening process does not go on satisfactorily without plenty of sun, although growth may be promoted to a great extent without it.

Instead of tying your rods to the trellis (which should be at least 16 inches from the glass) as before, we advise you to hang them by means of stout cord, 8 or 10 inches further down. The reason for this is, that by so doing you will have more room for foliage, and it is a good thing to allow the Vines to carry as much foliage as possible, *without overcrowding*. The common practice is to stop the shoots at one, or at most two, leaves beyond the bunch. When a bunch is left to every spur this is too little leaf-power to bring the bunches up to perfection, and hence many only take a bunch from every alternate spur. You cannot afford to do this, so you ought to hang the rods below the trellis, and so give the branches a chance to spread *upwards* as well as *outwards*, and room to carry three, four, five, or six leaves beyond the fruit, without overcrowding. Whenever the shoots are stopped, all subsequent attempts at growth should be pinched off at the first leaf.

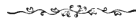
Each growth will produce a bunch, and maybe two. Put off all except one on each growth, otherwise the Vines will be over-cropped—not by any means an uncommon occurrence. After the berries have become the size of peas they must be thinned out. This will go against the grain, for it looks, to the beginner, like throwing away part of the crop. It is not so, however, for the bunches will not be any lighter, ultimately, for having two-thirds of the berries cut out, and the quality will be much enhanced. When thinning, it should be borne in mind that ultimately the berries will be about the size of marbles, and room should be left for them swelling to that size. Generally speaking, two-thirds will require cutting out, but practice and experience of varieties alone can determine what is the exact quantity to remove. Only the best berries should be left, and an eye should be kept to having symmetrical bunches. The uppermost limbs of large branches—shoulders they are called—should be suspended (so that their weight may be removed from the lower parts of the branch) by means of a thin shred of tying material.

After the fruit is ripe the house should be kept rather cooler and drier, and less water on the borders will suffice. Should it be necessary

to keep the fruit for a few weeks, the air of the house should be kept dry, even although fire-heat should require to be used. Any berries that show the least signs of decay should be removed immediately they are seen, or they will very soon contaminate the whole bunch. As to temperature, air-giving, and care of the Vine's health generally, the treatment should just be as before advised. By the time the Vines are bearing to the top of the house, the border will be pretty well filled with roots, and greater care will need to be taken that they do not become dry. Liquid manure may then be given with great advantage when the fruit is fairly set. Cow-urine, house-sewage, or manure-drainings of any kind may be given, but always well diluted. When none of these are to be had, a sprinkling of guano may be put over the borders and watered in, which will serve the same purpose.

Pruning will have again to be done after the leaves are shed, and this is the last lesson in pruning the Vine which we will require to give you. The main stem will need to be cut back again to within  $3\frac{1}{2}$  or 4 feet from where it was cut the year before. Three pairs of spurs, in addition to last year's ones, will be all that you will be able to start satisfactorily, and more should not be attempted. Last season's shoots should be cut back to one eye, unless the one nearest the old wood is very small; in that case the second bud should be chosen. In all other necessary particulars, the operations are just the same as stated before. Should difficulties arise, you must just apply to some practical man, who will, we doubt not, enlighten you; but we think a careful study of the foregoing, coupled with your own intelligence, will render you independent of anybody. Without any direction of ours you might have produced good Grapes; but we feel convinced that you will grow them better, and more of them, and have greater confidence in your proceedings, than without such help. The person before referred to attributes his success to the instructions herein contained, and we hope many others may derive similar benefit therefrom. J. H.

*(To be continued.)*



## NOTES ON DECORATIVE GREENHOUSE PLANTS.

### THE BALSAM.

AMONG plants raised annually from seed, for greenhouse or conservatory decoration, the Balsam takes a prominent place as being one of the showiest grown for that purpose. True, it is not a plant very well suited for supplying cut-flowers, neither is it very well adapted for dinner-table work, but it suits very well for mixing among foliage and other plants for general house decoration; and during the time it is in flower, is one of the most effective plants for decorating the conservatory. Few plants will stand a greater degree of hard usage with impunity than the Balsam; or, on the other hand, better repay

one for care and attention in its cultivation. Formerly it used to take a somewhat prominent position in our horticultural exhibitions, but for some years it seems to have been quite overlooked: we think this is a pity, as it is just one of those plants most suitable for amateurs and those having small means or limited accommodation for storing plants in winter, and who are yet desirous of having a few flowering-plants, at a small cost, during summer.

It is not always easy to get a really good strain of Balsam seed. It is therefore best for growers to try and save their own seed, when a good strain is obtained, which is very easily done, as the Balsam seeds very freely. The best flowers should alone be reserved for seed-bearing. If kept from moulding, the seed will keep for an almost indefinite time. (It is really astonishing how long some kinds of seed will retain their powers of germinating, if kept under proper conditions. As an instance, last season some Lobelia seed which I bought failed to come up, and I sowed a second time with seed that had been saved in 1877, and I may say that it came up as thickly as Lobelia seed usually does, the percentage being seemingly quite as great as that obtained from fresh seed. It is a well-known fact that seeds lie dormant in the earth for an indefinite time, until the proper conditions are presented to call them into active life. How often has this been exemplified in the making of railway cuttings and embankments, where soil is exposed to the action of light and air which may not have been so exposed for centuries, and yet in a short time they have become covered with verdure, and plants have been known to spring into being which before had not existed in that locality!)

Seed of the Balsam should be sown during the month of February, or early in March, according to the time they may be wanted to flower. Sow in a properly drained pan in leaf-mould and sand, two-thirds of the former to one-third of the latter: cover the seeds lightly, and set the pan in a warm pit or vinery. Cover the pan with a piece of glass until the seed begins to vegetate; but as soon as the seedlings appear, remove the glass and set the pan as close up to the light as may be convenient, in order that the young seedlings may not get drawn up, and weakly in consequence. When they have made two pairs of leaves, pot them off singly in 3-inch pots, as deep as convenient; but in pressing the soil gently, take care not to bruise the stems of the young plants, which at this stage are very tender, else they may damp off altogether. They should still be kept as close up to the glass as possible in order to keep them dwarf and stubby. They will get drawn up a little in spite of all one can do, but this can be rectified at the next potting, which should be as soon as the small pots are well filled with roots; and now they should be shifted into 7-inch or 8-inch pots, using roughish loam, leaf-mould, and sand, with a layer of old manure over the crocks: set the ball of the plant on the top of the manure, and then fill in the soil, pressing it moderately firm about the ball. A good

portion of the stem will thus be buried, which will push out roots, and thus the plant be made dwarfer in habit. If desirable, they may have another shift later on, into 10-inch pots, but this only where larger plants are wanted. The plants will now be pushing out the lateral growths, which should be trained out, either by tying them down to a wire passing round below the rim of the pot, which is the neatest way, or else by hooked sticks pushed into the soil, with the hook passed over the shoot. Their tendency is upwards, so that even though the branches be bent down to a horizontal position, the points will again take the upward direction. The Balsam is a very gross-feeding plant, and therefore requires a good deal of water; and after the pots are filled with roots, they may receive a dose of liquid manure, about twice a-week, with great advantage to the plants. About the middle of May the plants may be transferred to a cool house or pit, always keeping them as near the glass as convenient, but away from draughts. They will begin to flower in July, and continue for a good long time. They are somewhat subject to the attacks of red-spider, but this seldom appears on plants in a healthy condition, and is rather an indication of something being wrong. It may be kept under, however, by the use of the syringe.

J. G., W.



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

### NO. IV.

At the commencement of my last paper, I incidentally remarked that in all probability we should not have sown a seed in the open before the beginning of March. That time is passed, no seeds are sown, and probably will not be for some time to come, severe frosts, snow, and rain being in the ascendant. As a consequence, still more Peas, Lettuces, Sprouts, and Cauliflowers are being grown in boxes and frames, to be transplanted as weather permits.

*Kidney Beans.*—Few early vegetables are more appreciated than these, and few are of easier culture. Those who have every facility for growing them in pots in forcing-houses, and later on in pits and frames, are not called upon to make extra exertions to forward them on warm borders. At the same time, the sooner the houses and frames are relieved the better, and on this account it is advisable to grow a few Beans as early as possible in a sheltered position. Unfortunately they are very tender, a slight frost completely crippling them. Beans, in common with other seeds, were badly harvested last season, and probably if sown early, taking into consideration the cold wet state of the soil, they will germinate badly. To secure a few pickings, of a certainty, in succession to those obtained with the assistance of a glazed frame, or a rough frame and mats, it will be

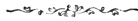
found the best practice to raise a few plants in pots, and transplant. 3-inch pots may be employed, using moderately rich soil, placing two good seeds oppositely, and near the sides of the pot. They may be placed in a warm house or frame, transferring to a shelf or a cold frame in time to prevent the plants becoming drawn, hardening off, and finally transplanting, if possible, at the foot of either a south or west wall. Early in May will be soon enough to plant, and even then they will require protection from late frosts. This protection may easily be given at any time, if a few branches of Spruce Fir, or some other evergreen, are kept in readiness. Hand-lights, as they are taken off the earliest Cauliflowers, may also be placed on a warm border, and be each filled with about eight plants in two lines: this of course will forward the Beans considerably. The seed should be sown about three weeks before the plants are required; and if only fifty plants are put out, they will yield several small and acceptable dishes.

To maintain the supply, seed may be sown on a warm border, should the ground be in good working order, about the middle of April, otherwise it is advisable to delay sowing till the end of the month, sowing again about three weeks later, also on a warm border, unless the spaces between the trenches got out for Celery are utilised for the purpose. Osborn's Forcing is the best for the earliest sowings—Canadian Wonder and Negro Longpod forming good successions. Moulding up is sufficient support for the former, but the two latter well repay staking, moulding up then being unnecessary. The soil should be moderately rich for Kidney Beans. The rows may be placed from 24 to 30 inches apart, according to the growth of the variety. On poor sandy soils, the rows of Osborns and other dwarf sorts may be placed 18 inches apart, thinning out the plants to about 5 inches. The stronger growers well repay being given plenty of room, say from 9 to 10 inches apart. All of course require to be kept clean by frequent hoeings. Watering is seldom necessary; and it is difficult to apply in sufficient quantities on a warm sloping border.

*Haricot Beans.*—Unfortunately these are not in request in many establishments. I say unfortunately, for it is a matter of regret they are not, as they give a variety to the list of vegetables daily required, at a time when much needed, and are besides very wholesome, and can be made delicious. What are usually supplied by seedsmen, if Haricot Beans are ordered, are tall growing, and require stakes; but any kind of white Beans are suitable, and I prefer the White Dutch or Caseknife to the much smaller-seeded White Haricot. Last season the seed ripened badly in many gardens, which of course injuriously affected the quality; and to guard against a recurrence of this, I recommend the growth of a quantity either of a dwarf or runner Bean on a warm border, the latter to have all running growth pinched back whenever made. Carter's White Advancer may well be grown for its

seed, as it is a dwarf heavy cropper, and matures somewhat early. Of course the pods of this, or of any other white-seeded variety, can be used when in a young state, but it is not advisable to pick many, or the crop of seed will be late. In many instances the warm borders are limited in extent—room cannot therefore be spared for a crop of Haricot Beans: in such cases they may be tried in a warm open position. Here, much of a long south border I found occupied with Winter Spinach; but as we cannot afford to destroy this, I shall follow with Beans, principally for seed, and shall consider the space profitably employed.

W. IGGULDEN.



#### NOTES.

IF I were asked to name the most useful of all the Orchids now in cultivation, I think I should say *Calanthe Veitchii*. I should hesitate a little, of course, for *Dendrobium nobile* is not to be lightly disregarded in a question of this kind—nor, for the matter of that, is *Ceologyne cristata* either; but I fancy most people would least like to be without the tall rosy-flowered spires of Mr Dominy's hybrid *Calanthe* during the dull winter season. All those on whom the modern fashion for cut-flowers makes great demands must grow all three Orchids named, in quantity; and then with white Roman Hyacinths and Lily of the Valley, *Spiræa* and Tea-Rose buds, *Bouvardias* and Ferns, there may be no lack of Christmas blossoms.

Yes! there is no doubt that *Calanthe Veitchii* is well worth having. I speak feelingly on the point, and any of my gardening friends who have it in great plenty may send me a bulb or two of it by parcel-post. If no loss to them, it will be a great gain to me. While speaking of this *Calanthe*, one should not forget *C. nivalis*, a pure snow-white kind, seemingly rather rare, but most beautiful. Flowering as it does after *C. vestita* is past, is rather an advantage than otherwise. It should be looked up by those who have it not.

Another lovely *Calanthe*—far finer in colour than the darkest and best forms of *C. Veitchii*—was another seedling named after its raiser, *C. Sedeni*. This was once exhibited and certificated at South Kensington, but was never, I believe, seen again. One must sympathise with Mr Seden in his loss of such a gorgeous thing; and I sincerely hope that P. H. Gosse, Esq. of Torquay, may not have to undergo such a trial of patience, since I hear that he has been fortunate enough to raise a lovely batch of hybrid *Calanthes*, including two or three beautiful and distinct forms.

That clever ex-Mendelian Orchid-grower, Mr W. Swan, now in charge of the Fallowfield Orchids near the busy town of Manchester,



has also been successful in raising two or three very beautiful seedling *Dendrobiums*, one of which fairly eclipses the now well-known *D. Ainsworthii*, and even *D. splendidissimum*. All of these kinds are hybrids between our old friend *D. nobile* and the violet-scented *D. heterocarpum*. Already three Orchid-growers have been successful in raising beautiful varieties from these two species intercrossed, and in all cases the progeny are robust growers, and most profuse in their bloom. I said three had thus far been successful, but I believe I must say four; for among my numerous original sketches of Orchids I find one of *D. Charltoni* made from flowers sent to me many years ago by Lieut.-Colonel Charlton of Farm Hill, Braddon, Isle of Man, who obtained it by crossing the above species.

Every day shows us some new development in this great art of hybridism — this mysterious blending of diverse characteristics in plants. Here is an art that will remain to us or to posterity, when every square mile of our tiny world shall have been ransacked by plant-collectors, and all new plants, as nature makes them, shall be no more. Hybridism will always be the kaleidoscope through which new and ever-varied plant beauty will then appear. And not beauty only, for by its agency old plants may be rendered fit for new uses, old favourites of to-day will be made new, and so serve the purposes of the unthought-of fashions of a thousand years hence, just as the Grape-Vine sculptured on the rock at Memphis five thousand years ago gives us the exhibition Grapes to-day.

The hardy flowers are awaking from their winter's sleep. Snow-drops, Hellebores, Crocus, and *Scilla siberica* bespangle the turf or open border; and that lovely gem among early blossoms, *Chionodoxa Lucillæ*, opened its bright eyes to the sun to-day (March 8) for the first time in our old garden. A tiny bulb, not so large as a hazel-nut, has given us four fine flowers nearly an inch in diameter, of a bright porcelain blue, shading to white in the centre. It is far brighter than the Siberian Squill, and, when well established, will be a most welcome little stranger.

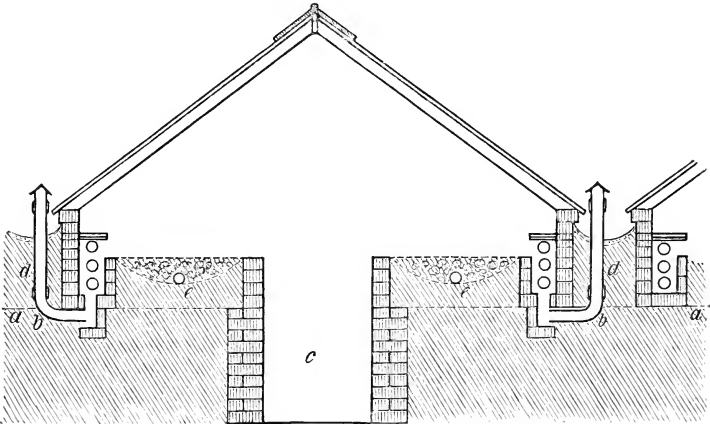
Narcissus are spearing up strongly, as they always do after severe winters, our *N. maximus* being now from 12 to 15 inches in height. This is by far the most stately and effective of all the yellow Daffodils, attaining under good culture a height of from 2 to 3 feet, and bearing great golden blossoms 5 or 6 inches across, and of a colour which would make the most gorgeous *Allamanda* look like a Primrose.

Hepaticas, blue, red, and white, are lovely; but lovelier still is the Spring Snowflake, *Leucojum vernum*, which hangs its great white bells Snowdrop-like on the top of a stalk nearly a foot in height.

WRITER.

## A PLANT-PIT.

SIR,—In the erection of pits, the conservation of heat by the means of “mother earth” is very often underestimated, if not ignored altogether. I think there is nothing that we can do with more advantage to our plants than endeavour to have them rather under ground than above it. The further a house or pit is raised above ground, the more it catches the bitter blast in winter. The roof we must have exposed; but why have the walls also exposed, when they can be built for less money, and heated at less cost afterwards, by having nothing exposed to the elements but the glass roof? And not only is it of advantage in heating in winter, but it is of great advantage in the maintenance of more genial moist atmosphere in hot dry weather in summer, as every one can testify who has had experience of such pits, or given the thing serious consideration. For a range of useful pits, I would suggest something like what is represented in the accompanying section. Supposing *a a* to



be the ground-line, mark off and level the soil where the outside walls are to be, and run it hard so that there is no chance of its sinking. On this build your outside walls, placing at intervals of 6 or 8 feet under the wall a right-angle elbow 3-inch sanitary pipe, socket-end up, as shown at *b b*. By placing three bricks on edge round its end, and breaking off the end of the brick just above this pipe, a connection with the inside of the pit is secured. Another pipe, placed in the socket at *b*, will rise above the eaves of the pit; and to prevent wet entering, a tin or zinc cover can be supported 3 inches above the pipe by three pieces of stout wire, to fit inside the sockets. These will form ventilators which may in most cases be left open, except in severe weather; but when desirable to have them at command, a small shutter to each inside can easily be applied. When the mortar is sufficiently set, the spaces between the walls *d d* and also *e e* may be filled up with the soil ex-

cavated for a footpath *c*, building a wall on each side in the usual way. The space between the pits should be in the form of a gutter, asphalted, and made to carry the water to tanks inside the pits. These gutters should be 18 inches or 2 feet wide, and if the ventilators are placed alternately there will then be plenty of room for cleaning out, attending to shading in summer, or applying mats or other coverings in the winter. A drain-pipe under the ashes in the beds will carry part of the water (otherwise wasted) back to the tanks. The inside arrangement of this pit is specially adapted to the growing of decorative plants of dwarf growth, such as Cyclamens, Primulas, Cinerarias, Bouvardias, Achimenes, Begonias, Poinsettias, and dozens of other plants, which will do far better than in houses of any other description. But with a little modification of the arrangements, it can be made equally suitable for propagating, forcing winter-flowering plants, growing pot-Vines, Melons, Cucumbers, Tomatoes, &c. &c.

The great objection to these sunken pits is the necessity of having steps down to the doorways. This, however, is not always necessary. If they are built on sloping ground they may be so arranged as to be wholly under ground except the ends in which the doors are placed. In such a case the end walls would have to be built first, the mean height of the soil ascertained and levelled in the same way as you would form a terrace, and upon this level, properly consolidated, commence to build as on level ground. In building a number of such pits a large tank should occupy the opposite end to the door, and these should not only be connected with each other, but should be made one tank, so that the water will run direct from the gutter into it. In every such tank a flow and return hot-water pipe should be placed, for the use of cold water in watering plants works untold mischief wherever it is applied in heated structures.

R. INGLIS.



### THE HERBACEOUS PLANT CONTROVERSY.

FOR some time our contemporary, the 'Garden,' has been endeavouring to make it appear that we are opposing its pet branch of gardening—the culture of herbaceous plants; and, as our readers are aware, we defended ourselves in the 'Gardener' of March from this misrepresentation, and to some extent dealt with the sneering manner in which the 'Garden' referred to us, our position, and our aids in connection with this subject. Here is our contemporary's reply, for which we desire neither better nor worse than that it be read in connection with our remarks in March:—

"The bitter feelings of Mr David Thomson in respect to the 'Garden' and its work, have long been accumulating in a deep reservoir, which, overstrained, has burst at last. A few perhaps may remember that the question (originated by Mr Thomson) concerned the flower-garden as regards the cost of staking—a theme that hardly deserves a violent attitude. This is the way he talks of it:—

“Long before the editor of the “Garden” came to this country we had devoted for years much of our spare time to hardy herbaceous plants, and we could show him a herbarium of them that was formed before he knew a Rose from a Thistle.’

“What a logical line of argument this ! But knowing so much and knowing it so long, why make so pitiful a use of it as to get angry and resort to personalities in discussing such a subject ? And that is not all, as he, with noble modesty, proceeds to give his infinitely small valuation of our ‘standing.’ But surely this is going beyond the bounds of decent argument, Mr Thomson ? The noble duke you serve has probably not included among your duties that of pronouncing in a public print on the position of those, of whom, in your vexed mood, you are not well fitted to judge. A very narrow soul has usually capacity for depreciating others. In that high elevation of yours, you no doubt are justified in looking at the kingdoms of the world as if they were all dominated by those stony terraces you have the care of ; so, too, the sparrows on the dome of St Paul’s take a complacent view of the human creatures passing beneath them. In pity that one like you should not give an example of fair discussion to the rising generation, we pass the personal question raised by you, and shall hope at an early date to find a corner to discuss the matter from a more general point of view.”

This is quite in harmony with our contemporary’s tone and attitude towards us, as its readers can see for themselves, since last November. It might have been rather inconvenient for the writer of the above to have quoted the whole or any part of our remarks of last month, that would have shown the object we had in view—the defence of ourselves from misrepresentation—or to have dealt with our statements by argument or facts, instead of the weakness of a sneer, and the quotation of a sentence most likely to mislead its readers. We could well afford to pass in silence anything the ‘Garden’ can possibly say of us, but in the interest of what is fair and truthful we notice it.

In reference to the accumulation of bitter feelings towards our contemporary and its works, we challenge it to point to a sentence of ours indicative of bitter feelings, unless that recently we thought fit to defend ourselves, and plant a blow in return as well. More than this, we ask the ‘Garden’ if any other horticultural journal has ever reviewed or noticed it and its work so approvingly as we have at page 96 of this magazine, 1877 ? Yet more as to these bitter feelings. Though we have not contributed very much to the pages of our contemporaries, we have sent more to the ‘Garden’ than to all of them together, since its advent. Has the editor of the ‘Garden’ ever showed courtesy or good feeling towards us, by an approving notice of this magazine, or sending us anything in exchange for its pages ? Yet, in spite of these facts, and on the pretext of our daring to differ from it as to the comparative cost of two systems of flower-gardening (which should never be set in rivalry against each other), the attempt is made to make it appear that we have opposed the culture

of hardy plants, and are the bitter enemy of the 'Garden' and its work. Is our exceedingly charitable and civil contemporary thus "measuring our corn by his own bushel"?

We are not in the least unwilling to credit the 'Garden' with its true share of the merit that may be due to it for the advocacy of these hardy plants, but in spite of all insinuations to the contrary, we have never opposed them, while we have allowed a free discussion of the merits and demerits of both systems of flower-gardening. Herbaceous plants, however, form but a small part of horticulture. They bear the same relation to it that the shallow brook carrying the "withered leaves" does to the majestic stream that bears the good old ship of horticulture on its way; hence, no doubt, horticulturists with more than one string to their bow do not harp on it without intermission.

We have now to congratulate our contemporary on its apparent promise to leave off "personalities" and straighten itself up from "violent attitudes" in dealing with its critics, for only a few months ago it characterised one of its brother editors in the elegant terms of "a *toothless wolf*;" and more recently another writer was referred to as "*the creature*;" and now in its very best temper, our capacity is compared to that of a Cockney sparrow. Perhaps it is fortunate for us that we are not within range of a blunderbuss! Stones of this sort should not be thrown right and left by those who live in glass houses, unless they also are prepared to have some panes smashed occasionally; and in displaying the supreme confidence that what does not seem right to their eyes must therefore be wrong, they may be certain that others do not quite think that horticulture would go to the dogs without them.

We had just written the foregoing when the 'Garden' of March 12 came to hand. As will be seen presently, a week's reflection has not "purified our critic's heart." We will now proceed to unmask his efforts at deception under the heading—

"MR DAVID THOMSON ON FLOWER-GARDENING."

Under this heading some very characteristic remarks appear in the 'Garden' of March 12—designed, as any one can easily see, to ridicule our practice at Archerfield, and to make it appear that our statements at various times as to the cost of the two systems of flower-gardening are contradictory. To show the course of misrepresentation the writer adopts, we quote the following:—

"Referring once more to this subject, we notice that the plea of cost which Mr Thomson urged against hardy plants is best answered by an extract from his own book on the Flower-Garden referring to the mixed system as compared with such bedding as is illustrated by him:—

"'One of the most weighty arguments in its favour lies in the fact that it is less expensive and less laborious than that which is the fashion now.—'Flower-Gardening' (D. Thomson), p. 10, last edition.'

"There is no allusion here to the fact that the mixed style referred to is only one of a number of ways of growing and enjoying garden flowers, and one of the least important. In the same place, however, he speaks of

“ ‘The vast increase of labour which has arisen in consequence of preparing and cultivating so many tender plants as are demanded by modern flower-gardening, and all without anything like corresponding resources in the way of houses and pits for propagating and growing such numbers of plants.’

“The ideal paradise desired was a village of big glass-houses for the production of tender plants to be put out in summer, so that our author takes himself precisely, in his book, the view as regards cost that he was angry with us for urging.

“What he himself thought of the future of flower-gardening in those days may be gathered from an article of his own written in the ‘Scottish Gardener’ in the palmy days of his bedding-out at Archerfield. In an article on the future possibilities of flower-gardening it

“ ‘Appeared to him then that some of the sections of plants which are used for our borders and parterres will scarcely be susceptible of much further improvement; and as to arrangement, they have been used in almost every conceivable relationship to each other, and it would almost appear as if there were nothing further left to achieve in the matter of arrangement’ !

“Mr Thomson has so often raised the question of his own doings and practice in relation to hardy plants and their employment—and he has certainly had opportunities such as fall to the lot of few men—that we might ask what he did in that direction in those Archerfield days. Did the famous flower-garden at Archerfield contain one single bed of good hardy plants? or was any attempt whatever made to show what could be done with numbers of beautiful subjects to be found among them? Very little indeed; four-fifths of the plants were of the most ordinary kind—making a very fine show, no doubt.

“Even the villagers of Dirleton came under the influence of the great bedding movement:—

“ ‘The flower-plots which invariably encircled the cottages were filled with Geraniums, Calceolarias, Hydrangeas, and the favourite Mignonette, all scenting the air, and spreading their heaven-like influence alike on the inmates and observers.’

“The writer (in the ‘Scottish Gardener’) describes the nature of the influence on himself:—

“ ‘Each bed was one mass of bloom; so regular had the plants grown that the entire beds were covered. There were three beds of yellow Calceolarias that I think it was impossible to excel for compactness,—not a leaf was seen—nothing save the golden blooms, the bed resembling a large honeycomb. Looking at these beds for a few moments, the eyes became almost of the same colour, and magnified them larger still, until gradually they were relieved by the shrubby habit and purple foliage of the *Perilla nankinensis*, with which the beds were edged.’ ”

The quotations here made use of—as any one can see by referring to the Introduction to the ‘Handy Book of the Flower-Garden’—are taken out of their connection; their real application is disguised and distorted. It is very well known that it does not take many words to misrepresent any writer. By taking odd sentences and phrases, and making them appear absolute, a critic, with only a very little talent and a lamentable want of principle and fairness, may make a writer say or prove almost anything desired. It is, of course, much more convenient to traffic in partial and prejudiced views of isolated passages dislocated out of their connection, when the object is to misrepresent, than to refute the particulars of your opponent’s writings. What

can be said of those who have descended so low, and who at the same time attempt to glorify their own special charity? They certainly do not demand smooth treatment. This writer does his best, and worst, to try and parade what he would fain have it believed is our inconsistency; and we will now show his spirit of unfairness.

In reference to the quotation from page 10 of our book, it was applied to what we refer to at pages 3 and 4 in these words: "The elder brethren of our profession who can look back to the introduction of the Dahlia, give us but a poor idea of flower-gardening as it was practised in the first decades of this century. Flower-gardens had then seldom a separate locality devoted to them; and when they had that advantage, they were generally composed of unshapely figures cut out in grass, and arranged, as the designer fondly but erroneously imagined, after the principles of English gardening, as inculcated by Wheatley and Uvedale Price. These figures were mostly filled with a miscellaneous assortment of shrubs and herbaceous plants, many of which possessed only botanical interest." And then at page 10 it is said: "A mixture with little regard to selection was the chief object attained, if not the one kept in view." It was to this old style that we applied the sentence our critic distorts from the context. It could not be any other, for no other existed at the time we wrote of. In the 'Gardener' of November last we applied remarks to the same effect: "Whatever is worth doing is worth doing well; and it may be taken for granted that no one with any sense of good culture and order in a garden pretends to maintain that the style of hardy mixed flower-borders that were in vogue *before* bedding-out began would now be tolerated. No doubt, to compare the system to which we have just referred with the bedding-out system, the latter is the more expensive. But to affirm that the bedding-out system is more expensive or laborious than the *same area* occupied and kept gay from spring till autumn with hardy herbaceous plants in a state of good cultivation is a different matter." Will our readers tell us where the one statement contradicts the other? Such criticism consists only of a species of unfair quotation that no honourable mind would resort to. It would not have fitted in with the spirit and tactics of the 'Garden' to have gone on and quoted our remarks at pages 13, 14, and 15 of our book.

We now turn to this writer's second quotation and his comments thereon, coupling them with his comments on the use we made of our opportunities at Archerfield in the matter of hardy herbaceous plants. The same remark, as will be seen, applies to both. He is in utter ignorance of the mainspring of our flower-gardening at Archerfield; but that seems best to suit his purpose. When we were engaged to take charge of the gardens at Archerfield, their noble proprietrix gave us only one definite command regarding their management. It was, that the flower-gardening (to which nearly every word we have quoted above in reference to the old hardy system applied) was to be done away with, for the sole reason that the family, having other two or three country seats, were never likely to reside at Archerfield except from early in August till about the middle of November, and that in former years the hardy plants were all out of bloom, withered, and littery-like when the family arrived there. We had the most definite order to inaugurate the bedding system; and at what expense we shall presently see. We had one season's experience of the old system there, and in every point it tallied with Lady Mary Nisbet Hamilton's remarks about it. Her ladyship arrived early in August of that year to find all the herbaceous plants in the long borders in front of the chief range of

glass and at the flower-garden done blooming, and withered-like, and her ladyship commanded the change with more decision than ever. Now these gardens had for a quarter of a century been in charge of two men (the late Mr John Young, and Mr James M'Intosh, my predecessor at Drumlanrig) very painstaking cultivators, and there was an excellent assortment of these plants at Archerfield; still we could have carried in our hand the whole bloom they produced in August and September. As is well known, the soil at Archerfield is light and dry, the climate considered to be the driest in Great Britain, and no supply of water but what had to be pumped by manual labour and collected from the roofs of the houses—conditions most unfavourable to a late bloom of herbaceous plants—but as everybody who visits the place knows, it is most singularly favourable to the long-continued and brilliant bloom of the half-hardy plants used there. Had our depreciatory critic been in our position, with all his ardent love of hardy plants, what would he have done? Disobeyed his employer, or have made the most of available resources and met her wishes? Our opinion is, that one of the best tests, and the first duty of a successful gardener, is to produce what his employer wants, and let his own hobbies sink.

We of course carried out our employer's wish, removing the shrubs and hardy herbaceous plants with which the beds and borders were mostly filled; and in the hope of getting some of the best late-blooming sorts to bloom later, we planted some of them in a damper border partially shaded; but finding that they were over before September, we did not continue them. This, we should suppose, is explanation and reason enough for our practice at Archerfield, notwithstanding the esteem in which we held and still hold many herbaceous plants, and in spite of what our critic tries to make out.

We entertained the Editor of the 'Garden' at Archerfield some time after the change of gardening. But he apparently forgets all he saw or heard of there. He has forgotten how he expatiated to us on the numbers of tall-growing things used to relieve the general features. He forgets all about the majestic rows of Tritomas, the Palms, comparatively hardy Dracænas, Humeas, Yuccas (variegated and green), Gladiolus, &c. Since an occurrence of last November, he makes it convenient to forget all these matters.

The third quotation made from our writings shows the desperate straits to which our contemporary is reduced in his attempt at fastening a case on us. This is what we did write:—

"Indeed *it has been hinted* that some of the sections of plants are scarcely susceptible of much further improvement; and as to arrangement, it might *almost be said* that the plants at our service have been used in every conceivable arrangement and relationship to each other, and that there cannot be much to achieve within the limits of good taste in this direction." See how this quotation is garbled! Now this is not given as our positive opinion, and we continue to write: "If this be near the truth, and the rate of progress is to be maintained, and the interest of flower-gardening freshened, we must necessarily look to a new order of plants, and to the *reintroduction* of many that have been much neglected, and, in fact, never cultivated as they ought," and so on—page 12 of 'Handy Book;' and at page 13 the reader will find us continuing the subject: "I consider it very desirable to work into a still greater variety of a hardier class of plants," &c.; and then—"Hardy plants such as I have referred to, or rather the multiplication and use of them, are one of the greatest desiderata of the modern flower-garden." We wrote this years before the 'Garden' was in existence. We have no greater desire, in order to



show how thoroughly unfair is our critic's way of misquoting us, and how low is the line of conduct adopted by him, than that those who possess our 'Handy Book' should read it and compare it with these quotations.

As to our "having so often raised the question of our own doings and practice in relation to hardy plants," we challenge him to refer to our having done any such thing except in the 'Gardener' of November last, where we remarked that we were not writing without an extensive practice in both systems; and we can appeal to our readers whether or not the remark was correct. And excepting in that instance, and in our defence in the 'Gardener' of last month from the misrepresentations of the 'Garden,' we ask where we have raised that question.

Turning now to the question of labour and expense in relation to the old system of hardy herbaceous flower-gardening, and to what in our critic's second quotation from the 'Handy Book of the Flower-Garden' we term "modern flower-gardening." It is only another way of applying what we have quoted, as repeated by us in our remarks of last November. The bedding-out system, as every one knows, has been practised over a far wider area in nearly every garden than ever the old mixed style of herbaceous plants was: hence its greater expense than the flower-gardening of *old times*. This is not what we have ever disputed in the matter of expense. It is the *same area kept constantly gay with herbaceous plants alone for months in succession*. We take the position, that, to do this, is more expensive than to do it with bedding-plants such as are now available.

In reference to the remarks that the 'Garden' makes on the second quotation from the 'Handy Book,' we never asked, and never got, an additional pane of glass when the change was made at Archerfield from the one system to the other, nor did we spend more than £5 annually in buying bedding-plants. Neither was there a house, pit, or frame there, nor a fire, that we would have done without if there had not been a bedding-plant in the place. There were over 300 feet run of vineries, over 200 feet of peacheries, accommodation for fruiting 100 Pines annually, a plant-stove, greenhouse, and plant-pit, Mushroom and Rhubarb and Seakale houses, besides the growing of Melons, Cucumbers, forcing Asparagus, Strawberries, &c., &c., for which, unfortunately, there were ten fires. Grapes were supplied from April to the end of February, Peaches from April till October. This, besides all the decorations at the mansion, the propagating of the flower-garden plants, and the whole work in the large flower-garden at Dirleton, was conducted at an expenditure of 64s. per week for labourers. There was no help allowed to the men in these two departments, except that of six men for not more than three or four days at planting-out time. The pit bill for the whole place did not exceed £15 annually. Then there were the few cartloads of loam and leaf-mould—had for the collecting—and some rough wooden boxes. This applies to an area quite double what previously had been devoted to flowers. These are particulars that such men as Mr Henderson of Thoresby Park, and others, can bear testimony to as being correct in every particular, for it was our good fortune to take the gentleman named to Archerfield with us as fireman.

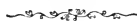
We are perfectly willing to leave it with any experienced gardener, or any number of them, to say how much of the 64s. was indispensably necessary to manage the fruits, pot-plants, the forcing of vegetables, and attendance to the mansion; and we will be perfectly content to take the remainder as a sum for the basis of estimating the comparative cost of the two systems

of flower-gardening, and ask if the editor of the 'Garden,' or any man, would undertake and accomplish the task of keeping the same area with an unbroken mass of bloom from the middle of June till the end of October (for we invariably planted by the 20th of May, and had a good show of bloom in June; and we have seen the plants in that climate untouched by frost at the middle of November) with the portion of the 64s. per week left, after deducting a reasonable estimate for the fruit, &c. From a very extensive experience of both systems here for the last thirteen years, we are more than ever convinced that it cannot be done. Let it be borne in mind that it is not *the old fifty-years-ago system*, and to which the quotations made by our critic refer, that we are now speaking of, and which would not be tolerated now.

The quotation from a writer in the 'Scottish Gardener' is quite in keeping with the spirit that prompts the quotations from our writings. It would not have suited his purpose to have given any other quotations from the same writer. The following, for instance, would not have served him: "When the entrance-door was thrown open, the fairy scene that was opened up before me—for it appeared like nothing else—so completely was I struck with the beauty at first sight that I was at a loss to which hand to turn first,"—and so on.

The same course of unfair quotation, of what the editor of the 'Garden' would fain have his readers believe we have written, is pursued in 'Gardening Illustrated.' Time and place only seems to aggravate his *penchant* for mis-quoting. He says, "That part of his [Mr David Thomson's] argument is, that we have no charge of a garden establishment." In 'Gardening Illustrated' he also writes that our "claim as a flower-gardener depends on geometrical bedding-out only." Well, it seems we have some claim! Our critic's claim depends on a year or two's practice in the herbaceous ground in the Regent's Park. And we ask any one who knew that patch of ground there, if it was not the only spot in that garden to which the term ugly could be applied. We have to do with twice as much in geometrical hardy herbaceous ground, and produce more bloom on it, than our critic ever had or is likely to have to do with.

Having thus exposed the questionable tactics of our contemporary, we leave him for ever, thinking that no importance can be attached to any further notice of a man who can resort to such a course of argument as we have been dealing with. Plenty can prove that we were an enthusiastic "hardy-herbaceous plant-man" before our critic was born; and apparently we will complete our gardening career as fond of them, and more extensively engaged with them, than ever—in their proper place.



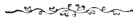
#### ZONAL PELARGONIUM, GUILLON MANGILLI.

IN the March number of the 'Gardener,' "Reader" refers approvingly to the above. Probably, had he seen it as grown by Mr Taylor at Longleat, he would not have dismissed the subject so briefly—com-

mendable, though difficult to practise, as brevity undoubtedly is. Guillon Mangilli is a winter-flowering variety of which it is impossible to write in too glowing terms, as by a little trouble it is possible to have an abundance of large trusses of semi-double, rosy-crimson flowers throughout the winter and spring months. At the present time, at Longleat, the plants are arranged in forcing-houses, in which Kidney Beans, Tomatoes, and other heat-loving plants are growing. They are disposed thinly, or otherwise the growth made would be too succulent—the aim always in view being to keep them as sturdy as possible. The majority of the plants are flowering for a second season in the same pots (principally 10-inch), not having been cut back at all. During the summer they are placed, but not plunged, in a sunny spot, kept watered, and all bloom pinched off. The result is a sturdy growth which will flower in heat, without becoming drawn and weakly—always supposing the plants receive plenty of space and light.

Let me advise those who are in the habit of stocking some of their houses with large old Begonias, Coleus, &c., which frequently are of but little value, to substitute a few large, well-prepared plants of Guillon Mangilli—to which may be added Madame Thibaut, pink, and Madame Baltet, white, securing from them a quantity of bloom, useful alike for home use, or packing for travelling. W. I.

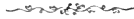
[We grow this Pelargonium in quantity, and find it very useful. A splendid free winter flowerer is Mrs Leavers, single.—ED.]



### CENTRADENIA ROSEA.

As not a few good old plants are being put aside to make room for newer, though, very often, not so valuable ones—when valued according to their beauty and usefulness, and not according to their prices in the catalogues, for anything new brings always a good price—to those who may not know *Centradenia rosea* (a Mexican plant), I would introduce this old and useful stove-plant. It is of a dwarf compact habit, leaves varying in length from  $\frac{1}{2}$  an inch to  $1\frac{1}{2}$  inch, and about  $\frac{1}{3}$  of an inch in breadth; dark green above, and purple beneath. The flowers are rose-coloured, small, but very numerous. But the greatest beauty of the plant is its fine graceful habit, in which respect it rivals the *Adiantums*. It can be struck at almost any season of the year, but the time most suitable is early in spring. Cuttings with three or four shoots on them are the best, as plants can be grown from these in a shorter time than from those with only one shoot. They strike freely in a mixture of equal parts of peat and silver sand, with a top-heat of  $65^{\circ}$  to  $80^{\circ}$ . The emission of rootlets will be hastened by bottom-heat, but they strike without it. The

cuttings must be shaded from the sun, and as soon as they are well rooted, they should be potted into 2½-inch pots, in a mixture of two parts peat and one part loam, and a little silver sand. They should be kept shaded until they have taken with their shift, then inure them gradually to light and sun, supply them with plenty of water, and attend to pinching the shoots and keeping off any flower-buds that may appear. As soon as these pots are filled with roots, shift into 5-inch pots, using the same compost. For most purposes these pots will be large enough, as plants in small pots have the nicest appearance, and are generally most useful. A temperature ranging from 60° to 75° will suit them all summer. Do not pinch after the end of August. After October they will do in a temperature of 5° below what is recommended for summer. If they have been treated as advised, they will show their flowers in great profusion early in spring. Instead of growing on the old plants, the better plan is to grow young plants from cuttings for next season's stock. GROWER.

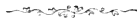


#### THE BEDDING-OUT SYSTEM.

I AM sorry my remarks under the above heading in the February issue of the 'Gardener' should have had such a perturbing effect on "One of the Advocates of the Hardy Brigade" as to lead him to consider them "in the light of a slander." He surely cannot have seen "nearly twenty years'" active service with the hardy heroes, as exposure to the elements for that length of time has a tendency to harden and thicken the skin—a characteristic that he cannot lay claim to, if we are to judge by his style of dealing with my remarks. His "knowledge of the subject he writes about" may be all that he claims, but he should not attribute a want of knowledge of herbaceous plants to all who differ from him as to whether they, or what are generally termed bedding-plants, are the most suitable for the decoration of the flower-garden. The writer has the privilege of reckoning amongst his friends an advocate of hardy herbaceous plants—one who has done as much as any living man to popularise these plants amongst practical gardeners. But I always observed that bedding-plants were largely employed in the flower-garden under his care. The reason for this is not far to seek. He being a *practical* gardener, is able to value the two classes of plants at their true worth as decorative subjects, and to select the number and kinds of each best suited to the object in view and requirement of the establishment.

I cannot find a good reason in anything that "One of the Advocates of the Hardy Brigade" has said in opposition to my remarks why I ought to withdraw any of them as he suggests I should do. Has not he who arrogates to be the captain of "the Hardy Brigade" put it on

record that Carnations and Picotees should be included in a border of plants without stakes? And from this I inferred that he condemned the practice of staking all herbaceous plants, whatever be their stature; and the non-use of stakes would virtually exclude from the flower-garden all the plants I named in my paper in the February issue of the 'Gardener.' Perhaps, however, the "rank and file" of "the Hardy Brigade" do not endorse the teaching of their commander. Be that as it may, I have done with the subject, as further discussion of this point would be of little practical benefit to any one. J. H. B.



### HORIZONTALLY TRAINED PEACH-TREES.

IN "Hints for Amateurs" last month, "M. T." says: "Horizontal training answers capitally for every kind of fruit we know. Pears, Plums, Peaches, and Apricots we have trained in this form with the view of reducing labour." As I am interested in such matters, I shall regard it as a favour if "M. T." will furnish me with the address of any garden where good examples of Peach-trees of mature age (say from ten to thirty years) trained on the horizontal system are to be seen. Youthful examples are of no value. I never yet have seen a good horizontally trained Peach-tree in this country, nor a Plum either; and those which I have seen in French gardens had been raised with much labour and difficulty, and were not of a kind to encourage any one to attempt the plan whose object was fine trees and good crops of fruit. The labour and time spent over them were out of all proportion to the results obtained. J. S.

[We sent "J. S.'s" question to "M. T.," who replies:—]

"I have for a number of years trained trees as described in 'Hints,' but I do not know of any good examples of Peaches trained in any form at the maximum age named by your correspondent 'J. S.' Neither do I know why horizontally trained trees should not remain in healthy condition as long as when trained into any other form. Those I train as fans are treated the same as the horizontals—the bearing wood all on one side, current year's shoots taken from base of that of the previous year: the latter is cut out, and its successor takes its place. To keep the trees vigorous and free from disfigurement, a system of introducing young leaders is practised, so that the substance of the tree never really becomes old. I believe in this practice with every kind of fruit-tree with which I am acquainted. I would not object to send branches of horizontal training to your correspondent. M. T."



## DUNDEE HORTICULTURAL ASSOCIATION.

THE ordinary monthly meeting of this Association was held in the Imperial Hotel, Dundee, on Friday evening the 4th ult., the president, Mr D. Doig, in the chair. Owing to the inclemency of the weather, the attendance was smaller than usual. After the usual preliminary business, Mr M'Arthur, gardener to Mr John Leng of Kimbrae, Newport, read a paper on "The Importance of a Practical Knowledge of Vegetable Culture." After a few introductory remarks, Mr M'Arthur said that culinary vegetables ranked high as articles of food, being very nutritious, and at the same time acting as a corrective against many diseases. They had been cultivated by the nations of the East from the remotest ages. Perhaps the most ancient mention made of any special kinds was to be found in the sacred writings of Moses, the Hebrew lawgiver, who incidentally referred to them in the Book of Numbers, from which we learn that Cucumbers, Melons, Leeks, Onions, and Garlic were in use in the land of Egypt in these days—4000 years ago. Mr M'Arthur then referred to the date of introduction, and the native countries of many of the most useful kinds of vegetables, and briefly traced their history up till the present time. As an instance of the rise and progress of the Potato, he alluded to the enormous consumption of this vegetable at the present day, compared with what he had heard from the lips of an old gardener in the West of Scotland, who well remembered hearing his father say, that when the Potato first came among them they carefully scooped out the eyes, with a small portion of flesh attached, and preserved them as sets for the following year's crop, while the remaining portion of the flesh only was used as food. Mr M'Arthur then dealt with the practical part of his subject. It was of the greatest importance that a gardener should have a thorough knowledge of this department of his business. He was afraid there are manifold signs of a growing tendency with many to partly, if not altogether, overlook or despise this very necessary part of their education—the more pleasing occupants of the stove or greenhouse claiming by far the greater part of their attention. He by no means spoke lightly of the love for the beautiful and graceful in flowers and foliage, or of the intellectual pleasure or enjoyment that would ever remain inseparably associated with their beauty and culture; but the gardener who must supply his employer's table with first-class vegetables every day in the year, could not afford to overlook the requirements of the one for the more pleasant duties associated with the other. The preparation of the soil was of the first importance in vegetable culture: to study its nature and capabilities, how best to husband its resources, and how to increase its fertility. To be able to make a judicious choice of seeds was also a very necessary acquirement, as experience in this matter went a long way to assist in keeping up a continual succession of fresh and useful vegetables. The insect and parasite pests of the kitchen-garden also demanded the skill and energy of the gardener. How to prevent or lessen the ravages of the Onion and Carrot-worm—what was the cause of that scourge amongst Peas, the mildew, and how it always appeared when rain came after a tack of dry weather,—these and the like were questions of weight and importance to the gardener, seriously affecting his work, and often frustrating his well-laid plans.

Mr W. Williamson, Tarvit Gardens, Cupar-Fife, then read a paper on "The Propagation, Cultivation, and Selection of Table Plants for Exhibition." He selected twelve plants from five distinct genera, and treated in detail their habits, propagation, and culture. These consisted of three Palms, three

Crotons, three *Dracenas*, two *Aralias*, and one *Pandanus*. The varieties chosen all required a stove temperature, and their successful management depended on the necessary accommodation, combined with a correct knowledge of their requirements, and an acquaintance with their natural habitat.

*Cocos Weddelliana*, *Geonoma gracilis*, *Crotons picturatus*, *Johannis*, and *interruptum aureum*, *Dracenas Sidneyi*, *Terminalis alba* and *Guilfoylei*, *Aralias elegantissima*, *Veitchii*, and *gracillima*, and *Pandanus Veitchii* were, in Mr Williamson's opinion, among the very best of the table plants; but with the rapid improvements that were yearly taking place in this class of plants, no doubt these would be superseded by other varieties of still greater value. Mr Williamson then referred more directly to the position these plants held in the show-room of our local exhibitions. He thought there was great room for improvement in staging them. Very often they were set so close together that one could scarcely distinguish which plant the various leaves belonged to; whereas, to be seen to advantage, each plant should have more or less clear space around it. They might with advantage be utilised in dividing the different sections of cut-flowers, where their graceful and elegant forms would go far to break up the sometimes monotonous appearance of these exhibits.

This paper gave rise to a lively discussion—the class of plants generally used and their treatment, as well as their habits and height—all being points of dispute.

A scheme for the encouragement of self-improvement amongst the younger members of the Association was submitted, the subjects suggested for consideration being practical horticulture, botany, and chemistry. This scheme was approved of by the meeting, and it was remitted to the council to arrange the details necessary for carrying it into practice. After a vote of thanks to the speakers and the chairman the proceedings terminated.



### ORCHIDS IN BLOOM.

THE following Orchids are in bloom in Mr Smith's Collection, at Brentham Park, Stirling, March 14:—

|                                  |                                  |
|----------------------------------|----------------------------------|
| <i>Ada aurantiaca.</i>           | <i>Dendrobium Ainsworthii.</i>   |
| <i>Angræcum citratum.</i>        | " <i>bigibbum.</i>               |
| " <i>sesquipedale.</i>           | " <i>crassinode.</i>             |
| <i>Arpophyllum giganteum.</i>    | " " <i>Barberianum.</i>          |
| <i>Barkeria Lindleyana.</i>      | " <i>Farmeri aureum.</i>         |
| <i>Calanthe vestita nivalis.</i> | " <i>fimbriatum oculatum.</i>    |
| <i>Cattleya amethystoglossa.</i> | " <i>luteolum.</i>               |
| " <i>trianæ.</i>                 | " <i>Findleyanum.</i>            |
| " " <i>atlanta.</i>              | " <i>hedyosmum.</i>              |
| " " <i>vestita.</i>              | " <i>heterocarpum philippin-</i> |
| " <i>Warszewiczii alba.</i>      | <i>ensis.</i>                    |
| <i>Chysis Limminghii</i>         | " <i>cucullatum giganteum.</i>   |
| <i>Cœlogyne cristata.</i>        | " <i>lasioglossum.</i>           |
| " <i>Lemoniana.</i>              | " <i>nobile.</i>                 |
| " <i>Ocellata maxima.</i>        | " <i>Pierardi.</i>               |
| " <i>fuscescens.</i>             | " <i>Wardianum.</i>              |
| <i>Colax jugosus.</i>            | <i>Dendrochilum glumaceum.</i>   |
| <i>Cymbidium eburneum.</i>       | <i>Epidendrum paniculatum.</i>   |
| " <i>Lowianum.</i>               | " <i>rhizophorum.</i>            |
| <i>Cypripedium Drurii.</i>       | <i>Ionopsis paniculatus.</i>     |
| " <i>Lowii.</i>                  | <i>Lælia harpophylla.</i>        |
| " <i>hirsutissimum.</i>          | <i>Lycaste Skinneri.</i>         |

|                          |                              |
|--------------------------|------------------------------|
| Lycaste Skinneri alba.   | Odontoglossum nœvium majus.  |
| Masdevallia chimæra.     | " Pescatorei.                |
| " ignea.                 | " Roezlii.                   |
| " " rubescens.           | " Rossii majus.              |
| " Shuttleworthii.        | " " roseum.                  |
| " polysticta.            | " Uro-Skinneri.              |
| " Wagneriana.            | " triumphans.                |
| Miltonia cuneata.        | Oncidium Cavendishii.        |
| " Warscewiczii.          | " cucullatum.                |
| Odontoglossum Alexandræ. | " concolor.                  |
| " Bictoniense superba.   | " macranthum.                |
| " cirrhosum.             | " serratum.                  |
| " cordatum.              | Phalænopsis amabilis.        |
| " cristatum.             | " grandiflora.               |
| " Chestertoni.           | " Schilleriana.              |
| " Donianum.              | Saccolabium violaceum.       |
| " gloriosum.             | Sophronites grandiflora.     |
| " Halli.                 | Vanda suavis (Veitch's var.) |
| " Jenningsianum.         | " tricolor.                  |
| " maculatum superbum.    | " " insignis.                |
| " membranaceum.          | " " (Dalkeith var.)          |

### EXHIBITIONS.

THE Glasgow and West of Scotland Horticultural Society has fixed its Autumn Exhibition for Wednesday and Thursday, the 7th and 8th September, in the City Hall, Glasgow.

The annual competition of the Scottish Pansy Society will be held on June the 17th, at 117 George Street, Edinburgh.

### COMPLIMENTARY DINNER.

MR DUNN, of Dalkeith Gardens, was entertained to dinner by the Scottish Horticultural Association in Edinburgh on the 9th March, in compliment to the efficient manner in which he has occupied the position of president of the Society, and for the great services he has rendered it since its commencement. Mr John Downie, who has succeeded Mr Dunn as president, occupied the chair. About 80 sat down to dinner. The chairman, in proposing the toast of the occasion, referred in fitting terms to the great interest Mr Dunn had taken in the Society, and to its successful results, stating that the members now are over 500. He also referred to the high position Mr Dunn holds in horticulture generally, to the efficiency with which he manages Dalkeith Gardens, and the great interest he takes in young men under his charge. Mr Dunn feelingly replied, and congratulated the Society on Mr Downie's advent to the presidency, which will no doubt continue to flourish under the leadership of such an experienced and successful horticulturist as Mr Downie has proved himself to be.

### THE FROST AT BOTHWELL CASTLE IN JANUARY.

THE month gave  $569\frac{1}{2}^{\circ}$  frost, or nearly  $18\frac{1}{2}^{\circ}$  for each day. On six days the temperature fell (and on the 16th and 17th,  $7^{\circ}$  and  $6^{\circ}$ ) below zero.



## VALLOTA PURPUREA.

IN the 'Gardener' I find that one of your correspondents wonders why Vallota is called purpurea, as it has no purple about it—but purpurea is really scarlet. The Tyrian purple was a scarlet dye, and to be born in the purple indicates that scarlet is the regal colour. D.



## VANDA SPIKES

OPEN AND OPENING AT CHATSWORTH, 14TH MARCH.

|                                        | No. |
|----------------------------------------|-----|
| Vanda suavis, . . . . .                | 128 |
| " tricolor formosa, . . . . .          | 9   |
| " insignis, . . . . .                  | 16  |
| Largest number on one plant, . . . . . | 35. |

There are about as many more spikes in later stages.



## ROYAL HORTICULTURAL SOCIETY.

MARCH 8TH.

THE advancing season was well shown at Kensington on Tuesday, for the exhibits had so far increased in numbers that, besides several small groups in the Council-room, an unusually fine display of Cyclamens, Amaryllises, Orchids, and miscellaneous plants was provided in the conservatory, the attractions being still further increased by a lecture from the Rev. G. Henslow, and a selection of music by a military band. There was a remarkably large attendance of the members of the Floral Committee, and the Fruit Committee was also well represented, the meeting altogether proving eminently satisfactory, and notwithstanding the showery weather, visitors were fairly numerous.

FRUIT COMMITTEE.—H. J. Veitch, Esq., in the chair. Mr Sidney Ford sent a dish of a seedling Apple, Margaret Henrietta—a pretty Apple, but without flavour. Mr M'Indoe, The Gardens, Hutton Hall, sent a seedling Cucumber, called Verdant Green, but the internal colour was so green as to disqualify it. Mr Douglas, Loxford Hall Gardens, sent a seedling Cucumber from Tender and True, which was considered not quite so good as its parent. Messrs Cutbush & Son, Highgate, sent samples of Nuneham Park Onion of very fine quality, to which a cultural commendation was awarded. Mr Strachan, The Gardens, Bulwick Park, near Wansford, sent specimens of Giant Zittau Onion, a fine brown-skinned Onion, to which a cultural commendation was awarded. Mr Sage, gardener to Earl Brownlow, Ashridge, sent a dish of *Musa Cavendishii*, remarkably well grown. The bunch had 235 fruits upon it. A cultural commendation was awarded. Mr Cox of Red-leaf Gardens exhibited fruit of Lemons and Oranges from Cyprus, for which a letter of thanks was awarded. Mr Green, gardener to Sir George Macleay, Pendell Court, Bletchingley, Surrey, sent a branch of *Coffea arabica*, var. *angustifolia*, laden with fruit, and showing great luxuriance of growth and superior cultivation. A cultural commendation was awarded.

FLORAL COMMITTEE.—Dr Denny in the chair. In the Council-room, Mr B. S. Williams, Upper Holloway, exhibited a group of new plants, very notice-

able, among them being the magnificent *Imantophyllum* Martha Reimers, which is described below. A specimen of the new *Azalea* Mrs Gerard Leigh was shown. Several plants of *Primula sinensis* *timbriata* *alba* *magnifica* were staged, the blooms being of great size and good form. *Actiniopteris radiata*, var. *australis*, was represented by a specimen in excellent condition, for which a cultural commendation was awarded. The species is a pretty little Fern very much in the way of *Rhipidopteris peltata*, and the variety appeared to differ very slightly if at all from the type. The fronds are divided in a fan-shaped manner into linear dark-green segments, the stipes varying in height from 3 to 6 inches. Mr C. Edmonds, Hillingdon, Middlesex, sent plants of *Cyclamens*, several of which were very fine, especially one named Mrs Harry Veitch, white with a purple throat, the petals being broad and the flowers numerous. Purple King had flowers of smaller size, of good rich colour, also abundant; good white varieties being Miss Lilian Cox and Charming Bride, for which certificates were awarded. Mr F. Moore, gardener to C. Pickersgill, Esq., Blandon Hall, Bexley, exhibited a specimen of *Lycaste Skinneri giganteum superbum* in a 32-size pot, and bearing six large handsome flowers, the sepals broad, and the petals with a rich crimson tinge. The plant was in excellent condition. The same exhibitor also sent a flower of *Lycaste Skinneri virginalis*, the beautiful white variety of this well-known Orchid. A vote of thanks was accorded. G. F. Wilson, Esq., Heatherbank, Weybridge, sent two cut spikes of *Odontoglossum Alexandrae*, one bearing thirteen, and the other sixteen flowers, which were large, of good form, and with a fine purplish tinge in the sepals. A vote of thanks was accorded.

Mr C. Green, gardener to Sir George Macleay, Pendell Court, Bletchingley, sent flowers of *Canna iridiflora*, var. *Ehemanni*, of great size and deep crimson colour. A note appended stated that the plant from which the flowers had been gathered had been in bloom for the past seven months, treated as a sub-aquatic—namely, planted with the crown about 9 inches above the surface of the water in a warm tank devoted to *Nymphæas*. It is not rested during the winter like other Cannas, and is still flowering, having eight growths about 7 feet high. Fine flowers of the beautiful *Vanda Cathcartii* were also sent, and a vote of thanks was accorded. Mr W. Masson, gardener to Dr Alfred Meadows, Poyle Park, Colnbrook, Bucks, obtained a cultural commendation for a number of large *Cinerarias*, with flowers of great size and excellent colour, but very loose and of bad form, the plants also being rather coarse. Mr R. H. Vertegans, Chad Valley Nurseries, Birmingham, obtained a vote of thanks for a basket of double *Cinerarias* with flowers of good form, chiefly purple and crimson in colour, some having the colours mixed. Mr James, gardener to Mrs Watson, Redlees, Isleworth, exhibited a box of extremely fine *Cineraria* blooms such as he is noted for. They were very handsome in shape, and comprised some rich and varied colours. Two plants were also shown—one, Mr H. Little, for which a certificate was awarded, and the other, Mrs Little, with flowers of excellent form but of rather peculiar pale purplish tint, or no doubt that would have received a similar award. Messrs John Laing & Co., The Nurseries, Forest Hill, sent a plant of *Begonia Roezli* with its small bright coral-coloured flowers. Mr H. Gohn, of the Springwell Nursery, Middlesex, sent plants of *Crimson Beauty* *Primula*, the flowers of good colour but rather poor in shape. Messrs Wm. Paul & Son, Waltham Cross, obtained a vote of thanks for a basket of *Primrose* *Scott Wilson*, the plants being in good condition and bearing their purplish-blue flowers profusely. J. T. D. Llewellyn, Esq. of Penllergare, Swansea, sent a pot of the diminutive

*Crocus Sieberi* collected at Florence thirteen years ago. The flowers are of a lilac-purple tint, and rise about 2 inches above the soil.

In the conservatory, as noted above, the display was unusually bright, the stage along one side of the entire path being entirely occupied with large and beautiful groups of plants. The most noticeable were those from Messrs Veitch, the Orchids and Amaryllises being particularly attractive. Among the former were several specimens of the fragrant *Dendrochilum glumaceum*, with numerous spikes of its diminutive flowers. The charming *Angræcum citratum* was represented by a specimen flowering very freely in a shallow pan. The pretty *Dendrobium Ainsworthi* was in good condition, its rich purple-lipped flowers being numerous. One specimen of *D. crassinode* had a growth about 3 feet long bearing twenty fine flowers. Many other handsome Orchids were also observable, among them being several good varieties of *Cattleya trianae* and *Epidendrum macrochilum album*. A specimen of *Rhododendron Veitchii* was shown, with abundance of its beautiful large white crisp flowers. *R. Taylori* was also exhibited in good condition, and near them was a group of *Rhododendron Early Gem*, a dwarf form, with oval dark-green leaves and purplish lilac-coloured flowers of medium size, but produced very freely. It appears a useful plant for decorative purposes, owing to its dwarfness and floriferousness. Plants of Guelder Rose 2 feet high in 32-size pots had a profusion of their balls of white flowers. The double purple *Cineraria Mrs Thomas Lloyd* was in similarly good condition. Cyclamens were contributed in vigorous health; but the Amaryllises were the chief feature of the groups, a large number being exhibited of various shades of colours, some very rich, and the flowers generally of excellent form. A gold medal was deservedly awarded for these fine collections.

Mr B. S. Williams also obtained a gold medal for a large and handsome group of Orchids, including some fine specimens of *Cypripedium villosum*, one central plant about a yard in diameter having more than three dozen flowers, while several others of less size had from twelve to twenty. *Dendrobium Freemaui* had two growths, each bearing twenty of its warm purple-tinted flowers. Two large healthy specimens of *Phaius grandifolius* had a dozen spikes each. A plant of *Masdevallia ignea* had more than thirty flowers, but rather small, owing to a check the plant had received, as the variety is really a very good one both in depth of colour and size of flower when in good condition. *Cymbidium eburneum* was well shown; also the pretty *Odontoglossum Rossii majus*, and many others which cannot now be particularised.

The General Horticultural Company contributed an attractive and elegant group of fine-foliaged and other plants. Very noticeable were specimens of *Aechmea (Chevalliera) Veitchii* and *Tillandsia Saundersoniana*. The former has been in flower for a long period, the spike of closely imbricated crimson bracts with their serrated margins being very distinct. The latter has recurved glaucous green leaves with reddish spots, and a large spreading inflorescence of flowers which were not open, but the pale yellow bracts rendered it attractive. Small plants of *Dracæna bella* occupied the centre of the group. This is a charming dwarf variety with narrow crimson leaves, and admirably suited for table decoration, as it colours well in a young state. The elegant *Adiantum Bausei* was in good form; several good specimens of *Nephrolepis Duffii* being also exhibited, with *Aralias*, Palms, &c. A silver Flora medal was awarded.

Sir Trevor Lawrence, Bart., Burford Lodge, Dorking (Orchid grower, Mr C. Spyers), exhibited a very beautiful collection of Orchids, chiefly *Odonto-*

glossums, some of which had, however, been lent by Messrs Veitch and Williams to permit the representation of a larger number of species and varieties. More than twenty forms of *Odontoglossum* were shown, some in extremely fine condition; one specimen of *O. Alexandrae* having a long spike with sixteen flowers. The pretty *O. roseum* had seven spikes of its rich rose-coloured flowers. *O. Rossii majus* had five spikes of its large flowers; while the peculiar and distinct *O. Uro-Skinneri* had a long spike of blooms, of which the purple marbled lip is so striking. Among other Orchids was a good example of *Miltonia cuneata* with about a dozen spikes, some bearing ten flowers; *Cymbidium eburneum* being also well represented. A silver-gilt Flora medal was awarded.

Cyclamens occupied a considerable space, three good collections being staged—namely, from Mr H. B. Smith, Ealing Dean; Mr R. Clarke, Twickenham; and Mr Charles Edmonds, Uxbridge,—to each of whom a silver Banksian medal was awarded. All the plants were in excellent condition and flowering very profusely, the collections differing chiefly in compactness of habit and height of the flower-stalks. Messrs Osborn & Sons, Fulham, were awarded a silver Banksian medal for a bright group of decorative plants, comprising Azaleas, Cytisuses, Spiræas, Ericas, Hyacinths, Cinerarias, Richardias, &c., tastefully arranged. A bronze medal was also accorded to Mr Aldous, Gloucester Road, for a similar group. Messrs W. Paul & Son, Waltham Cross, exhibited ten boxes of fine Camellia blooms, *Alba plena* being particularly fine,—and other good varieties were *L'Avenir*, excellent form, clear pink; *Countess of Derby*, similar but larger; *Reine des Fleurs*, fine crimson, very useful variety; *Ninfa Egeria*, white, good substance and excellent form; *Fimbriata*, white, very symmetrical; and *Mathotiana*, a large flower, rich crimson colour. A silver Banksian medal was awarded. Mr R. Dean, Ealing, sent some pretty Primroses; and a group of plants was contributed from Chiswick, containing a good assortment of useful decorative plants, the fine specimens of *Pteris serrulata cristata major* being especially noticeable.

Mr S. Ford, The Gardens, Leonardslee, Horsham, staged a very fine collection of Apples and Pears in excellent condition. The Apples were the most numerous, and were greatly admired for their plump fresh appearance. About sixty dishes were shown, and the silver Banksian medal awarded was well deserved.

First-class certificates were awarded for the following plants:—

*Cineraria* Mr H. Little (James).—A very distinct and striking variety, quite a new break in *Cinerarias*. It might be appropriately called *tricolor*, for the flowers have three clearly marked concentric bands of colour, the marginal one about a quarter of an inch wide, deep maroon, the next crimson, and the centre white. The flowers are of good form, about  $1\frac{1}{2}$  inch in diameter.

*Primula* The Queen.—Mr J. Tomkins, Showell Green Nurseries, Birmingham, obtained a certificate for this variety, the flowers of which were fully  $2\frac{1}{2}$  inches in diameter, of fine substance and good outline, but not so flat as might be desired. It is one of the Fern-leaved type, of neat habit, the colour of the flowers being white with a slight pink tinge and a yellow eye.

*Phaius tuberosus* (Sir Trevor Lawrence).—A remarkable and pretty Orchid from Madagascar. The leaves were similar to those marking the genus, but not so large as in the majority of species. The flowers were 2 inches across, in spikes about 9 inches high; the sepals and petals ovate acute and white, the upper slightly arching; the lip was about  $1\frac{1}{2}$  inch long and 1 inch broad, constricted in the middle; the base and sides were yellow, thickly

dotted with a reddish tint, with a tuft of yellow hairs at the base, and three bright yellow ridges in the centre; the apex was white and pink, with a crisped margin. Four to six flowers were borne in a spike.

*Cyclamen persicum*, vars. *Lilian Cox* and *Charming Bride* (Edmonds).—These were two good white varieties, very similar in appearance, but differing slightly in the breadth of the petals, which in both were of good width and substance. The habit was compact and the flowers numerous.

*Amaryllis John Heal* (Veitch).—Flowers of excellent form; division broad, white at the tip with a band down the centre, deep scarlet at the sides, greenish in the centre. Certainly one of the finest formed *Amaryllises* that have been obtained; the broad and rounded petals and good general outline rendering it unsurpassed in that respect.

*Amaryllis Royal Standard* (Veitch).—Flowers neat in form and size, similar to the last in colour, but richer and with less green in the centre.

*Amaryllis Miss Alice Gair* (Veitch).—Large flower; broad divisions of a very rich vermilion colour. An excellent variety, and scarcely equalled in brilliancy of tint.

*Asplenium Baptistii* (Williams).—A very distinct species with bipinnate fronds 1 foot to 18 inches long; the pinnae narrow, serrated, dark green, half an inch broad, and 3 to 5 inches long. The plant is a native of the South Sea Islands, and was introduced about two years ago. It was certificated by the Royal Botanic Society last year.

*Imantophyllum miniatum* Martha Reimers (Williams).—A noble variety of *Imantophyllum* obtained by Mr Williams from the Continent. The plant shown had fine rich green leaves 2 feet or more in length; two umbels of flowers, one on a peduncle 2 feet in height, and comprising nearly thirty large blooms. The corollas are 3 to 4 inches long, brilliant orange-scarlet, with a lighter centre. We give the name as rendered by Mr Williams, but we presume the variety is the same as that figured in the 'Flore des Serres' last year as *Marie Reimers*, and which was one of several in Van Houtte's nursery raised by M. Theodore Reimers, gardener to Madame Donner, near Hamburg.—*Journal of Horticulture*.



## Calendar.

### FORCING DEPARTMENT.

**Pines.**—Plants that were shifted four or five weeks since into their fruiting-pots, will, if treated as directed last month, have begun to lay hold of the fresh soil, and to show signs of growing freely. Care must be taken to prevent a too rapid pace of growth for the present, while a good deal of fire-heat is necessary to keep up the temperature. The bottom-heat should not be allowed to range higher than from 85° to 90°, the former being quite high enough for young growing stock. When the days are light, avoid having much heat in the pipes, and shut up sufficiently early in the after-

noon to run the heat up to 85° for a short time—at the same time dewing the plants slightly overhead, and damping vacant surfaces and walls, so as to have a moist atmosphere while the heat is high. Do not let the night temperature exceed 65° as long as the nights are cold, calling for considerable firing. High night-temperatures tell injuriously on Pines very quickly, and should always be avoided. Let the ventilation be regulated according to the state of the weather, and let it be attended to in the morning as soon as the heat gets to about 57°, increasing the amount of air gradually

till 2 o'clock, when it should be gradually reduced. See that the soil is kept just damp enough to promote healthy fresh growth, avoiding dryness and overmuch watering. The early started Queens will now be swelling their fruit rapidly, and must have every encouragement. Keep them steadily moist by waterings of manure made from guano and sheep-droppings. Shut them up early so as to have a high temperature from sun-heat in the evening, allowing it to drop to 70° by 10 P.M. Let the air be kept moist in proportion to the heat. Syringe the surface of the bed, and give the plants a dewing overhead: avoiding wetting the crowns much, or they will grow more than is sightly. The bottom-heat for these should be kept as steadily as possible about 90°. Until fruit that are about fully swollen begin to colour, treat them as directed for the early Queens; but when colouring commences, give them more air and less moisture to develop flavour. Smooth Cayennes and Charlotte Rothschilds that are wanted to start six weeks or two months hence, should be kept cooler and rather drier for the next month; but do not carry this treatment so far as to cripple or stunt the plants. A time of comparative rest makes it the more likely that they will fruit when required. Any portion of the stock that are well rooted in small pots should be shifted at once. If shaken out or much disturbed at the root, more shade will be desirable than earlier in the season, until they take with the shift.

**Vines.**—The winter and early part of spring having been so very cold, necessitating so much fire-heat, it is to be feared that the foliage of early Vines may not be so robust as is desirable, and no doubt red spider will be more troublesome. No amount of attention should be considered too much to keep the destructive pest under. At this early season, the best way we have ever adopted is to keep a sharp look-out for its first appearance, and to sponge it off with a soft sponge and a little soapy water. A man can go over a great deal of foliage in this way in a short time. As soon as colouring commences in the case of pot-Vines, do not give any more strong liquid manure. Increase the air, and keep the soil sufficiently moist

to well sustain the Vines. The reduction of water at the root to an extent that tells on the system of the plants is a mistaken practice, sometimes adopted with the idea of having better-flavoured Grapes. Where the crops have begun to colour on permanent Vines, having their roots chiefly in inside borders, examine the soil, and if in need of water, give them a soaking that will carry them on till the Grapes are cut, or nearly so. Later Vines, in whatever stages of progress, should not be subject to high night-temperatures: it is the greatest evil that can be perpetrated on Vines otherwise in good condition. Fine leathery dark-green foliage, free from the attacks of insects, can never be produced with high night-temperature and a stagnant atmosphere. We would much rather have Black Hamburgs at 55° than 65° all through this month. A fine crisp growth and strong foliage, with dew-drops round their edge in the morning—the whole plants having a fresh healthy look—is the result of moderate night-temperature and judicious ventilation. The forcing should be done by day under the influence of light and sun-heat; and when the vineries are shut up in the afternoon with a high temperature, we like to shut the ventilators closely, opening them according to the weather at six o'clock. All growing Vines will now require constant attention. Whenever the best bunches can be discerned in the broad points of the buds, rub off all superfluous ones, leaving one to a spur. Stop the points of the shoots two joints beyond the best bunches. By the best bunches we mean the most compact and strongest-limbed ones. All the most loose and weak-limbed bunches should be removed. As soon as the shoots can be brought down to the wires, tie them in their places. This operation has to be done by degrees, especially in the case of strong black Hamburg Vines. Thin the berries of free-setting sorts early, for when the berries get larger the operation takes more time, and it gives the Vines needless work to do in swelling useless berries. Regarding the stopping of lateral growths, our practice is when the main shoots are very short jointed, and the leaves consequently thickly set, to remove entirely the lat-

erals; but when the joints are longer, they are stopped at the first leaf. Black Hamburg especially colour best in shade. Muscats, Gros Colmar, and some others, colour best with more light.

**Peaches and Nectarines.**—In early houses where the stoning stage is past, the temperature may be 60° in cold and 65° in mild weather, if it be wished to have the fruit ripe as soon as possible. Take every opportunity of shutting up early with sun-heat, at the same time syringing the trees with tepid water. If the inside border be dry, and the trees be old, give a good soaking with manure-water. Examine the trees carefully, and see that the crop is not too heavy, and that too many young growths have not been tied in, and remove some fruit and shoots rather than have too many to injure the tree. Disbud the growths and thin the fruit by degrees in succession-houses. Keep a sharp look-out for green-fly, and if it appears, fumigate with tobacco in two successive nights, and syringe the trees with clean water the following day. Give abundance of air to crops that are wanted for ripening late.

**Figs.**—Old-established trees with their roots in narrow inside borders, that are bearing heavy crops, will require copious waterings of manure-water to keep the border moist. Syringe the trees every fine afternoon until the fruit begins to ripen, when

the house must be kept drier. Let the night-temperature range about 60° unless it be very mild, when it may be 65°. Tie the young growths to the trellis, and avoid crowding them. In fact, no more young wood should be left than is enough for next year's crop.

**Melons.**—Sow and plant out succession crops. Increase the moisture in both the air and soil in the case of plants that have set full crops of fruit. Keep the heat at 70°, with 10° or 15° more by day with sun. Look over those in bloom at mid-day, and impregnate them. Stop the laterals one leaf beyond the fruit. Support the fruits when they begin to swell and become a strain upon the shoots.

**Cucumbers.**—Mulch the borders of those in full bearing with some horse-droppings and fresh loam in equal proportions. Shut up early in the afternoon with sun-heat, rising to 85° for a time, and syringe the leaves with tepid water several times weekly. Look over the plants every few days, and stop young growths at every joint. The night-temperature should be from 72° to 75° at 10 P.M., dropping a few degrees lower by morning.

**Strawberries in Pots.**—See former calendars. Introduce more plants into heat. Keep red-spider in check by syringing all plants not in bloom, and that are not colouring fruits. Place plants from which the crop is gathered in cold frames, to be hardened off before being planted out.

### KITCHEN-GARDEN.

ALL soil to receive seeds and plants should now be finely broken, and otherwise ready for seeds. Sow in drills lightly drawn, and cover with fine light soil should the natural soil be heavy and tenacious. Treading in the seed should only be done when soil is dry, and not likely to become battered after the operation.

Successions should be kept up by frequent sowings. This applies to Peas, Beans, Cauliflowers, Cabbage (if always wanted young), Spinach, Turnips, Onions for Salads, Radishes, Carrots for drawing, young French Beans every fortnight (on warm borders, first and last sowings). Scarlet Runners may be sown as edgings to be kept dwarf, or in rows wide apart to be staked. These Beans do

well to shut out manure-heaps or other unsightly objects which cannot be dispensed with. Examine early sowings of any seeds, and if they are not vegetating, sow again. Any kind may be sown this month with every expectation of success. Prepare for and sow Broccoli, Brussels Sprouts, Savoys, Kales of sorts, and any others of the Brassica tribe. Red-lead among the seed may keep off birds and slugs. Transplant all young plants before they become too thick. Lettuce are especially easily injured by being too long in the seed-rows. (We say rows, as we take it for granted that broadcast sowing has long ceased as a practice.) Asparagus seed may be sown, and young plants may be placed carefully in the ground

where they are to remain for use. The surface should be finely broken over, and a dusting of salt given, succeeded by a dusting of guano in showery weather. Plant out thongs of Seakale about 3 or 4 inches long; rich deep soil is desirable for this vegetable. If a quantity is behind a wall, hedge, or other shady position for late supplies, cover with sand, old tan, or any other light soil to blanch it. Close-fitting boxes (air-tight) or pots will answer the purpose. Plant Rhubarb in rich ground. Sow a pinch of Beet early in the month for first supply—but main crops are early enough last week of month to first week in May. Deep, finely broken soil, free from rank manure, suits Beet. Tie up Lettuce to blanch. Small Salads may be sown under hand-lights. Celery may be sown under hand-lights and plant-protectors, or in open borders. Protection from

frost should be used. Bring up all arrears advised last month. As a reminder, look carefully over a catalogue of reliable character, and note what should be planted and sown. Calculate the extent of land at command, and the quantities required, and regulate the crops accordingly. A glut at one time and scarcity at another defeat the object of utilising a private garden. French Beans now forcing are easily managed. They require abundance of moisture from the syringe, and manure-water plentifully when pots or beds are well filled with roots. Sow Gherkins, Vegetable Marrows, Ridge Cucumbers, more Tomatoes if wanted by middle of month. Hoe and prong wherever it is required to advance crops. Dust sawdust and lime wherever slugs appear. Order and absence of weeds should be everywhere. M. T.

### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

JOHN WILLS.—If you will turn to page 574 of our volume for 1880, you will there find a special notice of the very liberal prizes you are offering for fruit at the Edinburgh Show, 1882. In our March issue you will at page 135 see notice of your Manchester prizes for next September.

ROBERT GREENFIELD.—The blooms of Double Cineraria, Mrs Thomas Lloyd, came to hand in good condition. It is by far the finest Double Cineraria yet offered, and cannot fail to be popular: the blooms are nearly 2 inches in diameter, globular, and of a rich purplish crimson.

A. S.—The box in which you sent the leaves was smashed to pieces, by the post-office stamp no doubt. We cannot, however, undertake to name plants from leaves even if they reach us in good condition.



THE  
GARDENER.

MAY 1881.



NOTES.



AQUATIC plants are now becoming more generally appreciated, and this is especially true of the small-growing kinds. *Salvinia natans*, *Azolla* (*pinnata*) *Caroliniana*, *Trianea bogotensis*, *Pistia stratiotes*, and *Myriophyllum proserpinoides* are all worth a place, and may all be easily grown in small pans or inverted bell-glasses in a stove temperature. During the summer months the *Azolla*, *Salvinia*, and *Myriophyllum* grow freely enough in tubs or sheltered open-air tanks. A friend to whom I gave *Salvinia* last season, used it with excellent effect as a substitute for the sprig of flower or leaf in finger-glasses; and I have no doubt Mr Wills could show off these little curiosities to advantage in those miniature lakes with which he so artistically embellishes his ice-rockeries or Filmy-Fern glades.

*Ouvirandra fenestralis* is well known as one of the most rare and curious of all aquatics. Its cultivation, however, is not always a success. The following are, I think, essential to its wellbeing: 1. Pure soft rain or river water. 2. Pure fibrous peat, and a little silver-sand as compost. 3. A pot as small as possible. 4. The water to be refreshed twice daily, morning and evening, by watering overhead with a fine-rosed water-pot. 5. Dense shade: direct sunlight is fatal by browning the leaves and favouring the growth of *confervæ*. 6. An opaque-sided pan or slate-tank to grow it in. 7. Temperature of water never below 60°. 8. A large body of compost at the bottom of the pan or tank is bad, as when planted out in this it is difficult to remove the plant, if the earth around it becomes vitiated or sour. Our plant

is now making nice fresh leaves, 10 inches long in the blade by 4 inches wide. In dense shade and in pure soft water this plant is by no means of slow growth.

One of the finest of all Orchids now in blossom is the old but ever lovely *Cymbidium eburneum*. Its culture is now becoming better understood. It used to be grown in peat, and with care succeeded moderately well; but of late years a loamy compost has been found to suit it far better, and, so grown, its blossoms come larger and expand better. Mr Spyers was, I believe, one of the first to try the plant in loam, and he had his reward the other day when he brought a specimen to South Kensington bearing sixteen flowers! The leaves are gracefully grass-like, curving in a pleasing way, the one or two great *Lycaste*-like flowers being borne on erect stems a foot or more in height. It is wonderful how this plant roots into the lumps of loam; and those who do not bloom it well in peat should give it a loamy compost at once.

*Dendrobium fimbriatum oculatum* is not one of the most modern, or fashionable, or expensive of Orchids, but it is a robust grower, and, under ordinary culture, rarely disappoints one. It comes in well for April or May exhibitions also, and is showy enough for grouping with other flowering exotics. We have a plant just now bearing fifty spikes of from eight to fourteen flowers each, and the effect is quite brilliant enough; besides which, the spikes come in well for cut-flowers. It is necessary to bear in mind, however, that as the flowers are produced several years in succession from different nodes or joints of the same old bulbs, the bulb itself should not be cut away with the flowers.

There are one or two annuals that are not generally known, and so they are rarely met with in gardens. One of the most showy (on hot dry soils it is especially brilliant) is *Venidium calendulaceum*. The flowers are more vivid than those of *Calendula officinalis*, and the habit of the plant is neater and better in all ways. A bed of it here last year attracted much attention. It was recommended to me by the late Miss J. Hope of Wardie Lodge, and that is perhaps the best I can say of it. Another tiny plant, quite different but still very pretty, is *Ionopsidium acaule*, a fully developed specimen of which is about 1½ inch in height and 2 inches in diameter. It has a mossy appearance, and is studded with pretty little lilac cup-shaped flowers, each of four petals. For the margin of a rockery or the front of a herbaceous border it is charming, and it may be successfully grown in small pots for greenhouse or window decoration.

Daffodils are now in perfection on this 11th day of April 1881: locality near Dublin Bay. There was some sense in a remark a gardening friend made to me the other day. "Oh yes," said he, "I

know the varieties are interminable, but tell me the names of the best thirteen varieties in the whole family." Here they are in what I consider their order of merit: *Narcissus maximus*, *N. Horsfieldii*, *N. Emperor*, *N. Empress* (for size), *N. obvallaris*, *N. Bulbocodium* (for pots), *N. poeticus*, *N. minor*, *N. princeps*, *N. incomparabilis*, *N. odorus*, *N. Tazetta* (for pots), *N. jonquilla* (for fragrance).

For really robust, hardy, and effective kinds, take *N. maximus* and *N. Horsfieldii*, both as hardy as the common wild Daffodil, and immeasurably more stately and effective as garden flowers.

A good spring-flowering greenhouse climber is *Clematis indivisa lobata*, which for a month at least has been covered with its pure-white star-shaped flowers. It grows rapidly, and is singularly free from insect enemies, and its blossoms come in at a time when choice and long-enduring flowers are valuable. A large dish fringed with Ivy leaves and filled with the flowers of this *Clematis* and those of the scarlet Pan Anemone (*A. fulgens*), has been a nine days' wonder to all who have seen it. I know of no other plant which gives such rapid and good return for its culture as this; and it should find a place in every greenhouse or conservatory, if not there already.

There are a good many sides to the hardy-plant question, and one well worth looking at is their importance and adaptability for forcing into bloom early in the year. Hyacinths, Tulips, Crocus, Lily of the Valley, Solomon's Seal, Tea Roses, Lilac, Deutzia, Spiræa, *Narcissus*, *Scilla*, *Helleborus niger*, Tree *Pæonias*, and many other things equally familiar, are perfectly hardy. Seeing that hardy plants are so adaptable, the question naturally arises whether we make the most of them in this way. There is a desire for variety abroad, and those who would profit most by it should keep an eye on hardy bulbs and experiment on their forcing qualities. One London florist made £70 last season by forced flowers of *Narcissus poeticus* alone. "I tried it last season," he told me, "in an accidental way. In the autumn I was planting Black Currants under my Plum-trees, and had to displace some old plantations of *Narcissus*. When I saw the crop of bulbs dug out, the idea suddenly came into my head to try and force them for early flowers! The first year they were wellnigh a failure, so far as quantity of flowers went; but the flowers sold so well that I resolved to master their culture. We mulched the pots with leaf-mould, and as the leaves turned yellow, allowed them to dry off under a north wall; and the result was that, from the same pots, we this season cut flowers in March by the thousand!" The moral is, when you experiment in forcing hardy flowers, and fail the first time, don't give up in despair, but try again. The addition of a new flower into the trade is not all *couleur de rose*; but if a thing "takes," the man who can supply it, and enjoys somewhat of a monopoly, is sure to reap his reward.

Orchids generally are cheaper than formerly was the case; but at Mr Day's sale the other day, the unique broad-petalled variety of Stone's *Cypripedium* fetched 140 guineas, or £42 in excess of any price ever before paid for a single Orchid of any kind! Sir Trevor Lawrence was the purchaser. I only remember three instances in which the price paid for a single specimen reached £100 before this case. Firstly, the late Duke of Devonshire gave it for one of the two first plants of *Phalenopsis* brought by Mr Cuming from the Philippines. Then Lord Londesborough gave £100 for an immense plant of *Dendrobium Wardianum* imported by Messrs Low and sold by auction by Mr Stevens.\* Then that splendid plant of *Vanda cærulea* grown by Mr Lowe at Henley-on-Thames was sold by auction for £80, and eventually changed hands at the lowest value of any three figures. After all, these fancy prices are not altogether satisfactory; and I have no doubt that those who pay moderate prices for some of the more common but not less beautiful kinds, derive more satisfaction in return for their money. Every one to his taste, however.

It is no matter of doubt as to whether the Land Question will affect horticulture. It has affected it in some localities very sensibly; and not only in Ireland, but throughout England and Scotland, the depressing influence must be felt. Bad seasons, foreign competition, and other causes less evident, have lowered the value of land everywhere. At present Ireland, where everybody depends on the land for a livelihood, feels the pressure most heavily; but the influence must become general. It costs more to send produce from Lancashire to London than from New York to Liverpool,—in fact, in every way our own growers are heavily handicapped. Rent-rates, taxes, high freightage or carriage, and an inferior climate, all co-operate against them. Where all this will end it is difficult to see. At any rate, it seems probable that "free trade" will prove a very expensive article of faith even in our own time.

F. W. BURBIDGE.

## GREENHOUSE PLANTS.

### NO. IV.—CHOROZEMAS.

CHOROZEMAS are very beautiful, free-flowering, evergreen shrubs, natives of Australia. They are easily cultivated, and produce very freely their bright-coloured, pea-flower-shaped blossoms during the spring and summer months. As plants for decorating the conservatory or greenhouse during the time indicated, Chorozemas are of much value, and when large enough, and in good condition, they are amongst the best of exhibition plants. Apart from the beauty of their flowers, they have several qualities to recommend them for the latter purpose, amongst which may be mentioned their quick-growing habit, in con-

\* The late A. B. Stewart, Esq., gave £100 for a plant of *Vanda Lowii*.—Ed.

sequence of which it only requires a few years to form them into fair-sized specimens suitable for the exhibition-table. Then their flowering season may be prolonged for a considerable length of time, by retarding the growth of some plants through placing them in a cool airy position, and accelerating that of others through subjecting them to slight forcing, both of which may be done without injuriously affecting the plants; and again, with due care, *Chorozemas* may be taken to and from the exhibition without injury either to the plants or their flowers. This latter quality alone should secure for them the patronage of plant exhibitors, as it is well known many beautiful flowering-plants cannot undergo the vicissitudes consequent upon their removal to and from the place of exhibition, without their crop of flowers being destroyed at the time, and not unfrequently resulting in the death of the plants. Hence plants that produce beautiful flowers, as in the case of *Chorozemas*, and that can undergo without injury the exposure consequent upon taking part in a horticultural exhibition, are of more value, from the plant exhibitor's point of view, than those which cannot do so.

*Chorozemas* are increased by either seeds or cuttings. Plants raised from seed, however, are preferable to those raised by cuttings. The seeds may be sown any time from January to August, but the earlier in the season the better. A compost of equal parts of peat and silver sand is suitable to sow them in. The pot or pan in which they are about to be sown should be properly drained, and the remaining space filled with the compost pressed firmly down to within three-quarters of an inch or so of the rim or top of the pot, making the surface smooth, on which the seeds are to be strewn as evenly as possible, and covered with a quarter of an inch or so of the compost, pressing it firmly on the seeds. This done, give a nice watering without disturbing the compost placed over the seed, and plunge the pot containing them in a mild bottom-heat, and place a bell-glass over it; shade from sunshine, attend to watering, and in due time, if the seeds are good, the young plants will appear. As soon as they are fit to handle, they should be transplanted singly into small pots, using a compost similar to that in which the seeds were sown. After the seedlings are pricked out, give them a good watering, and plunge the pots containing them in a bottom-heat similar to that in which they were raised; then place hand-lights or bell-glasses over them, and shade closely for a week or so, until the roots of the little plants have taken hold of the fresh soil; after which time, gradually inure to more light and air. As soon as they have become established, they should be removed from the bottom-heat; but it is well to plunge the pots in which they are growing for a while longer in some light material, such as cocoa-nut fibre or sawdust: this will prevent injury to their roots through sudden drought, and consequently preserve the health of the plants. They should now be placed in an airy position as near to

the glass as possible, and in future stages of their growth a similar position in the structure in which they are placed should be given them. As soon as they are about 3 inches high, they should have the points of the leading shoots nipped or cut out, which will induce them to push out three or four shoots, thereby forming a foundation for the future plants. The second year of their existence they should be repotted about the beginning of April, and again about the first week of August, and on neither occasion should they be over-potted—that is, the pots to which they are transferred should not be much larger than those they previously occupied. In the future years of their growth an annual repotting will be all that is required; and when they occupy pots of a size that it is not desirable to increase, they will, if the drainage is all right, remain healthy for several years without repotting.

After *Chorozemas* become established, they should be potted in a compost of good fibry loam and coarse river-sand, in the proportion of three parts in the bulk of the former to one of the latter, thoroughly well mixed together before being applied to the roots of the plants. When repotting them, the fresh soil should be made moderately firm as the process goes on. During the period of active growth, they require liberal supplies of water to the roots; and it is essential to their wellbeing that a ready exit be provided for any superabundance that at any time may be given. To secure this, the cultivator should, when the plants are being repotted, provide them with ample and efficient drainage, and thereby guard against the evil results of stagnant water and soured soil coming in contact with their roots. It has been previously pointed out in the 'Gardener,' that the efficiency of the drainage depends as much or nearly so upon the arrangement of the materials as upon the quantity supplied; and this should be kept in mind, particularly by the young cultivator, and especially when repotting specimen plants that have to remain for a considerable length of time in the same pot without being disturbed at the roots. *Chorozemas* being slender-growing plants, they require staking and training into shape; and the cultivator, owing to their slender habit, may train them into any shape that he fancies—but in my opinion, that of a blunt cone is the most desirable form. After the plants become sufficiently large for the purpose that they are intended for, they should be annually pruned or cut back immediately after the flowering season is past; and this is also the proper time to clean them from scale or other insects with which they may be affected. Like all plants cultivated under similar circumstances and employed for similar purposes, *Chorozemas* must be kept free from insect-pests; and the means previously recommended to be used in the case of other plants applies to them, and need not be repeated here. The following are the three best species that I know of: *C. cordata splendens*, *C. Henchmanii*, *C. varia Chandlerii*.

J. HAMMOND.

## FRUIT - CULTURE.

## THE APPLE.

THE Apple is undoubtedly the most useful of fruits, hardy or otherwise, and is appreciated by old and young, rich and poor, alike. Not very many years ago our supplies were home-grown ; but, like beef and bread, we are now indebted, to a great extent, to America for a very large quantity of the finest Apples. It is alleged that there are sufficient Apples to spare in the United States and Canada to fully supply this country, and of better quality than we are able to produce even in our best fruit-growing districts. And yet we feel confident that, on suitable soils, and in favourable localities, Apple-growing will be a paying occupation for a long while to come. Unless prices are to be remunerative, growers in America will not care about supplying us ; and we may take some comfort from the fact that if land is cheaper there, labour is cheaper here. Of course they have the advantage in the matter of climate ; but this only applies to the growing of fine kinds—for there are many square miles, altogether, in this country where Apples may be grown, with as certain a chance of a crop as in America, *if quantities of trustworthy kinds are grown*. This means, that if we will retreat at those parts of the line where we are beaten, and concentrate our forces where we are able to hold our own, the day, so far, may yet be ours. It is of no use our trying to compete with the Americans in the production of the finest dessert Apples, for there our climate fails us. We may grow fine Apples as heretofore, but we must admit the fact at once that we can never do so remuneratively—at least, with our present varieties—for our fine kinds are not to be depended on for a crop ; and unless we are to have kinds which are certain croppers, we may as well give in at once. Kitchen Apples will always be needed, and in increasing quantities too ; for people of all grades are awaking to the fact that fruits are *necessaries* of life, and not merely luxuries, as they have been hitherto regarded.

With such facts as these before our eyes, we do not think we would do right if we advised the amateur grower, who may know nothing at all of the subject, to buy and plant fine sorts in a small garden. We have seen this done, and seen the bitter disappointment when, after years of spending and hoping, the result was bare trees year after year.

This is addressed to those who plant that they may reap ; who prefer crops with something like regularity—even although the quality is not the very best—rather than a few very fine fruits now and again at intervals of years. Possibly others may go in for quality and risk the chance of a crop. We will endeavour to meet the requirements of all parties, but we add again—it is *cheaper* to buy the finest Apples ; while, under certain conditions, it is cheaper to produce ordinary kinds than to buy them.

*Soil.*—We think that soil is the most important thing to consider in the planting of Apple-trees. Climate is no doubt an important factor in the production of first-class crops, but there are not many districts south of the Grampians where the climate is so bad that fine crops of Apples may not be produced if the soil is a proper one. Now we wish to impress our readers with this fact, for this is where the majority of inexperienced persons err: it is useless to plant *orchard-trees* on land where the farmer fears to allow his plough to penetrate more than 5 inches; and yet we could name places where such a thing has been done. We know that ninety-nine out of every hundred of cottage and villa gardeners have no power to help themselves in this matter,—they must “take the ford as they find it.” When the soil is extremely thin, only dwarf trees should be grown, although dwarfs may be grown on any soil. Our best orchards everywhere are on deep heavy land; and unless the soil is, or can be made, 2 feet deep at the very least, and 3 feet if possible, we would not advise the planting of what are known as Standards. Yet no trees give less trouble and yield more in the long run. If the soil is light and deep it will do very well for the same purpose, and road-scrappings or clayey soil will do it much good. Heavy soil may be improved by the opposite treatment. Road-scrappings from off sandy roads will do much good, and such is generally more attainable by the grower on a small scale than light loam or sandy soil, although these should be secured if they are to be obtained. Ashes (screened), sand, leaf-mould, peat, and other suchlike substances are also valuable. Drainage is also necessary; for no fruit-tree will thrive where the soil is saturated with water.

In preparing the ground for the reception of the trees, it should be trenched to its full depth, but only the best soil thrown on the top. The bottom should be dug over (or picked if need be), so that the air and rain may penetrate and escape freely. Between the three upper layers of earth, layers of manure should be placed—thick or thin as the land is poor or rich—and a dressing of lime, unless the soil is on chalk or limestone, over the surface. This operation may be done during winter. The season following we would take a crop of Potatoes off the ground, and work the ground properly. The result will be a well-prepared soil, on which the trees will be sure to grow if they are healthy when planted, and properly taken care of afterwards. Of course, if the trees are to be dotted about in the vegetable-garden, the whole garden need not be trenched; nor will it be necessary to wait a year on the ground preparing. When the ground is in good condition, and properly drained, the trees may be at once planted. When the land is once properly prepared, the operation of planting is the same in all cases.

*Position.*—In gardens, Apple and other fruit trees are planted along the sides of the walks, and against the walls. If no other place is available, then these are the best places. Standards should be planted not nearer to the walk than 5



feet, and not nearer each other in the rows than 20 feet, or else in a few years nothing will grow between them. We don't recommend such trees for small gardens at all; for a very few trees would swallow up the whole space and leave room for nothing else in a short time. Trees of this kind are only suitable for large gardens. Indeed we do not recommend the planting of trees at all in gardens which are to be annually cropped with vegetables. It is bad for the vegetables, and it is bad for the trees. We recommend that such trees—and indeed all fruit-trees—should be planted by themselves. We don't care although only half-a-dozen trees are to be planted—we say, plant them by themselves. If there is over an eighth of an acre available for the purpose, make AN ORCHARD. If there is no other place, plant dwarfs in a quarter by themselves in the vegetable garden. In preparing soil for dwarfs it does not need to be so deeply dug—otherwise the preparation is the same. For dwarf trees, 12 inches of good soil will do; and we have seen good results with only 6.

*Planting.*—The end of October is the best time of the year for planting fruit-trees. Plant only where the soil is dry. Orchard-trees on good deep soil should stand 25 feet apart after they have fully grown. Mark the rows then at 25 feet apart. This will leave a good deal of unoccupied space, so it may be as well to plant the trees 12½ feet apart in the rows. In this case every alternate tree is to be lifted before it crowds its neighbours. Trees of this kind, when planted on soil prepared as we have described, need very little trouble afterwards; but they are years in coming into bearing, and are only suitable for those who have room to form a regular orchard, or who have a large vegetable garden. For those whose ground is limited—and most cottage and villa tenants and owners have only small spots—we would recommend a *miniature* orchard. A miniature Apple-orchard should be planted with trees of the English Paradise Apple stock; for on these, especially when root-pruning is practised, the trees grow dwarfer, and bear fruit more plentifully and sooner than when on the free (or seedling) stock, which is the one suitable for large orchard-trees. Anybody having a plot of ground 50 feet or so square, may have three dozen of trees, if trees on these stocks are planted at between 7 and 8 feet apart. At this distance occasional root-pruning will be required, even on these dwarfing stocks. Those who have only a small plot to devote to Apple cultivation had better plant trees 6 feet apart each way. These trees require to be kept in small bulk; and for this purpose, trees grafted on the Doucin, or French Paradise Apple stock, should be planted. Mr Rivers, in 'The Miniature Fruit-Garden,' advises the planting of such trees as these much closer together than what we have advised; but we have had something to do with orchards planted on Rivers's plan, and we consider that the room which we have recommended is little enough. Cottage and villa owners could not do better than procure Mr Rivers's little book, and well study its teachings; but our experience is, that the excessive restriction which is there recommended, is not suitable. We will not criticise Mr Rivers's teaching. His indomitable perseverance and enthusiasm we admire. We feel grateful to him, and honour his memory for the great work he did for Pomology; but we think that, for ordinary growers, and more especially for beginners, a less tied-down system, if we may so express ourselves, is more worthy of recommendation. We therefore advise beginners to allow their trees the distance named.

Perhaps we ought to say that only young healthy trees should be planted; and trees which have been repeatedly cut back to keep them small, are neither young

nor healthy. To make sure of getting proper plants, it may be as well to select the trees personally, and to get them from nurserymen who have a reputation to lose; for it is no uncommon thing for worthless kinds to be sold under fine names.

Having got the ground ready, and the trees to hand, mark the precise places where they are to be planted, and dig the holes as large as will allow of the roots being spread out on all sides. On dry soils the holes may be 8 inches deep, and on wet ones 4. Make the bottom perfectly flat and firm. On this firm bottom spread an inch of pulverised soil, from off the surface, and put the tree on it. Any strong or broken roots should be shortened back with a sharp knife, for all cuts must be short and clean: every fibry root must be saved. Only dry pulverised soil should be placed next the roots, and carefully worked in among them; and if the soil is of a *very* heavy description, it will be well to have a heap of such soil prepared beforehand. On dry soils the ground should be left level; on clayey land it should be raised—heaped up round the tree—2 or 3 inches; and in all cases it should be made thoroughly firm, so that heavy rain may not have a chance to water-log, and so sour it, and that the roots may have something firm to lay hold on. A stout stake should be driven in beside each, and the tree securely fastened to it, to prevent it rocking when winds are high, otherwise all young roots will perish as fast as they form. Between the trees and the stakes some soft material should be placed to prevent the stakes chafing the bark. Old cloth, matting, or even straw-rope will do. Lastly, put a circle of partially decayed manure, 3 inches thick, over their roots, and beat it firmly and neatly down with the back of a fork. This covering will protect the tender roots from frost in winter and drought in summer, and every rain-drop that falls on it will take food down to the roots as they stretch through the soil in search of nourishment.

A. H., H.

(To be continued.)



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

NO. V.

*North borders.*—The aim of all good gardeners is to extend the duration of crops, whether of fruit or vegetables, over as great a period as possible, various schemes being resorted to as circumstances may suggest. A quarter for one thing and a quarter for another is all very well in its way; but it is not the most scientifically managed gardens that yield the most satisfactory results. Much scheming is absolutely necessary, especially in small gardens. According to my experience, there are but few gardens where the crops of many kinds would not be found most profitable if distributed in patches; and I for one prefer to sacrifice order and strict rotation in order to maintain an unbroken supply without risking an undesirable glut. North borders prove especially useful, but unfortunately they are oftentimes small in proportion to the size of the gardens, as, by their proper management, much labour to attain the same ends is saved.

*Cauliflowers.*—Taking these for instance : if in the spring we have a good batch of autumn-sown plants, some of the strongest are planted in warm sheltered spots as previously advised, others on warm borders more in the open, and the remainder are planted on a north border. About one sowing of a main-crop variety on a warm border, early in April in our case, or on a gentle hotbed in colder districts, and the plants grown on a tolerably rich, open quarter, would then be sufficient to maintain the supply till the earliest Eclipse, or even Veitch's Autumn Giant (autumn-sown), are fit for use. This season autumn-sown plants are scarce, and therefore more plants were raised under glass for both the open ground and the north border. One of the best summer varieties is Sutton's King of the Cauliflowers, and it is equally good for the autumn, especially if grown on a north border.

*Turnips.*—These are still more important, in the cook's estimation at all events, and are often grown with difficulty during the hot summer months. For these reasons it is advisable to grow a crop on a north border. As before stated, we make our earliest sowings on an east border, commencing on the north border about the second week in June, giving the preference to a good strain of Snowball. Turnips often fail owing to insufficient pains being taken with the ground, and later on with the young plants. A tolerably rich firmly trod soil should be given them, and they should be encouraged to grow quickly, and never be crowded. If the ground be dry at sowing-time, after drawing the drills, water them well over-night or a few hours previous to sowing. This will be found more effective than watering after the seed is sown, and the ground levelled, as the enclosed moisture does not so quickly evaporate. Of course these remarks are equally applicable to the sowing of other kinds of seeds. At this time of year it is always advisable to sow small patches of Turnips at fortnightly intervals in preference to one large one. Sow seed thinly, dust over the seedlings with soot and lime on the first appearance of fleas, and thin out early.

*Summer Spinach for packing purposes.*—Sown in the open during the hot summer months, Spinach is certain to run to seed before it is of a serviceable size. In consequence of this, although there is no great demand for it, I still consider it advisable to grow a little on a north border,—not so much, however, for cooking, as the New Zealand Spinach is a capital substitute, but more especially for packing purposes. Vegetables have long been packed and sent to a great distance in Spinach, out of which they are taken comparatively fresh, and so also will cut-flowers if packed in it, and I strongly advise others to give the plan a trial. The cool succulent leaves, unlike other packing material, do not absorb moisture ; on the contrary, they afford a certain amount, or at all events materially assist in its retention. Roses, each wrapped in a Spinach leaf, and closely packed in layers and

shallow boxes, travel most satisfactorily, and so do many other kinds, including *Stephanotis*. Spinach at all times grows most luxuriantly in moderately rich soil, and manure should be freely dug into a north border. The drills may be disposed a foot apart, and the young plants ought to be thinned out early.

*New Zealand Spinach*.—Where the cooks can be prevailed upon to use it, this is found to be a most profitable vegetable. It is most easily cultivated, and about a dozen plants will in time afford heavy pickings daily. The seed is usually sown in heat early in April, putting out the plants obtained towards the end of May or early in June. It is not yet too late to sow. Fill as many 3-inch pots as plants are required with common soil, firmly press in about three seeds into each pot, and place them in a mild hotbed and keep moist. The seed will germinate more quickly if soaked in water twenty-four hours previous to sowing. Thin out the seedlings to one plant in a pot, hardening these off, and planting out before becoming root-bound. Any sunny spot is suitable to grow them. Here, for instance, the plants will follow winter Spinach on a well-manured raised south border. The plants should be planted at least a yard apart each way, and should not be placed near to fruit-trees, as they greatly impoverish the ground. They will require to be watered till established. The growth spreads very rapidly, the points being usually picked.

*Tomatos*.—Although I wrote in the last June number of the 'Gardener' at some length on "Open-air culture of Tomatos," I cannot consistently omit reference to the subject in this series of papers. That Tomatos are still gaining ground in the estimation of all classes of the community I am frequently receiving proof; and as they are considered by medical men to be very wholesome, it is to be hoped they will gradually displace the unwholesome Cucumber. Last season unusually heavy crops were produced on plants in the open air, though in many districts a great percentage of the fruit was badly diseased. To secure heavy crops extremely liberal treatment must necessarily be given, aiming also to have their fruit ripening as early as possible. In order to have an early crop, it is not advisable to plant sooner than usual, but rather to have plants in a more forward state—that is to say, with the first bunch of bloom already set, and more blooms expanding. This plan, of course, entails more labour and requires more house or frame room than does the commoner practice, but it pays: how best to prepare the plants depends much upon circumstances. In my last situation I prepared them in frames, as previously described; here they are being prepared between plants fruiting early on the shelf of a forcing-house, and in other somewhat similar positions. The seeds were sown early in April, the seedlings potted off into 4-inch pots, shifted into 8-inch pots, and trained up the roof. All side shoots are closely rubbed out, and the plants carefully watered. They will be hardened off

at the end of May, and planted out probably early in June. I do not anticipate any serious check to the development of the fruit, some of which most probably will be ripe by the middle of July, and the plants will continue in bearing till injured either by frost or disease. Of course it is impossible, in many cases, to grow the full number of plants in this manner. Here, for instance, fifty will be so prepared, these being destined for the hottest walls, those intended for the borders clear of the walls being sown later, and not allowed to get so much root-bound and drawn up as often is the case. With me the earliest bed of Lettuces is usually followed by Tomatoes, manuring freely and disposing the plants in lines at least 2 feet apart, and about 18 inches asunder in the lines, placing a strong stake to each at once. In this position the heaviest crops usually result. Manure is also freely worked in for those at the foot of the walls, planting these about 15 inches apart. In each instance the plants are grown with a single stem, are kept carefully trained, have all side shoots closely rubbed out, are watered during dry weather, and occasionally with liquid manure, and early in the season are freely mulched with half-rotten manure. Under this treatment nothing but disease prevents very profitable crops resulting. It is the late ripening, consequent upon haphazard culture, that most frequently ends in disappointment.

W. IGGULDEN.



### CENTROPOGON LUCIANUS.

THIS charming plant is not met with in the majority of gardens; and even where it is allowed a place in the stove, it is too often kept for the sake of maintaining a variety. Under such circumstances, its real beauty and usefulness can never be appreciated. That it is well grown in some establishments there can be no doubt, especially where an effort is made to produce flowers for decorative purposes during winter and spring, for which it is invaluable and very effective when well cultivated. Its habit of flowering profusely during winter should alone commend it to growers, without considering the length of time it will continue to produce its flowers in succession,—commencing as it does in November, at the termination of the shoots, and then breaking back and blooming all the way down the stem; in fact, during winter and spring it will continue to grow a little and then produce flowers, keeping the stove gay long after the latest Poinsettias and Euphorbias are over; and on this account the *Centropogon* should be grown in quantity.

The habit of this plant is somewhat straggling, if an attempt is made to grow specimen plants, or doubtless it would long ago have figured in the front rank at our autumn and spring exhibitions. Nevertheless, it could be grown and trained to look effective for this

purpose ; but the object of these notes is to describe its cultivation for decoration in small pots.

Its propagation is effected by means of cuttings, which are plentiful during the present month. If taken off much earlier, they are generally flowering shoots, which will do if the object is to get a stock ; otherwise they are not recommended, as they do not grow so luxuriantly as young ones which push from the base after flowering. The young shoots root readily if inserted in sandy soil, and placed under the shade of Cucumbers and Melons, or on a shelf if shaded from the sun ; and quicker still if placed in the propagating-frame, or under a bell-glass. When rooted, the young plants should be potted singly in 2-inch pots, and grown on in the Melon-house for a time until well established in their pots. They do not grow rapidly at first, as the young shoots inserted as cuttings will not extend many inches in length ; but stronger growth will start away from the base, and grow sometimes between 2 and 3 feet in length. When the young plants are established, they should be placed in a pit close to the glass, where more air can be given to them, so that the growth made will be more sturdy and firm. After they have filled the 2-inch pots with roots, they should be transferred into others 2 inches larger, which should be liberally drained, until they are placed in 5, 6, and 7 inch pots, which are large enough for all ordinary purposes. In potting, care should be taken that the plants never become pot-bound before the operation is carried out, or they will be seriously checked. The drainage only should be removed from the old ball, with as much care as possible, and the soil should be pressed firmly into the pots. After potting, in each case the house or pit should be kept close and moist for a time, until the roots have taken fairly to the new soil. The *Centropogon* is not particular to soil, and will do fairly well in almost any compost. Rich fibry loam, and a seventh of well-rotted manure, with plenty of coarse sand, and a little charcoal to render the whole porous, suits it well.

While growing, liberal applications of water should be given, and the plants well syringed overhead twice daily. Weak stimulants may be given every alternate watering after the plants have filled their flowering-pots with roots. As the season advances, the plants must be gradually hardened by reducing the artificial heat until it can be dispensed with for a time during the hottest months of the year. The house or pit in which they are growing should be closed early in the day, so as to run up the temperature considerably by sun-heat, as this will prove advantageous to the plants while in cool quarters. As soon as the nights become cold, they should at once be removed where a temperature of 55° to 60° can be maintained. If growth is sturdy, no stakes will be required while growing to support the shoots ; but before flowering, short stakes should be placed to each shoot, according to its length,—not too long, as the plants show themselves off to greater

advantage when allowed to arch the top part of their growth similar to *Euphorbia Jacquiniflora*. When grown this way, instead of their whole growth being staked entirely upright, they can be arranged to look more effective amongst stove-plants of a more formal habit. The flowering shoots stand well out, and thus give to the whole a light and gay appearance. I have found very little advantage to be gained by pinching the shoots while growing, as this plant has not much inclination to branch into a number of shoots. The strongest shoots only should be stopped. The more moderate growths that throw up from the base should be allowed to extend, as they flower the best, and for the greatest length along the stem. Plants with from one to three good shoots are much better than a greater number of small ones, and look much better when staged amongst other plants.

By propagating two or three sets of plants, a better succession will be maintained, and the latest will be much dwarfer, and therefore better for arranging near the front of stages. This plant has seldom given me much trouble to keep it free of insects. I have never seen anything upon it but a little thrip, which can be easily kept under by liberal syringing.

WM. BARDNEY.



#### NOTES ON BROCCOLI.

LAST autumn, when our Broccoli were looking their best, I decided to send a few notes to the 'Gardener' on the subject when the time came round again for their culture; and now that it is here, I am almost ashamed of my decision, as all the Broccoli crops in the country have undergone a wonderful transformation since last autumn. As a rule, they have failed to such an extent that many may be considering whether to grow them again or not. I more than suspect that the last failure is not the first during the last three years, and we all know that repeated loss is not encouraging to further trial; but I think we must try and try again with the Broccoli yet. In ordinary winters they are such an excellent vegetable that nothing so good could be substituted for them, and the hope is great that we will be more fortunate in the weather next time our winter and spring Broccoli are due. Considering the past, too, it has not been without its advantages, as it has proved very markedly which kinds we may place most reliance on at such times; and the warning should not be trifled with, but let every one confine his sorts to those which have resisted the severe weather the best, as this is more likely to be the means of securing a crop than selecting varieties at random, or growing those which have previously proved most tender.

Some seasons we have grown more than a dozen sorts here, but several of them possessed so little merit that we have reduced them to about four kinds or so. First and foremost comes Veitch's Self-

Protecting Autumn Variety, which comes into use in November and December, and is an excellent sort for succeeding Veitch's Autumn Cauliflower, which is closely followed by Osborn's Winter White, which in its turn is followed by Carter's Mammoth Spring White; and this is finally succeeded by Sutton's Late Queen, which comes in from the middle of April until the end of May. This variety is one of the hardiest of all Broccoli, and it, together with the first-named, are our favourites in this section of vegetables, and should be included in all Broccoli lists. In most cases Broccoli seed will have been sown by this time. Where all has not been put in, no time should now be lost in completing the operation. The seed is best sown in beds broadcast, but not too thick. Our beds for all plants of the kind are generally made on one of the kitchen-garden borders, from 12 to 20 feet in width. If a very small quantity is sown, it may be put into a drill along the bottom of a wall, or any such place. Under such a system, the drill may be from 1 to 2 inches deep; but the seed should not be covered quite so much as this, whether in drills or broadcast. Birds and slugs are always eager to destroy the young plants when in a small state, and it is sometimes necessary to put a piece of net over the seed immediately after sowing to keep birds off; and other pests may generally be kept away by sprinkling a little soot and lime over the surface. When once the plants are fairly through the ground, they will push on rapidly; and if the seed was sown thick, and germinated well, they will be too crowded to remain in the seed-ground until finally planted. In such cases they should be carefully thinned out as soon as they have formed two or three rough leaves, and dibbled into some good piece of ground, from 3 to 4 inches apart. This transplanting may cause them to fall a little behind those in the seed-bed in growth, but they will form a succession, and all will be converted into sturdy healthy plants by the operation. Some may be ready for planting in their permanent quarters by the end of May, others during June; and those which were given plenty of room at transplanting time may be retained until July, if necessary, to fill up space then rendered vacant by removing other early crops.

The time of sowing or planting does not influence the time of heading very much. This is entirely guided by variety. For instance, were Veitch's and Sutton's varieties, recommended above, both sown on the same day in April, the former would head in November, the latter five months afterwards. I merely state this simple fact, as the question is frequently asked by amateurs how Broccoli are got in for such a time in succession. The extent of most kitchen-gardens is barely sufficient to produce all that is required from them, by only taking one crop off the ground in the year. Two crops, and sometimes three, are not too many in some cases; and in such gardens Broccoli has seldom a piece of ground set apart for it exclu-

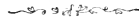


sively. A spring crop must generally come off the ground before the Broccoli are planted; and as it is the most economical way, there is no reason why it should not be so. At the present time we have a number of Sutton's Queen Broccoli on land that was a crop of Peas last July, and by that month again the same piece of ground will contain an advanced crop of Turnips. If fine large heads are desired, the plants must not be grown too closely together; besides, close planting has also a great tendency to make the plants tender—a condition to be strictly avoided in the case of all winter and spring plants. These cannot be grown too hardy. Wide planting and an exposed situation are the rules to follow to secure this. Early autumn kinds may be grown 18 inches apart each way; later sorts, 2 feet and 30 inches. Where large quantities are wanted, good breadths should be planted; but where only a few heads weekly are all that is required, a few rows may keep up the supply—and for convenience these may be planted in any little spare strip of ground. As late sorts remain a long time on the ground, they should not be planted in the centre quarters, which are likely to be wanted early; but when they are kept at the ends of the quarters they are seldom in the way of anything. Where the main crop of Potatoes are planted 30 inches or so between the rows, a row of Broccoli may sometimes be planted between each; and when the Potatoes are lifted in autumn, the Broccoli are left in full possession for the winter. We practise this kind of double-cropping a good deal, and find it answer well. Most of our Brussels Sprouts, Savoys, &c., are planted between Potatoes. Unless fairly good-sized Broccoli plants are secured before growth ceases, the heads will not be large. For this reason the ground for this crop should be on the rich side. They require plenty of manure put into the ground at the time of planting, or some little time previously. At the present time we are just getting our largest Broccoli quarter ready. The subsoil is very retentive, and to improve this it is being dug two spades deep. Decayed leaves and suchlike are being put well down to the bottom; and before the crop is planted a coating of half-decayed cow-dung will be forked close under the surface. Should the winter not prove all the worse, a fine crop may be depended on from this piece, or any other that is prepared in the same way. We have transferred the plants from the seed-bed when they were from 2 to 8 inches high, and both succeeded; but unless great care is taken with the smaller size, slugs are very apt to destroy them. Large plants are not so easily injured. Those who can spare the time to lift the young plants with balls of earth to their roots, and plant with a trowel, will find this a better plan than using a dibble, especially in dry weather, as they do not sustain such a check. Showery weather or a wet day is the best time to plant Broccoli. When the atmosphere and soil is very dry, one good watering immediately after planting helps greatly to sustain the plant until fresh

growth begins. As most kinds of Broccoli are inclined to become rather long in the stem and heavy in the head, as soon as they are about a foot high a quantity of earth should be drawn to their stems with the drag-hoe. This plan must be followed on all very exposed spots, and sometimes a second earthing may have to be done when they are half-grown. Although some Broccoli plants will bear a great amount of frost, the heads, when once formed, are most easily injured by it; and if not protected, a few degrees will make them worthless. From November onwards, as soon as the heads are seen to be forming, all the side-leaves should be gathered up over the head, and have their ends tied just above it with a piece of matting or small willow. When more heads are ready for cutting than are wanted, the plants should be taken up altogether, a piece of cord tied round the stem, and then hung up head-downwards in a cool shed. This is the best way of keeping Broccoli: we have kept heads in perfectly good condition for a month in this way. Just before severe weather every head formed should be treated in this way. Where it is feared that any spell of severe weather will injure plants which are intended for later supplies, every one of them should be taken up by the roots and laid in sideways, with their heads facing the north. All plants treated in this way during the past winter have, as a rule, suffered very much less from the weather than those having no such attention.

J. MUIR.

MARGAM.



## HINTS FOR AMATEURS.

### HARDY FRUITS.

A GENERAL examination of Peaches and Nectarines should now be made where they have set in clusters (as we hope they have this year), so that enough may be thinned to prevent others from falling off by overcrowding, which is apt to take place on trees which are not vigorous. Shoots laid in thickly is another evil, besides the useless loss of time in tying and untying. Disbud very gradually outgrowing shoots first, and retain those next the wall for next year's bearing-wood; but taking off large breadths of young growths at one time may unduly expose the fruit to late frosts. When disbudding is done as soon as the buds are seen, the tree receives no check; but on open walls the fruit is often the better of protection from young growths as late as June. This applies to all fruit-trees. Apricots will now be swelling rapidly, and disbudding may go on piecemeal. Stop shoots which are taking the lead at the expense of their fellows. It may be well to give a dewing over fruit-trees, with the syringe, of the following mixture:  $\frac{1}{4}$  lb. of quassia-chips, boiled, to each gallon of water, with a little soft soap and tobacco-powder (snuff is useful for the mixture); this may act as a preventive in warding off green and

black fly. Grubs may put in an appearance on Apricots, which are detected by curling of the leaf. Hand-picking is the only effectual remedy we know of for stamping them out. Gooseberries may be early attacked with grubs, as they were last year, and also with aphids. A syringing with the mixture referred to might ward them off; but too often remedies found in print against such vermin prove useless when applied in their best form. Strawberries should be mulched with litter, if not already done. A good soaking of manure-water, succeeded by the same of rain-water after they are set, may give fine crops of fruit. Frequent watering affects the flavour: give plenty of an evening, and let it alone for a week.

Young trees may be making rapid growth, and should be examined often. Any going off into strong watery growth should be stopped, but if such can be spared so much the better: firm even growth is desirable. Maiden trees lately planted, to be trained on walls or fences, will now be starting. And to make fine trees, well balanced on the wall, careful hands should be used to get them well started into form. As all forms of training come to the same thing as regards quality and quantity, it should be done to taste, but systematically, and give plenty of space between the ties and the wood. Grafts must be examined to see that no suckers are robbing them of their supply from the stock: mulch and water stocks if necessary. Orchard-house trees will be in advance of those outside. Attend to stopping, thinning of shoots and fruit, syringing, careful watering at the roots—using weak doses of guano where crops are good and roots in abundance to turn the liquid manure to good account. If insects attack the trees, fumigating (except where any fruits are ripening) three successive times is an effectual remedy.

#### SHRUBS.

It may be observed that many shrubs which appeared little the worse of the severe winter, are now showing signs of distress. Laurustinus, common and Portugal Laurels, are the worst we have seen. Where they are much injured, they had better be cut well back; and if a mulching, and above that a coating, of rich loam and rotten manure well mixed, be given, they may be much assisted to make a free and healthy growth from the bottom. Where plants are quite dead, the sooner the ground is cleared of them the better. Early flowering shrubs and berry-bearing kinds, such as *Cotoneaster Simondsii*, may be cut well back; they will break out and make fine fruiting shoots: but if size is no object they are as well let alone. We adopt a system of cutting back Lilacs, Thorns, Ribes's Laburnums, mock O'anges, and numerous others when done flowering, which keeps a good variety on the space allotted to them, and no crowding takes place. Some prefer this season for transplanting evergreen shrubs. When done quickly and carefully they get well established during the summer.

Some good soil next the roots, made firm and well soaked with water, then covered over with dry soil, will keep them right, and growth takes place at once. Stakes should be firmly placed when trees and shrubs are large enough to be affected by the wind. Young shrub-beries should have the surface of the soil well hoed, and all made neat and orderly. Coniferæ, which have lost their tops and more than one leader forming, may have the most central and best one left, and the others reduced or cut out.

#### FLOWER-GARDEN.

The soil which is to receive the summer and autumn flowering plants should (where vacant) be in good healthy condition, having been well turned up to the weather. Any manuring or addition of soil necessary should be given without delay, and the soil well broken, to be ready when the plants are taken to their quarters. It is not profitable to be in a great hurry, as severe weather is often experienced at end of month. All hardier kinds should be planted first, leaving the most tender kinds to end of month or first week in June. Decide on the style in which the plants are to be arranged. Calculate the numbers required, and number the stock which are ready for planting, then set about the work vigorously till all are planted. The patchwork system (carpeting) seems to have had its day, and has not now so many admirers. And no wonder, when one sees so much ground unnaturally covered with small shapes, made with flowers and foliage, and these forms not of the most pleasing character either; but there are styles of this bedding in the hands of some men who are able to make it pleasing, and the opposite of what is often practised. The effort to cram as many kinds and colours on one bed or border is all that is studied by some. There is no beauty in this; but it is not our duty to try to regulate taste. Another evil which is not checked is the cutting up of lawns into beds, probably among fine trees, with no other object in view but to stick flowers about. A flower-garden in its place is all very well, but nothing is so pleasing and beautiful as a well-kept lawn round a dwelling; and insignificant beds among fine trees are much out of harmony and good taste.

Hardy Annuals may now be sown: they mostly require good ground and proper attention to thinning. More Mignonette and Sweet Peas may be sown. Propagate all spring-flowering plants by cuttings or divisions. When done with for the season, the plants should be arranged in the store-garden, and kept clean and orderly till wanted. Plant out Violets: they may be increased by cutting and divisions. Polyanthus may be increased in the same manner. Stocks and Asters may be planted in quantity—they are always acceptable. Pansies in full flower may require a soaking of water. Young plants not turned out should have prompt attention. They do well on rich cool soil, well

trenched ; a surfacing of thoroughly rotten manure would do much to establish a long blooming season. Dahlias should be gradually hardened before they are turned out ; and it may be necessary in some localities to protect the plants with flower-pots at night : they are easily destroyed by frost. Herbaceous borders and beds should be well hoed, and stake all plants requiring it. Phloxes, Delphiniums, and suchlike soon get destroyed if left to themselves. Roses may be examined for grubs. A good soaking of manure-water before they flower would be of much service to them. Lawns may still be renovated by fresh surfacing of soil and good seed sown. All weeds in grass should be removed, walks thoroughly cleaned, edgings cut often, and everything in thorough good keeping. Lime-water destroys worms.

#### PLANT-STRUCTURES.

At this season watering must have increased attention ; it may be done in the after-part of the day. The roots of all pot-plants should now be in healthy soil, with proper drainage ; no stimulants, or the most judicious watering, will ever give health and vigour if the roots are not active and in wholesome soil. Better to have a small stock of plants and do them well, than be crowded up, with worthless kinds destroying what should be useful. Manure cannot often be mixed with soil in pots with advantage. Gross feeders may get advantage from it, but often the soil is made sour and unwholesome by it. Absence of air is what does the mischief. Airing must be increased to most kinds of plants, especially those of the greenhouse class. Cold currents should be avoided. To keep health, thorough cleanliness should be maintained everywhere. Look often to see that no insects are being harboured. Foliage of every plant should be free from dust, and a free use of the syringe and rain-water may be made ; but see that no soil becomes sodden by frequent overhead drenchings. Fire will probably be in less request now, but frost must be kept out, and plants requiring a higher growing atmosphere must have it. In greenhouses and cold pits there should be a stock of plants coming forward to supply the show-house. This structure may only be a glass case attached to an upper storey ; but whether that or a gigantic conservatory, the same attention, to a greater or less extent, is necessary to secure a continuous display of bloom. Begonias (tuberous kinds), which make a fine display, may now be arranged in successions. They do well in turfy loam and sand—a little rotten healthy leaf-soil, or a trifle of peat, is of some advantage. Calceolarias and Pelargoniums now flowering may require manure-water. If there are not other things to crowd out the following, they may be in full growth for later supplies of flowers—*Heliotropes*, *Harrison's Musk*, *Pelargoniums* of the various classes. Show kinds coming into flower are very apt to suffer by green-fly, and can be syringed with quassia-water or fumi-

gated as preventives. Lobelias, Fuchsias, Verbenas, Petunias (single and double), Lantanas, Carnations in pots, Kalosanthes, Hydrangeas, &c. There should also be (if only a small lot) Cockscombs, Balsams, Globe Amaranthus, Coleus, Salvias of sorts, Plumbagos, Cannas, and suchlike, to give the necessary display ; but better only to grow a few of these well, than suffer the one lot to destroy the other.

Sow Cinerarias for main supply, also more Primulas if wanted. Calceolarias may be sown, but the best of these we ever saw were raised from seed in July. When such plants are stunted for want of pot-room (as they often are), they are worthless when they should be at their best. Prick out seedlings before they suffer in the seed-pots ; shade carefully, but only to keep off sun when strong. All plants which have done good service during the past winter and spring should not be neglected now (as they often are by pressure of other work). They should make their wood, then be allowed to ripen it and set their buds : this applies to all forced plants. Bulbs may be planted out in the reserve garden. After they are forced they require at least a season to recover themselves, and some are never fit for pots again. Cyclamens may be planted out in frames, or placed in borders partially shaded. Camellias and Azaleas should not be taken too quickly outside from heat where they are under preparation for early work. The buds should be well formed before the plants are taken outside, and that should be done gradually. A house for such plants, or pits suitable, are desirable when they are to flower during autumn and early winter. Hard-wood greenhouse plants should all be overhauled as they go out of flower, and shifted, if necessary, into pots a size larger, or have the soil and drainage partly renewed ; the latter is of more importance than is generally believed. In the show-structure, climbers should be regulated, thinned to keep them from crowding, and made secure to their fastenings. When they hang gracefully and naturally they are very beautiful. As examples, Plumbagos, Passifloras, Habrothamnus, Bougainvilleas, &c., with a rod like a Vine trained along the roof of a house, and the young growths hanging separately and loaded with flowers, must create admiration, but not so when they are crowded or tied into forms. In stoves there are many plants coming into flower, such as Gloxinias, Achimenes, Begonias, Clerodendrons, Anthuriums, &c. They should have the best positions in the house as to light and air. An intermediate temperature, when more air and light can be given, will keep them longer in flower, and is better in every way. Moisture will be increased according to heat, and a free use of the syringe must be made. Shade carefully, but not when there is no sunshine, though many are obliged to use whitening or thin white paint from May to September, and with tolerable success ; but blinds of thin canvas or hexagon netting are best. Night-temperatures need not be more than 65° to 70°. Newly potted plants are the better of a little more.

M. T.

## NOTES ON DECORATIVE GREENHOUSE PLANTS.

## THE ACACIA.

THE Acacia, in its varieties, ranks amongst the most handsome and graceful, as well as most useful, of our flowering greenhouse plants. The sprays of flowers are excellent for arranging in vases, and the plants, when in flower, are admirable for general house decoration. Their season of flowering being from January till June—a time when all kinds of flowers, except forced ones, are generally scarce—renders them all the more acceptable. The Acacia, like many more good greenhouse plants, is not nearly so extensively cultivated as used formerly to be the case, the fashion for foliage plants which has prevailed having elbowed them aside. They are gradually, however, winning their way back to public favour. Foliage plants are all very well in their place, and are very useful, yet they lack the interest and attraction which flowering plants possess.

No doubt the fashion of table-decoration has been in a great measure the cause of the neglect of flowering greenhouse plants. Foliage plants are, as a rule, more suitable for this kind of work, not to speak of the much greater facility with which they can be got up to the requisite size, suitable for such purposes. We think, however, that horticultural societies have also been much to blame by giving undue prominence to foliage plants, to the almost total exclusion of the others. We have heard exhibitors remark that it was almost useless to exhibit greenhouse flowering plants in a collection of mixed stove or greenhouse plants, as they could not compete against the fine-foliage stove-plants. When the accommodation is sufficient, both may be grown in proportions to suit circumstances; but the evil is that, where the accommodation is limited, we are almost of necessity confined to either one or the other kind of plants, only a few of the hardier kinds of Palms, Dracænas, &c., being capable of cultivation in the ordinary greenhouse, and, on the other hand, the stove being much too hot for the general run of greenhouse plants. The fashion for table-decoration is, no doubt, on the wane, so that in all probability “time, the great leveller,” will in due course make things right again.

The list of Acacias is a very comprehensive one, consisting as it does of about 300 varieties. Some of them are natives of tropical climates, and some of more temperate climes. Most of the best of our greenhouse varieties are natives of the Australian continent, and none of them are very difficult to cultivate. The soil best suited to their wants consists of a mixture of equal parts of peat and good fibry loam, with a liberal allowance of sharp sand. Some of the varieties, such as *Riceana*, are admirably adapted for training up rafters, pillars, or for covering a wall, and thus grown, are very strik-

ing and beautiful objects. Some of the finer kinds also make grand plants for exhibition purposes. The *Acacia* is propagated by cuttings and from seed. If by cuttings, they should be taken off at a joint, and put in a properly drained pot or pan, filled up with soil, leaving about two inches of pure silver sand on the top in which to insert the cuttings; water them through a fine rose, cover with a bell-glass, and plunge the pot up to the rim in a moderate hotbed. After they are fairly rooted, they should be potted off singly, in small pots, and replunged for a time in the hotbed or propagating-pit until they have again started into active growth. As soon as the pots are filled with roots, they may be shifted into larger pots. It is not desirable in the case of any hard-wooded plants to give large shifts, as the roots always find their way to the sides of the pot, and therefore the roots may get matted there, and the centre of the ball just loose soil, by which the water escapes too readily, and the soil also holds too much water in suspension, and therefore soon gets soured. By giving small shifts, and more frequently, the whole ball will be full of roots, and they will be ready to absorb the water when it is given to them. The points of the shoots should be pinched out when they are young, so as to secure a bushy habit. They should be kept moderately close and warm during the first season, gradually hardening them off as autumn approaches, so that they may be the better able to stand the winter. In spring, when fresh growth commences, they may get another shift, say into 6-inch pots, using the soil as roughly as may be convenient. They may be kept close for a short time until they begin to root afresh, when a more liberal allowance of air may be given them. About the middle of July they may be set out of doors in a well-sheltered, sunny place, and the pots plunged in a good deep bed of ashes, both to prevent the entrance of worms through the drainage-holes and also excessive evaporation. They may be allowed to stand here until the autumn, but must be attended to in the way of watering, &c. When the pots are full of roots they require a liberal supply. They must be housed again about the middle or end of October. If it be desired to raise plants from seed, it should be sown in February or March, the pot or pan plunged in a mild bottom-heat, and the seedlings pricked off singly into small pots as soon as they have made two pairs of leaves. The after-treatment should be the same as described above for plants raised from cuttings.

It is unnecessary to give a list of varieties, as this can easily be obtained from any catalogue. We may, however, just give the names of a dozen varieties which will give pretty general satisfaction—viz., *A. armata*, *A. dealbata*, *A. Drummondii*, *A. grandis*, *A. hispidissima*, *A. linearis*, *A. longifolia*, *A. pubescens*, *A. Riceana*, *A. verticillata*, *A. spectabilis*, and *A. vestita*.

J. G., W.



## NOTES FROM THE PAPERS.

"HOTWATER-MEN," as gardeners term "Horticultural Engineers," do not always know most about heating; and as to boilers, one has only to contemplate some of their misshapen and thoroughly stupid inventions to understand how much they know about their business; but they are not quite so bad as some "judges" of boilers. There are men who have had a large share in awarding valuable prizes to stupid boilers, who possessed no real knowledge of the subject whatever. There are numbers of common-sense people who have never yet fathomed the mystery of awarding a grand medal to a boiler because it was a common "saddle" squeezed in at the sides to make these perpendicular (a bad fault), and had its inside capacity reduced in order to make two chimneys under the roof of it. Fancy erecting a fireplace in a room with the half of the grate or heating portion of the fire turned to the wall! What we wish particularly to refer to here, however, is the paper read lately by Mr A. D. Makenzie of Edinburgh on "Economy in Fuel" in garden furnaces. Mr Makenzie's ideas are sound, and simple as well. He prefers a boiler with plenty of internal capacity for fuel, and with a grate-bar wide enough to admit sufficient air to burn it thoroughly. Any inventor may proceed on these lines. It is not that portion of real *manufactured* heat going up the chimney, and supposed by some to be lost, which troubles the Edinburgh engineer so much, but the heat that escapes in a latent state—*i.e.*, in the form of smoke and unburned particles: he wants to burn the "reek," which is just what some of our fine boilers will not do. They are tar-distilling and gas-making apparatus. When the stoker feels his hoe getting sticky with tar as he pushes it under his "water jacket" boilers that boast of "no fire-brick settings" or other aids to perfect combustion, he may then always be sure that his coal is going away bodily up the chimney, or being expended to worse purposes. Listen to what an eminent authority says on this point: "If a fireplace were required to be constructed so as to drive off as much as possible of the hydrogen in an unignited state (that is, to merely waste the fuel), the best plan would be to have the furnace bars and sides formed of pipes with cold water constantly circulating through them. Those portions of fresh coal which lie against the boiler undergo for some time distillation rather than combustion; and while they are thus *wasting* they intercept a large portion of the boiler surface from the central portion of the fuel, which is probably in a state of incandescence." If your readers will apply this test to some of our "double million power," hollow-barred heating apparatus of the present time, it will give them a more accurate conception of their merits. Very wisely, too, does Mr Makenzie tell us that he prefers a long low boiler to a short lofty one, for he has found that with a short boiler he could not raise the same heat as with a long one. Plenty of stokers know this from experience.

One of the failings of our boiler-makers is a *penchant* for adding side and top auxiliary flues, in the belief that they are thereby adding power to the boiler. Neither wings nor top flues should ever be added to a saddle boiler till it becomes so long that you cannot reach the end of it conveniently with the poker. When this happens, and you have any iron to spare, you may use it to make a tail or a wing outside, but not before. You can never get so much heat from an outside flue as you can get from that portion of the boiler which is exposed to the direct action of the fire ; and with a long saddle of proportionate width, and set on fire-brick, you may challenge the most complicated or best silver or gold medal boiler ever invented, and feel sure of beating them, provided you know how to stoke.

#### MORE SCIENTIFIC BALDERDASH.

“M. Regnard has been inquiring into the much-disputed problem, why vegetation does not grow well beneath trees, notwithstanding that there is plenty of light, pure air, humidity, and warmth. He has confirmed the observations of M. Paul Bert, who had already shown that green light hinders the development of plants. Plants enclosed in a green glass frame wither and die as though they were in darkness. M. Regnard finds that plants specially require the red rays. If the sunlight is deprived of the red rays the plants soon cease to thrive. This fact explains why plants grow well in rooms upholstered or papered in red, while they wither in rooms upholstered or papered in green.”

It can hardly be said that it has been a much-disputed point by English gardeners, at least, why vegetation does not grow well beneath trees. It has generally been supposed that the reason was the same as that which prevented plants thriving in a dark cupboard with the door shut. It was not known before that plants died in a green glass frame, but the contrary was supposed to be the case ; and gardeners, even of Kew, if we remember correctly, painted some of their glass roofs green, and recommended the plan. The French horticulturists themselves shade their plant-houses with a kind of green Venetian blinds that gives everything inside a green look ; and yet their plants thrive admirably. The “fact” of plants growing in red-papered rooms, and dying in green-papered ones, is unadulterated lunacy. As barren a piece of ground as we ever saw was under the branches of a spreading purple or red beech. It is the fault of French horticulturists and botanists that they are a trifle too “scientific” and philosophical. Their “high-class” gardening partakes too much of the laboratory, hence these errors and contrarities. It is not long since one of the most learned horticulturists in France, Lavallée, was at great pains to explain how it was that vegetation *throve* under beech and other trees ; now we are having it explained by another of his countrymen why it does not thrive. It is this same “scientific” *penchant* which has created the innumerable fantastic systems of training fruit-

trees which finds favour with a certain section of French gardeners. There is not one fantastic shape but which is founded on some wise principle or other, but which nobody believes in but themselves—even even real French fruit-growers. If all the fine-trained trees in France were burned to-morrow, it would not make the smallest difference to the future supplies of the Halles Centrales. If you want to see fine examples of *training*, you have to seek them out like needles in a bundle of hay; but in a single journey from Dieppe through Normandy, “which produces the best farmers and best gardeners in France,” you will see how the *fruit* is grown, or where it comes from. It is like a long railway journey through orchards and gardens. The vineyards at Thomery, Asparagus farms at Argenteuil, and the market-gardens round Paris, are old-fashioned institutions that have been carried on with marvellous success for generations, by old-fashioned common-sense people, who have nearly as much “science” about them as the ordinary farmer in this country has, but more method and industry.

Some of our great seed-firms seem to be going in for the “Holloway Pill” and “New Blood Restorer” method of advertising their Potatoes and other things. An advertisement like the following would hardly be admitted into the gardening papers, but it has for some time been going the round of the second-rate provincial prints, week by week, in the “promiscuous paragraph” style. We suppress names:—

“POTATO PLANTING.—The value of a good crop of sound floury Potatoes cannot be over-estimated, and yet how few, comparatively, use the means to secure it! Planting the same kinds which our forefathers have grown from time immemorial, and without any change of seed, is called the ‘custom of the country,’ and an unprofitable custom too, as many have found to their cost. The value of disease-resisting Potatoes has been demonstrated in such a remarkable manner, that we wonder at any lover of the national esculent planting any other. It, however, needs caution in selecting these so-called ‘Disease Resisters.’ The only Potatoes which can lay claim to practically resisting disease are — — and — —, the latter a new introduction this year. Of — —, every one speaks most highly; the yield is prodigious, the quality A1, the waste *nil*. Indeed, so great is its reputation that other Potatoes sold as — — have been substituted for the real variety. Those who would have the true stock should go to — — direct, as Messrs — — do not supply other seedsmen; and send for — — Illustrated Descriptive Catalogue of Seed Potatoes, which not only contains particulars of all the best kinds in cultivation, but a complete list of those most suitable for early, medium, and late crops. The Catalogue may be had gratis and post free, on application to — —.”

The Potato here so plausibly recommended by the party who has got it to sell is not disease-proof, is not the best for general cropping, is so very late that in some districts it hardly produces anything but haulms, and is bad to eat, as a rule.

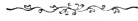
Those manure-tables in the 'Gardeners' Chronicle' are valuable, and it is to be hoped they will be continued till all our artificial manures have been analysed. That these vary considerably in their composition, has been long suspected by cultivators who have used different samples, and the analysis, so far, proves that for general purposes some of those manufactured are inferior to others. To be useful to the cultivator, artificial manures, it would appear, must be prepared for special subjects, or they must be so constituted and balanced as to render them applicable to crops generally. It is evident, however, that compounds of the last description will entail the most waste, as they may contain certain elements that are of no use to some plants, or they may already exist in the soil in sufficient abundance. The subjects cultivated are, however, so numerous, that anything but a generally applicable artificial manure is out of the question, unless it be for such special subjects as Potatoes, Peas, Onions, and the Brassica tribe, &c. Meanwhile it is a good thing to know what the various and highly-puffed artificial manures are made of, and their relative value. Probably they are something like boilers—better and worse kinds. Certainly some of them are dear—as much as £250 per ton!

If the coloured portrait of the "Rath-Ripe" Peach in the 'Florist' of February be a truthful one—and "both artist and colour-printer" are said "to have acquitted themselves with success" in its production—it must be a marvellously high-coloured variety indeed. In your contemporary, the skin is nearly as bright as a scarlet Geranium, while the term "illuminated" hardly conveys an idea of the splendid tints that encircle the stone of the fruit like a brilliant corona. We would rather credit the description given in the letterpress regarding the qualities of the fruit. It was exhibited last summer, "and created quite a sensation—its very handsome appearance being found to be equalled by its excellent quality." For appearance and flavour it is not to be surpassed, says Mr Bond, who grew and exhibited it. Rath-Ripe is an American Peach, late, and a good bearer. From other sources we have heard that it is a nicely-coloured and good Peach.

That fine group of *Hyacinthus candicans*, in a contemporary, might easily be mistaken at a first glance for a group of white Foxgloves, which, without underestimating the value of the Hyacinth, are equally fine, equally grand. It is a humiliating admission to make, but we have not the shadow of a doubt that if the *Hyacinthus candicans* had been a native of our own woods, the Foxglove a native of Africa, and doubtfully hardy in this country, as well as scarce and expensive, their positions would be reversed. It is marvellous the glamour a high price and difficulty of culture throws round a plant in the gardener's eyes! There is no use disguising the fact. It is extremely doubtful if this fine Hyacinth will prove a hardy and suitable border

plant anywhere ; but those who want a substitute equally good, equally noble, and quite as lasting, will find it in the Foxglove, and they may have a choice of colours. In the woods, in the poor natural soil, the Foxglove is a conspicuous and noble-looking plant ; but in the open, and in an ordinarily rich soil, it is splendid, and has few equals, especially the *Gloxiniflora* variety ; and a few seeds scattered over the ground is all that is needed to establish it.

READER.



#### NOTES.

ALL gardeners know something of grafting, but what I desire to know is, Whether is it best to graft a strong-growing scion upon a weak-growing stock, or *vice versâ* ? There is a tendency among some Rose-growers to dispense with stocks altogether, and to depend entirely on own-root Roses. An amateur wrote to tell me the other day that none of his Roses on the Brier stock were killed ; but he added that the stocks—*i.e.*, the Briers themselves—were killed, leaving the poor Roses rootless 'twixt earth and sky. I have seen the same effect in Yorkshire many times ; and it is now a well-known fact that, hardy as the Brier undoubtedly is in its native lair—I mean, hedge or wood—it is very often killed in the garden. Of course Briers are more exposed in the garden, but I believe that they are weakened most by that miserable mop-like wisp of Rose-twigs budded on their crowns. No one will for a moment deny that to nurserymen, grafting is a necessary means to quick manufacture of stock : it is convenient, but is it the best way ?

Mr Simpson, of Wortley Hall Gardens, sends me flowers of *Cœlogyne cristata*, representing the old type, and a much “improved” form with larger flowers and a deeper orange-yellow blotch on the lip. The best form also blooms more profusely. It was like *Cypripedium Maulei*, *Lælia alba*, *Lycaste virginalis*, and many other good things, imported by accident as it were, and is no doubt one of nature’s own “improved” forms.

It is very wicked, I know, but a malicious gardener writes to say that all the “improved” strains of seeds he bought last season were not equal in results to pinches of home-saved seeds that brother gardeners gave him or sent to him by post. What he suggests is that a few “improved” seedsmen would be an advantage to practical gardeners. All I can say is, that his heresy and schism does not apply to Mr Simpson’s *Cœlogyne* ; and I trust that with further experience he will think better of the seedsmen, who unfortunately, in the matter of choice seeds, are often entirely at the mercy of others.

Why are not the varieties of *Pæony Moutan*, the hardy or half-hardy

Tree Pæony of northern China, not more often seen forced into bloom at this season? Brought on gently in an intermediate temperature, they are very fine in flower and distinct in leafage. Like Spiræa, Prunus, Solomon's Seal, Lily of the Valley, Deutzia, and many other of our finest spring-blooming greenhouse-plants, they may best be grown in the open air for the greater part of the year. Just now their great rosy or peach-stained flowers are very welcome, and many of them are delicately fragrant. For cut-flowers and for drawing-room vases, half-a-dozen great blooms go a long way, as the saying is, and they are effective.

The crimson-blossomed *Pyrus* (*Cydonia*) *japonica* is now covered with its bright red buds, and I never saw it so profuse before—a result due rather to a warm dry autumn than to the exceptionally severe winter through which we have just passed. White, salmon, pink, rose, and blush shaded varieties have been raised on the Continent, but the old scarlet type remains the hardiest and most effective,—the best, in fact, in every way. In most places its gorgeous flowers are highly valued; and wherever there is a bare place on a south or west wall, one might “go farther and fare worse” by not planting—well, planting—this fine native of Japan.

I am not one of those who believe that the young gardener of to-day is less efficient or less attentive to his studies than the young gardener of the past, but one fact in the modern man is worth notice. I allude to his eagerness to get under the shelter of a glass roof. “To be employed in the houses” is the height of his ambition, and a good hardy-plant man can't well be obtained either “for love or money.” Out of fifty replies to an advertisement for a young journeyman gardener, forty-three manage to convey the idea, more or less explicitly, that they want to be “under glass.” Two say “indoor or out,” and with five others it remains an open question. A large proportion of these replies—nearly forty, in fact—were in good bold handwriting, spelling correct, and grammar also, on the whole, very good. Only one solitary reply out of the whole fifty was really bad. Here it is:—

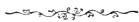
“My Dere sur,—hif you want a gud mann hin the hose I wil con fur a pund a weak as you sed in yure hadvartsmen that 18 shillgs pur weak wad be givn I wud like to hev a pund has I know my bussines as well as heny hed gardner—yurs, &c.”

“P.S.—write back return post has I may be wanted sumwere.”

Comment upon this letter would be superfluous. One or two others whose writing was certainly irreproachable said they were “not particular” as to wages, but would be contented to accept “from 30s. to 50s. per week.” Three would only come on condition that they should succeed to the “foreman's place” if he left “during their time.” One man could “play the organ,” one had been “used to a cow,” and two of them could “sing in a quire.” One young gentleman, who wrote on fancy heavily-perfumed note-paper, enclosed his *carte-de-visite*, and remarked that he had a “lovely tenor voice.” I wrote off to my friend Mr Mapleson at once on his behalf. Once or twice I regretted

I did not telegraph instead. Two others—one aged nineteen, the other twenty-four—wanted “a place in which they could get married;” and three more offered premiums varying from £5 to £10 for the place. Seven were gardeners’ sons, and referred to their fathers amongst other employers. One was a “humble boy,” and two very rightly desired to have “a Christian master.” But, as I before said, the great anxiety of their minds—the one idea struggling to the surface—of more consequence to them than the organ, the cow, the quire, Christian master, foreman’s place, or lovely tenor voice, is the morbid craving to be “under glass.”

WRITER.



## BOTANY FOR GARDENERS.

### NO. VII.—THE OVULE, &c.

BEFORE alluding to the *Ovule*, it will perhaps be better for me to give a few brief words on the stamens and pistils, essential to all plants for the production of fruit. STAMENS are the male organs of the plant, and consist of a bundle of spiral vessels surrounded by cellular tissue, termed the *filament*, at the top of which will be found the *anthers*, that finally open and discharge their contents—*pollen*—which is usually a powdery matter, and by whose action on the stigma the fertilisation of the ovules is accomplished. A familiar example of pollen will be found in the common garden Crocus. Let the reader take a stamen from the flower of this plant and gently rub it between the finger and thumb, and he will find both covered with pollen-grains; thus it will be easy to account for the short crops of fruit sometimes taking place. Last year, for example, the continuous rains probably washed away the greater part of these small grains, and thus prevented their being fertilised with the pistil, without which the natural consequence is, short crop. PISTILS—the female organs—are always in perfection simultaneously with the male parts (stamens): they (the pistils) are composed usually of the *stigma*—the parts at or near the point—to which the pollen must be applied to fertilise the seed; the *style*, usually very long, but sometimes absent, supporting the stigma; and the *ovarium*, or embryo seed-vessel. The stigma is invariably viscid or clammy, so that immediately the pollen bursts from the anthers it adheres to it. In the saffron of shops will be recognised the stamens of a Crocus (*Crocus sativus*); and no wonder it is so expensive, considering that only three stamens are found in one flower, taking, as a matter of course, a goodly number to make a pound in weight. In some cases the male and female organs are in separate flowers, the fertilisation of which is often performed by insects, &c.; and it is on the number of both stamens and pistils that the great Linnæus based his system of botany—now, however, in disuse, the natural system being much preferred by modern botanists. I shall probably say a few words about both systems in a future number. The OVULE is the rudiment of a future seed, and is inserted in the lower portion of the carpel,

which is popularly known as the *ovary*. A familiar and easily obtained example can be found by carefully making a vertical section of a carpel of the common Buttercup, each carpel containing one ovule. In coniferous and cycadaceous plants, the ovule is exposed and naked to the influence of the pollen. It (the ovule) is regarded by many botanists in most cases as a marginal bud, being borne upon the margins of carpellary leaves,—bringing us to the conclusion that the inner angle of each carpel, upon which the seeds are arranged, answers to the line of union of its unfolded edges. This line is called the *ventral suture*. “If you split a Pea carefully,” says Prof. Oliver, “opening up the edge bearing the seeds, you will find, when laid open, that half of the seeds are on one edge, half on the other, each margin being alternately seed-bearing.” Up the middle of the open carpel you have a strong line or nerve (the outer angle when the carpel was closed), which is simply the midrib of the carpellary leaf, answering to the midrib which we find in foliage plants. This line is called the *dorsal suture*. In shape and mode of insertion ovules are somewhat numerous, and very interesting. When it is curved downwards so as to approach the *placenta* (the part on which the ovule originates), it is *campytropal*; when curved and grown to the lower half, *anatropal*; when attached by its middle, so that the *foramen* (the aperture through the integuments, to allow the passage of the pollen-tubes to the central part of the ovule in which the embryo is contained) is at one end and the base at the other, it is *campylotropal*; when the shape of a horse-shoe, it is *lycotropal*. There are a few other shapes, which it is not necessary to explain here.

W. ROBERTS.

(To be continued.)



## JOTTINGS FROM NEW ZEALAND.

### CLIMATIC INFLUENCES.

IN our last paper we were necessarily bound within certain limits, as we were anxious to represent a garden rather than the climatic influences of the country. We will now return to the subject, and endeavour to treat it in a more liberal manner. Our summer months, which include December, January, and February, are characterised by great heat and dryness. Often not a drop of rain falls for six or eight weeks: the ground then becomes so hot that even the occurrence of a heavy fall of rain serves only to clear the leaves from dust, since it evaporates as quickly as it falls. The autumn season begins with March and ends with May, and may be considered the most genial and beautiful part of the year. The indigenous vegetation which has suffered through the summer now awakes to new life, while trees and shrubs put forth fresh growth: the European deciduous trees and shrubs mature their



wood, and, autumn-like, drop their leaves. June, July, and August constitute the winter and rainy season, during which rain falls more than enough, if it were put to the popular vote. But seeing that it takes the place of snow, and gives to the ground many fertilising qualities, we do not get too much of it. Heavy hoar-frosts appear during night, which have often disastrous effects upon the introduced tropical and sub-tropical vegetation. The spring is introduced by September and terminates with November. During this season of the year the gardens may be considered in their best condition of floral beauty—trees, shrubs, perennials, and annuals emulate each other in their display of colour and perfection of beauty. From this short climatic sketch it will be readily understood that to attempt a universal acclimatisation of plants would be rather a difficult undertaking. The alpine and tropical ones suffer not only from dryness, but likewise the latter from frost during winter.

Not many European or North American forest-trees prosper with us. The Elm, Plane, Ash, Chestnut, and Poplar do fairly well; while the Oak, Lime, Birch, and Horse-Chestnut do anything but well. All attempts to grow the beautiful Beech-tree have as yet failed. It will therefore be at once seen that our gardens do not present that lively appearance during spring which is one of the grandest features of British gardens—

“ When all the trees, on all the hills,  
Open their thousand leaves.”

To the coniferous family this climate offers special advantages, from the fact that the Californian, Himalayan, and Japanese varieties all produce cones in abundance. The trees grow to a gigantic size, and give to a garden a grand oriental appearance. From “the world’s flora” we may select freely. The East Indies favours us with many of its beauties. From South America we have the famous Jacaranda, Brugmansia, Tecomas, and many kinds of Begonias: only one or two of the African Palms prosper in the open ground. The succulent family do remarkably well, and develop to great perfection, especially Yuccas, Aloes, and Agaves. It is a pleasing sight to see *Aloe americana* and *mexicana* throwing up their flower-spikes to the height of 30 or 40 feet, which they usually do after the eighth year of planting. The growth of perennials generally succeeds well. Phloxes, Delphiniums, and Aconitums make a grand show in their season. Annuals generally grow best during the early spring months, and arrive at great perfection. The China Aster, however, does not equal those at home, for at its best it produces small insignificant flowers; and, strange to say, all its endless varieties go back to the original type. For summer display we have to depend to a large extent upon Petunias, Verbenas, Zinnias, Zonal Pelargoniums, Tagetes, Amaranths, and Gomphrenas: these annuals, being deep-rooted, are able to bridge over the dry season. All the bulbous

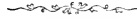
and tuberous plants from the Cape succeed as well as in their native country, and when planted with some aim at arrangement they make a grand autumn display. The natural moisture of the climate makes it a very genial home for many kinds of ferns—from the great Tree-fern down to the lowly Pellæa: the finer sorts of *Adiantum* have only one representative—viz., *Adiantum æthiopicum*. Of fruits we have a long list—such as Apples, Pears, Apricots, Peaches, Nectarines, Oranges, Lemons, Plums, Figs, Olives, Guavas, and Mulberries. To go through the country when Peaches are in bloom is one of the sights of the season. Apples grow to a large size, and the trees literally groan under the weight of fruit; they have, however, to do battle against attacks of American blight, for which no reliable remedy has as yet been found: in many cases the tree at last succumbs to this dreadful scourge. All the stone-fruit producing trees are short-lived, especially those of the Peach type, which seldom live beyond fourteen years. Apples, in like manner, decline at an early age: no doubt this is caused by quick luxuriant growth and early and excessive bearing. The Pears grow to perfection, while the fruit of Peaches, &c., &c., attain a size and acquire a flavour almost unknown in the “old country.” Vines bear plentifully in sheltered situations, though somewhat wanting in flavour. A German company have taken in a large tract of land, which they propose forming into a vineyard. They say the climate is in every way suited for the production of the finest wines. Grapes are grown for market, by market-gardeners, in shed-like buildings with glass roofs. By this means they bring them in early, without the expense of artificial heat, and readily dispose of them at one shilling per pound, which leaves a fair profit. The Phylloxera has not yet made its appearance amongst the vine plantations of the colony, though in the neighbouring colony of Victoria it is in full force. It may be the climate is against it. The cultivation of the Olive is likely to succeed; if so, it will be a great source of wealth to the colony. For vegetable culture the spring months are very suitable. Cauliflower may sometimes be seen 2 feet in diameter. Asparagus does remarkably well. Peas grow rapidly, but do not stand long. Turnips, Carrots, and other root-crops may be had the year round by successive sowings. Leeks and Onions grow to a size not often seen in British gardens. The summer months, owing to their excessive dryness, do not favour kitchen-garden operations, and during this period the housekeeper’s demands cannot always be supplied.

In conclusion, we may safely say the climate is too independent of artificial appliances to call forth any great amount of horticultural skill; and to the trained gardener I do not think it offers a very tempting field for operations. Undoubtedly at no very distant period it will become a great fruit-producing country, but even here little skill will be required saving in the raising of young stock. Such climates as that of Britain, where the rigour of winter calls forth all the energies

and appliances which art can invent, is certainly the most likely to advance that art which strives to give to colder climes that which more sunny climes produce.

WM. FORBES.

AUCKLAND, N.Z., February 2, 1881.

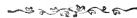


### RECIPROCAL ACTION.

THIS phrase has a rather learned and respectable sound when used by a writer on the subject of roots or branches, and is supposed to express much or little meaning just according to circumstances; but it is a much-prostituted term, and ought to be properly cleared up. The words were, we believe, invented by the physiologist to denote some kind of sympathetic action existing between the roots and the top of a tree—akin to that which is said to exist between the dog's head and its tail; but what that sympathy is, and where it begins or ends, nobody knows, although its presumed existence is made to do duty in a hypothetical capacity on many occasions. Teetotallers say the tippler's general apology is, that he requires spirits in winter to keep him warm, and in summer to keep him cool; and gardeners and botanists, it is to be feared, employ "reciprocal action" on the same principle—it is a good peg. We are taught that if we want to create superabundant vigour in a vine or other tree, we must encourage growth in order to encourage roots, and a corresponding development of both; and next, that the way to increase the vigour of the same tree is to cut all this growth away at the winter pruning, or nearly all,—two quite opposite methods of attaining the same end. One much-respected and noted author is at great pains to explain, physiologically, how the top limbs of certain horizontally-trained fruit-trees are very apt to grow over-luxuriantly at the expense of the lower ones unless persistently checked by the stopping of the summer's growth; and in the same breath it is also stated that in order to make the weak lower branches stronger, they must be pruned back severely: and it is all connected in some mysterious way with "reciprocal action"—so we are told. It has struck the writer frequently that it must be a marvellously consistent theory which teaches that in order to produce vigorous Vines, for example, we must encourage them to produce as many limbs and leaves as possible the first year or two, and then cut all the said limbs off at pruning-time for exactly the same reason that they were encouraged to grow. A greater writer than practitioner has written and explained how the leaves pump up moisture with astonishing force, and that the more pumps the more roots—*i. e.*, reciprocal action—forgetting that some plants, like the Vine, send up their sap with the greatest mechanical force when there are no leaves, otherwise pumps, upon the tree at all. But though the cultivator blames the branches for encouraging the roots—or, as was said lately, "it is the leaves that apply the

stimulus to the roots"—he does not act as if he believed it ; for when his trees grow over-strongly, he makes no pretence of controlling the roots by cutting off the *branches*, but sets about controlling the branches by cutting off the *roots*. In practice he finds himself totally unable to make his theories fit. We have, indeed, neither the head nor the tail of a theory in many things we do in the garden. In dealing with such questions there is a tendency to forget what Dr Lindley used to say underlay all other problems of vegetable physiology, and that is vital force—*life*. So far as the practical application of the theory of reciprocal action is concerned, the despised Chinese gardeners are far more consistent than we are. The Chinese theory is, that it is the roots which apply the stimulus to the branches ; and they adapt their practice accordingly, and succeed admirably. They scout the idea of restraining root-action, or top vigour either, by curtailing the branches ; but they do restrain the roots, and by that means alone they make the smallest dwarfs of the greatest giants of the forest. Their Oaks in thumb-pots and Mandarin Orange-trees are never pinched nor pruned, and yet they are always veritable dwarfs. The Chinaman, in short, sets out with the assumption that the vitality lies in the roots, and he troubles himself about neither stocks nor pruning, and beats us hollow in the production of dwarf-trees and fertility in whatever subject he tries his hand upon. This may not be reckoned a "practical article" by some of your readers, but it suggests practical ideas, and the subject is one that has been present to my mind on many occasions in connection with work, and it is not unworthy of further consideration, as it raises questions that go to the root of many cultural operations.

J. S., W.



#### HORIZONTALLY TRAINED PEACH-TREES.

I SHALL be much pleased to show "J. S." a Peach and Nectarine tree horizontally trained in a lean-to house. It is 46 feet long by 14 wide, the two trees filling it. Every gentleman, gardener, or novice exclaims, on entering the house, "What beautiful trees!" I have gathered eight hundred fruit off the two trees. They are now twelve years old. In my experience they are less trouble in training, dis-budding, &c.; and when they attain their full size, or "fill the house," any one once shown can do all that is required to them. I have a Royal George Peach in another house sixteen years old, and a number of specimens in other houses from last season's maidens to five-year-olds. I find I have a better set of fruit on my horizontal trees than on those fan-trained, owing, I think, the last dull season or two, to the young wood being more exposed to the light and air.

EROMEGNAR.

## ORCHIDS IN BLOOM.

AT CRAIGLEITH NURSERIES, EDINBURGH.

|                              |                                                |
|------------------------------|------------------------------------------------|
| Cypripedium Sedeni.          | Lycaste Skinneri, fine variety.                |
| " boxallii.                  | Masdevallia Lindeni.                           |
| Cattleya citrina.            | " ignea.                                       |
| Cœlogyne cristata.           | Mesospinidium sanguineum.                      |
| Dendrobium chrysotoxum.      | Odontoglossum Alexandræ (many fine varieties). |
| " crepidatum.                | " cirrhosum.                                   |
| " crystallinum.              | " nævium.                                      |
| " densiflorum.               | " Pescatorei, (many fine varieties).           |
| " cambridgeanum.             | " pulchellum majus.                            |
| " Bensoniæ.                  | " Rœzlii album.                                |
| " Jamesianum.                | " roseum.                                      |
| " luteolum.                  | Oncidium concolor.                             |
| " nobile.                    | " cucullatum.                                  |
| " Wallichii.                 | " sarcodes.                                    |
| " Pierardi.                  | Phalænopsis grandiflora.                       |
| " primulinum.                | " Schilleriana.                                |
| " " giganteum.               | Sophronites grandiflora.                       |
| " Kingianum.                 | Zygopetalum Mackayi.                           |
| " tortile.                   | " intermedium.                                 |
| " Wardianum.                 |                                                |
| " " (fine var).              |                                                |
| Epidendrum vitellinum majus. |                                                |

April 16.

J. COLE.

## APONOGETON DISTACHYON.

WE have received from Mr Parker of Tooting Nursery a box of blooms of this lovely, sweet-scented, hardy aquatic, which for robustness of growth quite astonishes us. The flower-stems are as thick as a man's little finger, and the size of blooms quite in proportion, of course. It blooms the whole winter in a brook of spring-water at Tooting, and all who can so accommodate the Aponogeton should not be without it.

## DUNDEE HORTICULTURAL ASSOCIATION.

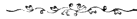
THE ordinary monthly meeting of this Association was held in the Imperial Hotel, Dundee, on Friday evening the 1st ult., the president, Mr D. Doig, in the chair. Mr W. S. Watt, landscape-gardener, Broughty Ferry, read his second paper—"Effect in Suburban Landscape Gardening." After describing the style in which villa grounds were laid out and planted in the neighbourhood thirty or forty years ago, he said: "It seems very desirable to preserve in all time coming every interesting view of external scenery that can be obtained from the mansion or any part of the grounds; and this could be done by planting dwarf subjects only in front of mansions. On the other hand, unsightly objects could be hidden by planting trees of rapid and taller growth. In planting for effect, the experienced landscape-gardener would carefully select those subjects that harmonised and contrasted in foliage and in habits of growth." Mr Watt divided the first into four classes—flowering trees, variegated-foliaged trees, coniferous trees, trees changing colour in autumn; and the second into groups or characters—round-headed trees, oblong-topped trees, spiral-topped trees, spreading trees. He also named a few representative ornamental evergreen and deciduous trees and shrubs for groups,

or single specimens on the lawn, where the character of the ground and situation were favourable. With such a variety of materials at command, the intelligent planter, by judicious grouping and wise distribution, would be able to form scenes of great interest and picturesque beauty. The grouping system, where it could be carried out, was preferable to any other. Dense backgrounds could be formed, and these again relieved by foreground masses of rich variegated shrubs of striking character. These, again, could be "toned down" by dwarf plants having silent shades of green with flowers. Boundary belts should exhibit in the garden or lawn side bold curvatures of outline, in the deep recesses of which the ingenious gardener might erect rockeries and grottos, or form lakes, rivulets, and cascades. Mr Watt did not approve of the annual digging of clumps and shrub borders, as much injury was done to the young roots thereby. All mural decorations, he thought, should harmonise in style with the mansion, as should also the design of flower-garden if seen from the windows. September and October he considered the best months in which to plant evergreens, then deciduous plants. The next best period was from April to May inclusive, but the operation, if conducted properly, would be successful at other seasons, the dead of winter excepted, which he found the worst.

Mr James Scrymgeour then read a lengthy paper on "Horticultural Exhibitions." At the outset he said that, though personally greatly in favour of such exhibitions, it might not be amiss if he recounted some of the objections against them. He had met with those who, though practically favourable in other respects to shows, did not care for their own gardeners becoming competitors. They considered that the needful if not monopolising care, attention, skill, and exertion required for special flowers, fruits, and vegetables, for which they expected prizes and honours, proved detrimental to the general interests of the garden. The gardener's heart and affections being set upon certain petted and pampered favourites, to the detriment of all the unschedulable things under his charge, his manœuvring with those favourites, among which he saw medals, cups, cash, and honour, and the time and skill spent in forcing certain specimens forward and keeping others back for certain shows, were far too much, and the garden suffered accordingly. Moreover, the great bunches of prize grapes, raised at the expense of numerous bunches ruthlessly nipped off the vine without an opportunity of ripening, were not so sweet and pleasant as the ordinary bunches. He had tasted of the great berries of the prize bunches praised in all the newspapers, and found them poor indeed. He had also tasted of berries taken from the biggest prize bunch ever shown in Scotland, at Edinburgh, and found them, as did the fox of old, "sour as crabs." Mr Scrymgeour, after forcibly pointing out the advantages of shows in stimulating horticultural enterprise and promoting a love of flowers as a refining and civilising influence, adverted to various of the leading features of shows with warm commendation or denunciatory animadversion. His condemnation of the conduct of some mere prize-mongers was very severe. In showing the progress in horticulture made by working men, even in large towns, he stated that not a few of them had daringly entered the list with the gardener class, and not unfrequently defeated them in vegetables and flowers. Some of the heaviest specimens of vegetables, and the most splendid Fuchsias, Lilliums, Geraniums, and Ferns (British and exotic) ever seen at Dundee shows, were raised by working men. In extolling the working men of Baledgarno, who every year carry such a large and notable proportion of the prize-money at Dundee shows, he gave a brief sketch of their village, and history of their society. From a sad

experience of the effects of drinking and dancing at country shows, he was led to denounce such practices. Holding flower-shows as being ostensibly got up in the best interests of our humanity, bearing on Christian civilisation, he denounced the use of intoxicants among the promoters and servants, and also at the dinners of the judges and committee. Instead of providing the judges of fruit with brandy, as was usually done in their tasting and discriminating operations, he proposed that they should follow the example of many of the great tea-merchants, who had very delicate work in tasting tea samples, by using a few drops of Condry's Fluid in a glass of water, and which would serve the purpose more effectively than brandy, as sixpence-worth of Condry's Fluid would go farther than £100 worth of brandy.

Both papers were much appreciated, Mr Scrymgeour's remarks giving rise to considerable discussion. Mr Edward Moir, Newport, exhibited a splendid pot of *Saxifraga burserianum*, clothed with at least one hundred and twenty blooms of delicate white flowers. Two trusses of the beautiful snow-white *Rhododendron Duchess of Buccleuch*, with richly perfumed flowers, fully three inches in diameter, were also exhibited by Mr William Alison, Seaview Gardens, Monifieth. A vote of thanks to the chairman terminated the proceedings.



#### ROYAL CALEDONIAN HORTICULTURAL SOCIETY.

THE spring exhibition of this Society on the 6th and 7th of last month, notwithstanding the severe weather of the eight days preceding it, and the intense frost on the morning of the first day's show, was a very successful one, the *tout ensemble* being enhanced by the wintry nakedness everywhere out of doors when compared with the brightness within the Waverley Market on these two days. Some of the classes, as for example those for Hyacinths, were not up to their usual quality; but on the other hand, the Azaleas were finer than have been seen in Edinburgh for a number of years. Picking out the more important features in the prize-list, we must revert to Hyacinths, and find that the twelves were eclipsed by the premier collection of nine sorts staged by Mr Pearson of Beechwood. Czar Peter, General Havelock, Koh-i-noor, Superbissima alba, Garibaldi, Charles Dickens, and Von Schiller were very fine. Tulips were gay, of course, but the individual flowers smaller than they are when a limited number are grown in each pot. In the classes for one and four Azaleas, Mr Paul's large cone-shaped specimens were placed before the equally robust though not so shapely bushes of Mr Paterson. For the six stove or greenhouse plants, Mr Paterson held his old position; but here his antagonist followed very closely on his heels. The premier collection was composed of a large *Anthurium Schertzerianum*, a *Tetratheca*, two Azaleas, an *Erica*, and a huge *Chorozema*. Mr Paul's lot was made up of an extra large specimen of *Cœlogyne cristata* (only thinly bloomed), two Azaleas, a very good Countess of Haddington *Rhododendron*, and *Genetyllis tulipifera*. There was nothing noteworthy about the foliage-plants. The table of plants set up by Mr Priest was well balanced, and contained, besides well-flowered examples of Azaleas and other decorative plants, a few good Orchids, notably two very good varieties of *Odontoglossum Pescatorei*, *O. Alexandræ*, *Masdevallia Lindeni*, and a distinct variety of *Odontoglossum Lindleyanum* with shorter and more obtuse floral segments than ordinary varieties, the ground-colour being of a lemon shade instead of a greenish-yellow in ordinary forms. The second-prize table

was also a very bright and attractive one; while the third in the prize-list was especially rich in Orchids, but not well arranged. The tables of hardy spring flowering-plants were interesting as usual, and were especially so as showing the poor hold æsthetics have gained in the north, the exhibitor who had his flowers arranged out of pots *au naturelle* being "plucked." In the Orchid classes some good plants were staged. Mr Paul's four consisted of *Vanda suavis*, *Oncidium sarcodes*, *Phalaenopsis Schilleriana*, and *Dendrobium thyrseiflorum*. Mr Priest's two were a strong plant of *Dendrobium fimbriatum oculatum giganteum* and a healthy plant of *Cypripedium caudatum*. Mr Paul's single specimen was a grand *Odontoglossum Pescatorei* with three branched spikes, with 150 to 160 flowers open altogether. *Deutzias*, *Hoteias*, *Lily of the Valley*, *Mignonette*, *pot-Roses*, *Rhododendrons*, and *Cyclamens* were generally well represented, the premium lots being in all cases excellent. *Cut-Roses* were not up to the mark, the buds being small and wanting in colour. Fruit was poorly represented; Apples were good—so were the prize Grapes and the single Pine-apple shown. Vegetables were a wonderfully good show when we consider the season, some fine Leeks, Mushrooms, &c., being staged. Mr Potter's collection contained a few extra-fine dishes.

There was only slight competition in the nurserymen's classes. Messrs Downie & Laird's *Hyacinths*, *Rhododendrons*, and *Cyclamens* were, as usual, fine—their table in the centre of the hall being conspicuous by the gigantic specimen *Rhododendrons* it was mainly made up of: Mrs J. Clutton, Lady Clerk, *Brilliant Comet*, *Broughtoni*, *Michael Waterer*, *Purity*, and *Joseph Whitworth* were particularly noteworthy. Messrs T. Methven & Sons' table alongside was also mainly composed of *Rhododendrons* and specimen *Palms*; the semi-double *Rhododendron flexuosum fl.-pleno* was particularly telling. Some good specimens of *Todea superba* were also set up in this collection. At the other flank of Messrs Downie & Laird's, Messrs Ireland & Thomson had as usual a very bright and attractive table of new and ornamental plants, conspicuous amongst them being double-flowering *Thorns*, *Lilacs*, *Azaleas*, *Staphylea colchica*, with *Palms*, *Crotons*, new *Coleus*, &c., and a great number of flowering *Orchids* of popular sorts, many of them in good varieties. The Lawson Seed & Nursery Co. had an attractive table at the extreme west end of the Market. A lot of *Amaryllis* were very telling on this table. Messrs Drummond Bros. filled a table with much the same kind of material. Mr Taylor, *Hermitage*, *Leith*, showed a large table of market plants, consisting mostly of *Hyacinths* in various shades, *crimson Tulips*, *Lily of the Valley*, and *Hoteia japonica*. Mr Robertson Munro, *Portobello*, showed a table of attractive spring-flowering plants, a number of rare kinds being included. Messrs Todd & Co., *Maitland Street*, had bouquets and some remarkably fine buds of *Devoniensis Rose*. But in the way of bouquets, crosses, and a floral wreath, Messrs W. Thomson & Sons, *Clovenfords*, eclipsed all others in the style theirs were got up in, combined with simplicity in the arrangement of the flowers. Mr Potts, *Fettes Mount*, *Lasswade*, staged a collection of 260 sorts *Saxifragas*. Messrs Stuart & Co. have applied their patent granolithic to the formation of vases, and showed some specimens at this show. Two of those shown are for the *West Princes Street Gardens*, and struck us as being remarkably like the material they are intended to take the place of—sandstone. The manufacturers claim greater durability for them than any other kind of stone. They are certainly worth looking after by those who are in the way of buying such articles. The design of the vases is good, though the pedestal is anything but pleasing in its effect.



Special awards were bestowed on some Vanda blooms from Mr M'Intyre, The Glen; and on a basket of flowers from Mr M'Millan, Broadmeadows. It was hardly possible to believe that the combination of blue Cinerarias, and pink, crimson, and scarlet Geraniums, of which this arrangement was made up, should have had such a recognition by the judges, after the teaching they have received during the last decade.

First-class certificates were awarded to Messrs Ireland & Thomson for a white sweet-scented Rhododendron named Thomsonii; Mr Robertson Munro, for Soldanella minima alba; Mr Potts, for Saxifraga Fettestonia aurea.

The judges were—Messrs James Henderson, Cowden Castle; Neil Glass, Carbrook; Lunt, Ardgowan; D. Henderson, Castle Wemyss; T. Gellatly, Gosford; Lamont, Kennet; Morrison, Archerfield; Ormiston, Alloa Park; Currie, Peebles; Rutledge, Freeland; Ramsay, Fordell; and Wilson, Murdiston. During the afternoon and evening the band of the 71st Highlanders played selections of music. So far as the number of visitors was concerned, the show was a decided success. In the afternoon it was patronised by between three and four thousand people, including a number of the nobility. In the evening there was also a large attendance.

The following is the prize-list:—

#### GARDENERS AND AMATEURS.

Twelve Hyacinths, not less than twelve sorts.—1, A. Crombie, Royal Asylum, Morningside; 2, G. M'Clure, Trinity Grove; 3, H. Syme.

Nine distinct Hyacinths.—1, J. Pearson, Beechwood; 2, R. M. Reid, Ravenswood; 3, J. Fowler.

Six distinct Hyacinths.—1, W. Penn, Liberton; 2, G. Lawrie, Merchiston; 3, A. Dunlop.

Six distinct Hyacinths (Amateurs).—G. Drummond, Grange Road.

Four pots Polyanthus-Narcissus, sorts, pots not exceeding 9 inches.—1, W. Pearson; 2, S. Graham, Kilravock Lodge; 3, J. Spence.

Nine pots Tulips, sorts, pots not exceeding 9 inches (First Prize by Mackenzie & Moncur, horticultural builders).—1, A. Crombie; 2, G. M'Lure.

Six pots Tulips, sorts, pots not exceeding 9 inches.—1, T. Macdonald, Ashfield, Grange Loan; 2, R. Johnston, Woolmet, Dalkeith; 3, W. Penn.

Twelve pots Narcissus, garden sorts, varieties.—J. Gordon, Niddrie Gardens.

Six pots Narcissus, do.—1, J. Spence, Oswald Road; 2, G. M'Lure.

Four Rhododendrons, in pots or tubs, hardy.—1, G. M'Lure; 2, C. Smith, Restalrig House.

Two Rhododendrons, do.—1, C. Smith; 2, Hugh Mackenzie, Blackford Brae.

One specimen Azalea.—1, A. Paul, Henderson Cottage, Gilmore Place; 2, J. Paterson, Millbank.

Four Azalea indica, varieties (First Prize by the Corporation of the City of Edinburgh).—1, A. Paul; 2, J. Paterson; 3, C. Smith.

Two Azalea indica, varieties.—1, J. Paterson; 2, A. Paul.

Three do., pots not exceeding 8 inches.—1, J. Paterson; 2, J. Fowler, Grange Road.

Six Greenhouse or Stove Plants, in flower, distinct varieties, not more than two Azaleas.—1, J. Paterson; 2, A. Paul.

Three Greenhouse or Stove Plants, in flower, distinct varieties, not more than one Azalea.—1, J. M'Cormick, Grange Loan; 2, G. M'Lure.

Six Foliage Plants, pots not exceeding 8 inches.—1, J. M'Cormick; 2, S. Graham.

Four Foliage Plants, excluding Ferns.—1, S. Graham; 2, R. M. Reid.

Two Foliage Plants, do.—1, J. Paterson; 2, J. M'Cormick.

Six Plants for table decoration, pots not to exceed 6 inches.—1, J. M'Cormick; 2, J. M'Leod, Brentan Park, Stirling.

Table of Plants, 20 feet by 5 feet.—1, Wm. Priest, Newbattle Abbey; 2, R. M. Reid; 3, A. Paul.

Table of Hardy Spring Flowering Plants, 10 feet by 5 feet.—1, G. M'Lure; 2, C. Smith.

Two Dracænas.—1, S. Graham; 2, J. M'Cormick.

One Specimen Croton.—1, J. Paterson; 2, R. M. Reid.

Four Palms.—1, J. Paterson; 2, T. Macdonald.

One Palm.—T. Macdonald.

Four Orchids.—1, A. Paul; 2, J. Laidlaw, Liberton.

Two Orchids.—1, W. Priest; 2, A. Paul.

One Orchid.—1, A. Paul ; 2, J. Laidlaw.

Six Exotic Ferns, sorts.—1, A. Paul ; 2, T. Macdonald.

Three do., in pots not exceeding 9 in.—1, S. Graham ; 2, T. Macdonald.

Three Adiantums, sorts.—1, S. Graham ; 2, W. Pearson.

Two pots or pans Lycopodium, different species.—1, W. Henderson, Polmont ; 2, J. Cosar, Linlithgow.

One Tree Fern, not less than 3 feet stem.—T. Macdonald.

Four Cape Heaths.—1, J. Paterson ; 2, J. M'Cormick.

Three pots Amaryllis, varieties.—1, T. Macdonald ; 2, G. M'Lure.

Two Deutzia Gracilis.—1, W. Bennet, Hanley ; 2, G. M'Lure.

One do.—1, T. Macdonald ; 2, J. M'Cormick.

Two Lilacs.—1, W. Priest ; 2, James Spence.

Three Spiræa japonica.—1, T. Macdonald ; 2, A. Scott, Carberrry Tower.

Two Dielytra spectabilis.—J. Cosar.

Two Epacris.—A. Paul.

Four Cinerarias, sorts.—1, M. M'Intyre, The Glen, Innerleithen ; 2, W. Bennett, Corstorphine.

Two do.—1, J. Matheson, Lasswade ; 2, A. Hay, Linlithgow.

Twelve Camellia Blooms.—1, J. Stewart ; 2, C. Smith.

Six do. do.—1, J. Stewart ; 2, Thomas Bowman.

Six Rhododendron Trusses, of sorts.—1, S. Graham ; 2, C. Smith.

A Hand Bouquet.—1, J. Bald, Canaan House ; 2, T. Bowman.

A Table Bouquet.—1, H. Watson, Stirling ; 2, J. Cosar.

Two Standard Mignonette.—S. Graham.

One do.—J. Cosar.

Two pots Mignonette.—1, S. Graham ; 2, J. Cosar.

Three pots or pans Lily of the Valley.—1, W. Pearson ; 2, S. Graham.

One do.—1, W. Pearson ; 2, G. M'Lure.

Four forced Roses in pots (First Prize by Mr H. Dickson, nurseryman, Belmont).—1, J. Paterson ; 2, W. Priest.

Two forced Roses, in pots.—1, J. Paterson ; 2, G. M'Lure.

Twenty-four cut Roses, not less than twelve sorts.—T. Bowman.

Twelve cut Roses, not less than six sorts.—C. Smith.

Twelve cut Roses, Marechal Niel.—1, W. Pearson ; 2, J. Gordon.

One Cactus, any sort.—W. Dougal, Ferry Road.

Two single Primulas (Chinese).—1, W. Kay ; 2, W. Pearson.

Six Primula vulgaris, varieties.—W. Pearson.

Two Stage Pelargoniums, in flower.—Thos. Macdonald.

Twelve Cyclamens, not less than six varieties.—1, M. M'Intyre ; 2, G. M'Lure.

Six do., three varieties.—1, G. M'Lure ; 2, J. Paterson.

Six pots Polyanthus, in flower.—1, S. Graham ; 2, R. Harvey, Colinton Road.

Six Auriculas, Alpine, in flower.—R. Johnston.

Six Alpine Plants, in flower.—1, A. Paterson ; 2, G. Drummond.

One Pine Apple.—M. M'Intyre.

Thirty Strawberries.—M. M'Intyre.

Two bunches of Grapes, black.—1, A. Anderson, Oxenford Castle, Dalkeith ; 2, D. Kemp, Langlee, Galashiels.

Twelve Apples, cooking, six sorts, named.—1, G. Potter, Seacliff House, North Berwick ; 2, J. Brunton, Gilmerton.

Twelve do., dessert, three sorts, do.—1, J. Brunton ; 2, J. Stewart, Catherine Bank House, Newhaven Road.

Twelve Pears, dessert, three sorts, named.—1, J. Brunton ; 2, G. Potter.

Two Cucumbers.—R. Ferguson, Teviot Bank, Merchiston.

Collection of Vegetables, eight sorts.—1, G. Potter ; 2, T. Bowman.

Six Heaviest Stalks Rhubarb.—1, J. Leyden, Rosewell ; 2, J. Stewart.

Six Heads Seakale.—1, T. Bowman ; 2, J. Stewart, Corstorphine.

Six Leeks.—1, G. Potter ; 2, J. Stewart, Corstorphine.

A Pint of Mushrooms.—1, C. Smith ; 2, J. Gordon.

Three Cabbages.—1, G. Potter ; 2, T. Bowman.

Twelve Onions.—1, T. Boyd, Callender Park, Falkirk ; 2, T. Bowman.

Twenty-five Asparagus.—1, G. Potter ; 2, T. Bowman.

Fifty Pods French Beans.—1, R. P. Brotherston, Tynninghame ; 2, J. Boyd.

#### NURSERYMEN.

Eighteen distinct Hyacinths.—Messrs Downie & Laird, West Coates Nursery.

Twelve Rhododendrons, hardy varieties, in pots or tubs.—Messrs Downie & Laird.

Six Rhododendrons, do., in pots not

exceeding 9 inches.—1, Messrs Downie & Laird ; 2, Messrs T. Methven & Sons.

Six Greenhouse Rhododendrons.—Messrs Downie & Laird.

Twelve Camellia Blooms, six varieties.—1, Messrs W. Gordon & Sons, Col-

bridge; 2, J. Bryson, Parkend, Helensburgh.

A Hand Bouquet.—1, Messrs Todd & Co., Maitland Street; 2, Messrs Downie & Laird.

A Table Bouquet.—Messrs Todd & Co.

Twelve cut Roses.—1, J. Bryson; 2, George Sinclair.

Twelve Blooms Marechal Niel Rose.—1, George Sinclair; 2, J. Bryson.

Twelve pots Cyclamens.—Messrs Downie & Laird.

Six forced Roses, in pots—J. Bryson.

Four Azaleas.—Messrs Downie & Laird.

Collection of Hardy Spring Flowers, not less than twelve sorts.—R. Munro, Piershill.



## NOTICES OF BOOKS.

IMPROVED PRUNING AND TRAINING OF FRUIT-TREES, OR EXTENSION *versus* RESTRICTION. By John Simpson, Wortley Hall Gardens. The 'Garden' Office, 37 Southampton Street, London.

This is the first volume—so far as we are aware—that has been entirely devoted to the explanation and advocacy of what is well known as the extension system of training fruit-trees. It is founded on the author's own practice, and is on that account—if for no other—worthy of every respect, especially as nowadays there are writers who idealise on systems neither they nor anybody else has ever practised. The extension system is by no means of recent date, though not generally practised. Nearly forty years ago the late Mr Peter Kay of Finchley was an ardent advocate and practiser of the extension system in Peach-growing, and also in Vines, and filled houses with young trees in very short spaces of time. To such a length did he carry it out, that he allowed two, and sometimes three shoots from a Vine spur, and allowed them to make three, four, and five joints beyond the bunches; and those who were eyewitnesses to his crops at that time will bear us out in saying that his Muscat and Hamburgs were splendid. He practised the system advocated by Mr Simpson, in filling his Peach-houses rapidly; and, so far as our recollection carries us, the same principle was practised at Wrotham Park about the year 1842. There can be no doubt about the hacking back system, condemned by Mr Simpson, being wrong, and the extension system the better for Peaches and Nectarines, especially under glass, where the wood can be ripened. From our own experience we cannot pronounce so confidently on Plums. We prefer a medium course for them, unless when under glass, and where no doubt exists about ripening the wood. As to the extension system for orchard Apples and Pears, there cannot be a doubt about its superiority to the whittling system, demanded more or less by rows of trees near garden-walks, where, in our opinion, Apples and Pears should never be planted. We suspect the monks were cognisant of, and practised the extension system, just as it has been practised in large Apple-orchards ever since their time. We commend Mr Simpson's little volume for a clear exposition of free training. If we have any fault to find, it is with his chapter on Vine training; and do not think 2 feet for Hamburgs, &c., and 3 feet for Barbarossa, sufficient width to grow really fine Vines. Mr Simpson refers to the practice of market-gardeners in general, and to Garston and Tweed Vineyard in particular, as bearing out the soundness of his views. But if we mistake not, Vines planted by market-gardeners, as a rule, do not keep long in good condition. It would be interesting to know how the Vines at Garston,

trained at 2 feet, have gone on. At Tweed Vineyard the 2 feet system was a temporary one, lasting only till the supernumeraries were cut out. Now they are grown wider, with what results many are aware, and Covent Garden salesmen in particular. To produce really fine Vines and crops, we consider 3 feet the minimum width for such as Hamburgs, but we prefer 6 or 9 inches more. With this exception, we commend the remarks of Mr Simpson to all interested in fruit-tree training.

THE CHERRY AND MEDLAR. THEIR HISTORY, VARIETIES, CULTIVATION, AND DISEASES. By D. T. Fish. The Bazaar Office, 170 Strand, London.

In this treatise, Mr Fish has done for the Cherry and Medlar, what in former ones he has done for the Peach, Plum, Pear, &c. ; but we think he has done better in this instance, inasmuch as he has evidently studied brevity more: and it will, like the others, be a help to all seeking information on Cherry and Medlar culture.

ON THE ART OF GARDENING. By Mrs Francis Forster. W. Satchel & Co., London.

This is evidently the work of a lady who has a warm attachment to what some people call old-fashioned flowers, and what amounts to a dislike to the new-fashioned ones. She is also brimful of sentiment concerning them. Any practical hints the little *brochure* contains, will no doubt be useful to such as herself, who love a garden made up exclusively of hardy flowers. If ever she writes a second edition, we would recommend her to have more frequent recourse to some botanical dictionary.

We shall be glad to hear from any one having the following numbers of the 'Gardener' to part with: January 1874; January 1879.



## Calendar.

### FORCING DEPARTMENT.

Pines.—Owing to the wintry weather which has prevailed all through March, till nearly the middle of April, early started Queens have not made such rapid progress as usual; and in cases where they are required as early as possible for the London season, they may now be pushed on with higher temperature. Let the night temperature not be lower than from 70° to 75° after 10 P.M. Shut them up early on sunny afternoons, so that the thermometer runs up to 95° for a time. Give a corresponding amount of air moisture by syringing the surface of the bed, and the plants themselves lightly. Keep the bottom-heat as steadily as possible about 90°; and see that the soil is never allowed to become really dry, but avoid keeping it very wet. Succession plants, shifted two or three months ago, will now be growing freely, and will require careful management as regards air-giving and watering. As soon as the thermometer touches 75° put a little air on, and increase it gradually till noon, when in calm warm days the ventilation should be liberal to keep the plants from drawing; 65° on cold nights, and 70° when mild, will be high enough all through this

month. Sprinkle the plants lightly every fine day when the pits are shut up, and moisten the surface of the bed and paths, so as to keep the air moist for the night. Keep the fires low by day when there is sunshine; for hot pipes, a brilliant sun, and maximum ventilation, make the atmosphere of the pits very injurious to young growing Pines. By raising the temperature, and giving more water at the end of the month, plants that have been resting for the last month or so can be started into fruit for the supply of ripe fruit in autumn. Keep those intended for starting in July steadily growing all through this month. In watering Pines in all stages of growth just keep the soil moist, avoiding anything approaching to a wet sodden condition. Heavy syringings over the plants is a practice we object to. The foliage should be dewed over through a fine syringe, and the moisture applied chiefly to the surface of the bed and paths, &c.

Vines.—In early vineries, where the Grapes are ripening, ventilate freely, always leaving air on all night, so as never to have a stagnant atmosphere. Keep ripe Grapes cool and dry, but do not carry the drying up to an extreme, especially as regards Vines that have their roots chiefly in inside borders. Anything like starving them just now tells injuriously on the Vines for another year. Never let the border get dry, and when watered give as much as will go right through it, applying the water early on a fine day, so that the surface dries a little before night. Keep the foliage on these early Vines as healthy as possible. If red-spider appears, get rid of it at once by sponging it off with a soft sponge and tepid water. In later vineries, where the Grapes are swelling rapidly, keep up the temperature with as little fire-heat as possible. When the nights are cold and frosty, as they often are in May, rather drop the heat a few degrees, than keep it up by force of firing. If the thermometer is at 60° at 6 A.M., it is high enough, except for Muscats, which we do not like to see in a cooler temperature than 65° after the first of this month. Shut up the vineries early in the afternoon, so that the

sun runs up the heat to 85° or 90° for a time, and sprinkle the surface of the border, paths, &c.: open the front lights an inch or two at 6 o'clock, and leave them so all night. This causes a circulation of invigorating fresh air by its coming in at the bottom of the house, and escaping at the laps all over the roof. Muscats in bloom should have a free circulation of warm air about them, at the same time giving the stems of the bunches a tap about mid-day, so as to disturb and distribute the pollen. Thin all free-setting sorts immediately they have shed their blooms. It is an unnecessary strain on the Vines to leave the thinning till the berries are nearly as large as Peas, besides taking much longer time to do the work. Avoid heavy cropping and crowding of foliage and wood as the greatest evils that Vines can be subjected to. Look over later Vines, and stop and tie them down as they may require, two or three times weekly. Examine all inside borders, and never let them get dry, giving good drenchings of water and liquid manure, as the state of the Vines may call for. Avoid a close damp atmosphere kept up by swilling the inside of the vineries all day long with water. Everything about the Vines andinery should be dry for a considerable time every day. A good vapour-bath for a few hours in the afternoon and evening does them good, but this should not be continued. Attend carefully to young Vines planted a few weeks ago. Mulch their roots with some litter to prevent rapid evaporation from the soil. Keep them regularly tied to the wires as they advance, and allow them to make growths sufficient to cover the whole roof without crowding the foliage.

Peaches.—To get Peaches now ripening of good flavour, they require to have a free circulation of air about them, and full exposure to the sun. Put aside all leaves that may be shading them, so that the sun can lay on those rich mellow tinges peculiar to a well-flavoured Peach. Syringe later crops freely on fine afternoons, and keep a strict watch on the state of the soil where the roots are chiefly in inside borders. Give good soakings of manure-water, and if not already

done, lay a few inches of manure on the surface of the borders. In dis-budding and tying in the young wood, reserve very little more than is sufficient to furnish the trees with bearing-wood for next year. Thin the fruit by degrees, and finally after they have stoned. If green-fly appears, fumigate with tobacco before it gets a footing. In 1879 we syringed two trees with paraffin-oil and water after the leaves dropped, and on these two trees there was no green-fly last year. Last winter the whole trees were dressed with paraffin, and up till the middle of April we have not detected a fly on some thirty trees that were attacked before the fruit were set last year. Pinch all shoots that are growing much more strongly than others on young trees, so as to equalise the growth as much as possible. Trees that are inclined to grow too strongly can be checked by rather heavy cropping.

**Figs.**—These will be swelling their crop rapidly, and those started in December should begin to ripen before the close of the month. Up till the time of ripening, keep a moist atmosphere, and syringe the trees freely every fine day at shutting-up time. When the first signs of ripening are noticed, discontinue syringing, and otherwise decrease the moisture and ventilate more freely, so as to keep a circulation of dry warm air about the trees, that the Figs may be well-flavoured. Let the night temperature be 65°. When the second crop is well developed on the young growths, thin them out in time. A fair crop of large well-swelled fruits is much to be preferred to a greater number of inferior quality. Attend to the tying of young growths on succession-trees, and do not crowd the foliage by retaining more growths than are needed to furnish the trees. See that all trees in pots or restricted inside borders are well supplied with water, giving frequent applications of manure-water.

**Melons.**—Sow and plant out for succession-crops at the beginning and end of the month. Attend regularly to the tying and stopping of those planted out last month, and see that plants in bloom are impregnated regularly. The best time for this is at mid-day, when the pollen is most

likely to be well developed. The amount and depth of soil for Melons planted now should be more than for early crops. Do not over-water crops which are fully swollen, especially should the weather be dull and damp, or the fruits may crack. Whenever they begin to change colour, expose them as much as possible to the sun. Give more air, and lessen the moisture in the soil, but do not dry them off to such an extent as will injuriously effect the leaves; for Melons can never be properly finished unless the foliage be retained in health. Syringe young growing plants at shutting-up time, and let the heat run up to about 90° for a time with sun-heat. Do not let the night temperature drop below 70°, nor exceed 75°.

**Cucumbers.**—Plants that have been bearing all winter and spring will now be superseded by younger ones, and the former may be done away with, and the pit occupied with Melons or Tomatoes. Sow at the beginning of the month, to produce a batch of plants to be put into frames and pits after the tender flower-garden plants have been planted out. Give plants in full bearing occasional waterings of manure-water, and top-dress the border with fresh loam and manure, if the roots have come through the last dressing. Thin out old growths, and let young ones take their place.

**Strawberries.**—Unless carefully managed, these, if grown on shelves in hothouses, are apt to be very troublesome with red-spider. Except those in full bloom, syringe them freely every day to keep them clean, and see that they are never allowed to get dry at the root. A good plan after the first of this month is to fill pots about half full of rich soil and place the Strawberry-pots in them. They root into the soil, and are very much nourished thereby. This is much better than placing the pots in flats of water, which rots the roots and spoils the flavour of the fruit. All plants now done bearing may be hardening off previous to being planted out. The remainder of the stock yet to fruit may be placed in pits and frames near the glass, where they will ripen before Strawberries are ready outdoors.

## KITCHEN-GARDEN.

ONE of the driest months of March we ever remember, and up to the 10th of April, has passed. Though very trying for both vegetable and animal life, it certainly was in favour of advancing work, and arrears in most cases will be well brought forward. Broccoli being early cleared off after its destruction by frost, has given an opportunity of getting extra space cropped with Potatoes, or whatever may be desired. Notwithstanding all our fears, we observe most seeds coming up. Strong clay land, which has gone together like rock, and cracked, has been dusted with fine soil, soot, and ashes, which will act as protection from drought and slugs, and stimulate the seedlings as well. Insects and slugs must have every preventive used against them, as there seems to be a great scarcity of birds to clear them off, numbers having been killed by the severity of the frost. Work of every kind will now increase; weeds especially will put in an unwelcome appearance, and must be attacked promptly, as destroying them when young is easier than when they get established in the ground. Let gardening be ever so well done in other respects, if slovenly and weedy, it may be considered destitute of what is most pleasant and attractive. It is well to make sure that all crops are vegetating, and if it is found that any failures have taken place, make an effort to meet the difficulty by sowing at once: most things may yet be sown or planted with tolerable success. Onions may be begged from any neighbour when their thinning has taken place. They may be planted well soaked with water, and when the surface is dry enough, the hoe may be run between the rows. One of the best crops we ever had was treated in this way, the plants having travelled miles, and been unduly delayed by rail. Parsnips can be easily had in the same way. Leeks and Parsley, which do well when transplanted, can also be raised easily from thinnings if one's own seeds have failed.

Frost during the period above referred to having ranged from 8° to 12°, is likely to have left its unwelcome mark in many districts. Artichokes

(Globe kinds) will now show if they are to grow or not. It will be well to plant suckers if they can be had, or sow seed to raise plants for transplanting. They require rich, deeply trenched, and well-drained soil to do them well. Asparagus may now be in full bearing, and it is well to cut the produce systematically all over the ground, taking large and small, which may be sized and separated, and tied into bundles for use. Sprinklings of salt after each cutting will help the crop and keep weeds in check. Sow broad Beans, Peas, French Beans, and Scarlet Runners at least twice during the month. Champion of England, Ne Plus Ultra, Veitch's Perfection, and The Baron are good kinds for present sowing; so also are Telephone and Telegraph: stake forward lots. All the foregoing do well on rich, deep land, and not crowded. If the seed is covered with fine ashes and leaf-mould, mixed and mulched (when they come into bearing) with manure, they will not readily succumb to mildew or be burnt up with sun. Beet may be sown at beginning of month. The ground for these roots should be free from manure, but should not be poor and sandy, as some affirm. Such soil gives "stringy" produce. Early crops of Beet may require thinning: where blanks may have occurred, let them be planted up well, soaking the drills in which they are placed. Sow all kinds of Broccoli for successions. Brussels Sprouts may be ready for planting out: they should be placed in drills 2 feet apart, and as much between the plants in the rows. Plant out Cauliflower, and sow more for succession. They require rich soil and early positions to get them in quickly; and a quantity of plants of the same age, planted behind a wall or hedge, will make a succession to them: better to have lots of such crops coming on in small successions than large gluts, to be succeeded by a scarcity. Plant Cabbage thickly, if required, on very rich ground. This crop on poor gritty soil is tough and worthless. Carrots may be thinned and well hoed: a young crop to draw when small and tender may be sown as circumstances may require. Celery may be often planted out for a first

supply when ready to transplant: give them plenty of moisture at their roots to start with, and when growth is started mulch over the roots with rotten manure: mowings of grass may be used sparingly. Shading may be used to begin with. Lettuce, Turnips, Radishes, Spinach, and all small salads, may be sown between other crops every ten days, or weekly, where such are required; and we think these are the most difficult crops to have at all times in abundance. If ground is dry, a deluge with water the night before it is to be used will make it easily worked. Lettuce may be thinned to 9 inches apart each way, and the thinnings planted in the shade for succession. Salsafy, Scorzonera, and Chicory may now be sown. The two former may be treated as Beetroots: the latter may be grown anywhere. Early thinning of crops; free, open surfaces well hoed; water in good soakings when it is really wanted; and vermin kept in check,—are matters of considerable importance at this season. Tomatoes should be hardened gradually, never stopping growth entirely, and planted out at end of month or early in June. Mushrooms are not so easily kept from maggots at this season. Beds formed out in cool positions, well protected by litter or straw mats, answer well for growing this much-valued crop. Capsicums do well in frames planted out, or along back walls of pits. Ridge-Cucumbers, Vegetable-Marrows, and Gherkins may be planted on beds of warm manure, leaves, or other material, covered with good soil, and protected by “protectors” or hand-lights. Weather is often deceptive during May, and no risk should be run.

M. T.

### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the ‘Gardener’ to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

W. ALLISON.—*Dendrobium Pierardi*.

BEGINNER.—The following *Masdevallias* are to be recommended as the most showy, *M. Harryana*, *igneae*, *Lindeni*, *Tovarensis*, *Veitchiana*, *Davisii*. Keep *Tovarensis* at the warmest part of the house.

J. F.—We suspect the roots of your young Vines are being devoured by wire-worms. Place a thin layer of horse-droppings on the surface, and cover it closely over with boards: examine beneath the boards and you will soon find the worms, if our suspicion be correct; and if so, turn over the boards every morning and pick up the worms. Pieces of carrot or potato thrust into the border and examined daily is also a good way of getting rid of them. If wire-worm is not the cause, we cannot say what is, seeing your soil is fresh and good.



THE  
GARDENER.

JUNE 1881.



FRUIT-CULTURE.

THE APPLE.

*Treatment of established Trees.*



THE remarks in our last chapter apply wholly to trees in the open garden or orchard. Further on we will deal with wall-trees. In the meantime we will confine our attention to the treatment of the trees which we have been treating of, after they have become established.

*Orchard-trees.*—The first thing that will require attention is pruning. Standard trees on good deep soil require very little of it; and, generally speaking, the less they get of it the better. When healthy young trees on good soil are hard cut in, the result is that almost every bud left on the shoot is forced into growth. When trees are unduly repressed by pruning, their vigour is expended in numerous strong unfruitful shoots. When hedges are hard cut in, the result is a dense thick growth; and the same result follows in the case of fruit-trees similarly treated. Well-kept thorn-hedges seldom produce much blossom, while neglected hedges are generally covered with a profusion of bloom. *Well-pruned* trees behave in a way similar to a closely cut hedge, and trees which are let alone generally blossom and fruit as freely as neglected hedges. When a strong growth is cut back half-way, most of the buds which are left grow to be shoots. When left untouched many of them become flower-buds, which develop ultimately into Apples instead of twigs. The lesson to be learnt from this is to let healthy trees, which are to be allowed full development, alone or almost so. Still, intelligent regulation of the branches will prove beneficial.

Some trees are very spare in habit, and if left to themselves would not become properly furnished. When such kinds are young, they ought to be pretty well cut back, just for the very purpose of making them push a greater profusion of shoots. Densely habited kinds, on the other hand, should never on any account be shortened, unless parts of the tree are bare of shoots. Such kinds should have a branch here and another there cut clean out altogether; and when any young shoots push from the place where such branches are cut, they should be rubbed off as soon as they appear. Care should always be taken to get a good foundation of branches from the very first.

For ordinary orchard-trees globe-formed heads are best, for most varieties assume that shape of themselves. As the trees get large, care should be taken to keep the branches thin, so that sun and air may have a chance to penetrate and assist fruit and wood to attain maturity. Wood which is unmaturing is generally fruitless, and mature wood cannot be obtained unless sun and air get at every part of the trees. Some of the freer-fruited varieties may produce both blossoms and fruit; but when the branches are crowded like a hedge, the fruit is sure to be inferior in quality and appearance, and so of less value; and although the number of fruits may be larger, the weight will not be greater, but may be the reverse. It is better, therefore, not to cut back the young wood, unless it is necessary in order to furnish the tree with branches; and remember, when thinning is necessary, to do it by cutting out the weakly branches. When two branches cross each other like an X, the worst-placed one should be removed, for the rubbing of the one against the other will spoil both, to say nothing at all of the awkward look of the thing. Branches should be as nearly parallel as possible.

Although orchard-trees may be skilfully let alone, and as skilfully thinned when necessary, they may weary the cultivator waiting for the "returns." Where the soil is good and deep, more especially in cool northern localities, the trees may "go in for basket-wood;" and when trees grow too vigorously, the time for skilful letting alone has passed in favour of skilful interference. After three or four years have passed, and vigorous trees show no sign of producing fruit-buds, means should be taken to cause their formation. This is best done by careful lifting and replanting. Trees three or four years planted may be lifted and transplanted during the month of October with every safety; and the result will be that the year following plenty of flower-buds will form, and the growth be more moderate but of a better quality. If the operation is carefully done in the way we advised when speaking of planting them—all fibry roots saved and only strong ones cut back, and all laid out horizontally,—after one year's growth they will again be firmly established, and quite fit to make a proper growth and bear some fruit. After this stage has been reached the trees will cause very little trouble, for the bearing of fruit will prevent the formation of too strong wood; and if it is not strong enough, mulchings of manure over

the roots, and one soaking of manure-water during winter, will correct this tendency. Still, if the trees grow too strongly in after-years, root-lifting should be practised. Wholly lifting and transplanting is not quite safe in the case of large trees, but it is quite safe to lift one side one year and the other side the next year. In the case of trees on a thin soil and a bad subsoil, it is well to practise this root-lifting, especially if the bottom is damp. Trees which have sent their strongest roots straight down into cold wet soil seldom thrive, and the fruit is generally of a poor quality. During summer, the soil, especially when damp, is much colder than the air; and so the sap which is drawn up keeps the temperature of the tree lower than it might be, which is one of the reasons why Apples on such subsoils are poor. The upper soil, on the other hand, is in autumn of a higher temperature than the atmosphere; and hence, when the sap is wholly drawn from the surface-soil, the temperature of the tree is kept up, which is one reason why the fruit on trees whose roots have been brought to the surface is generally fine. Another great advantage which follows root-lifting is, that the roots can be properly fed when necessary.

A great many orchards are laid out in grass. On really good soil this may be well enough, on inferior soil it is not. We think it far better to keep the surface-soil free of all growth except some light vegetables. The tree-roots should not be interfered with, but the interspaces may and should be cropped. Between the rows Gooseberries, Currants, or Rasps may be profitably grown for some years; and it will be found that on cultivated soil the trees will thin better than on grass land, while the operations we have hinted at can be more easily and satisfactorily performed.

*Medium Trees—Management of the Roots.*—Although orchard-trees, at least when on a good, deep soil, and in a favourable locality, certainly give the greatest amount of fruit for the least possible trouble, it is not every cottager or villa-owner who can afford space for them, or has patience enough to wait many years until full crops are produced. Medium-sized trees—that is, trees grafted on the Crab Apple or English Paradise—may be grown in less space than ordinary orchard-trees: they come earlier into bearing, and, as they are planted very much closer together, sooner attain their full growth and yield a full crop from off a given piece of ground. As a set-off against this, such trees, to do them justice, require to be systematically pruned both at root and top. On peculiarly favourable soils and in favourable localities they may be treated on the let-alone system to a very great extent, but on ordinary soil and in ordinary situations systematic cultivation will be required to produce satisfactory results. We have seen such trees on a moderately deep soil, on a whinstone bottom, do first-rate without anything being done to them at all, except the occasional removal of a crowding branch, and a little cow-urine at the root in winter. We have seen the same kind of trees on a thin soil, with a cold, damp, clayey bottom,

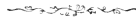
which for years did no good at all in the way of fruit-bearing, although the annual growth was strong and healthy; and after these trees were carefully lifted, root-pruned, and planted again with their roots placed near the surface among open soil raised a little above the surrounding level, and mulched with manure, they produced splendid crops for years afterwards. The reader will understand by this that what may be proper on one soil and in one locality, may be highly improper on another soil and in another locality. When trees which are planted on a strong soil of average fertility, with a dry wholesome bottom, make a fairly good annual growth, and after three or four years begin to bear fruit of a good quality freely, it will be wise to let the roots alone. On such soils, especially if poor, it is just possible that fruit may be *too* freely produced, at the expense of the annual growth—so much so, that the trees make no headway. We have found that a good mulching of manure over the roots, coupled with a soaking of manure-water once in May, and again in June or July, had a very good effect in producing free growth and fine fruit. An indispensable factor in the production of good fruit and healthy growth are fibry roots near the surface. The Paradise stock and, in a lesser but still fairly good degree, the Crab produce good fibry roots naturally on dry stony soils, and mulching draws them towards the surface and keeps them there. The roots go where the sap and the food are, and it is a good thing to keep the food and moisture at the surface. Digging in manure is not a good way to secure this, because rank manure, when the roots can reach it, causes the formation of strong sappy roots; and such roots produce strong sappy wood which is not fruitful; but the reverse. Moreover, every drop of rain that passes through manure so placed, carries its essence deep down, and the roots follow. Again, manure dug in does not promote moisture at the surface in dry weather; and so there is nothing to attract the roots thither. Mulching, on the other hand, promotes moisture at the surface; and as the rain carries the strength of the manure into the soil, the roots get the benefit of it, just as much as if it were dug in. Practical men thoroughly understand all this; beginners seem not to do so,—at least in many instances which have come under our notice. The untidy appearance is sometimes objected to, especially when the garden adjoins the house. An inch of fine soil placed over the mulch makes everything tidy.

On deep, damp, rich soils, such trees generally grow very strongly, but do not fruit well. It is these trees which require the systematic root and top pruning to which we referred. Trees on the Paradise or Crab stock which produce a profusion of shoots a foot and a half or two feet long, and few flower-buds, which results in puny fruit, need root-pruning. While the trees are young this is an easy job; and on such soils as we have just named, the roots of the trees should be taken in hand and kept right from the first. The roots produced in rich soils are generally anything but fibry and near the surface, but by

lifting and root-pruning them they may be made so. When this is done (October is the best time for doing it), all fibry roots should be carefully saved, and in planting kept well up. Strong clean roots should be well shortened in. The result of this will be a moderate fruitful growth above and a mass of fibry roots below. When the trees begin to fruit, the calls made on their energies will do much to keep down the tendency to over-luxuriant growth. Below, however, the roots will be apt to grow strongly, and so produce unfruitful growth. When this is so, root-pruning must again be resorted to. When the trees attain some size, however, it may be wise to lift the roots of only one side of the tree one year, and the other the next. In the case of old, unfruitful, neglected trees, it is best to carefully find the strong roots, and, instead of cutting them back, lay them just under the surface. This operation is necessary to produce healthful trees, and to keep them healthy, on all thin soils with a bad subsoil. When the roots penetrate bad soil, diseased unhealthy trees are the result. Root-lifting is a sure cure—or rather a sure preventive.

A. H., H.

(*To be continued.*)



#### NOTES ON WINTER-FLOWERING PLANTS.

THE present month will be gladly welcomed by all who grow plants extensively for the production of flowers during winter, especially where house and pit room are somewhat limited. In northern districts a number of plants that will do out of doors during the summer months cannot be placed outside until all fear of frost is over, which in many seasons is not the case until June is well advanced. This, in the majority of cases, occasions fruit and plant houses to be overcrowded with plants during the spring months,—such, at least, is the case here at present. Rhododendrons of the early-flowering type will have completed their growth if gradually pushed forward after flowering. The batch of *R. præcox* that flowered first have already their buds a good size, and later batches are comparatively well advanced. These should be hardened off and plunged outside. This variety will bear a considerable amount of hard forcing in autumn; but its flowers sometimes open irregularly, and are colourless and soft, thus being rendered useless for cutting, as they quickly droop after being severed from the plant. No autumn forcing is needed when the growth of the latest batches is completed this month, as the flowers naturally unfold early in the season, and are of a fine colour and good substance, with very lasting properties when cut. This and other early kinds, such as *R. nobleanum*, do better in pots than when planted out after flowering. When kept in pots they annually set a good quantity of buds, and force both better and easier. This is not the only advantage,

as *R. præcox* and the Ghent Azaleas, especially the Mollis varieties, are liable, when their growth is completed early, to flower about the month of August if the season proves hot and dry. If planted out it is difficult to prevent this—that is, if the growth has been made indoors first; but when in pots they can be placed in a northern aspect if advancing too rapidly, and the risk of blooming prevented, besides giving them a more complete rest. Deutzias and Prunuses will scarcely be ready for turning out, as the wood will not yet be sufficiently matured. If in small pots and full of roots, liberal feeding should be resorted to. Some cultivators allow all the growths on Prunuses to remain that start away when cut back after flowering; but this is a mistake, as the second growths are not so strong. Disbudding is as essential with this plant as it is in the culture of the Peach; and if plants are crowded with shoots, it is not too late yet to thin them out, as they not only ripen better, but flower more profusely. A few well-flowered shoots are preferable to a host of weak badly-flowered ones. To have the shoots thin and thoroughly ripened is the secret of doing well either *P. sinensis flore-pleno* or *triloba*. The former strikes freely if the young shoots are taken off with a heel, and grows much stronger and better upon its own roots than when worked; with the latter I have found some difficulty in propagating from cuttings, and it appears to do better when worked.

The varieties of *Azalea indica* that have been making their growth under the shade of Vines and Peaches, should be moved to a lighter position for a time, until the flower-buds are well formed—afterwards gradually bringing them to cool treatment, and finally placing them outside. I am not much of an advocate for Azaleas being placed outside, and yet some little advantage is to be gained by subjecting the early batch to this treatment for a short time. A good position should be selected, and the plants placed upon a moist bottom, or better still if they can be plunged, to prevent the sun striking direct upon the pots. The system of placing them by the side of garden-walks, so frequently practised, proves anything but beneficial to them. The little advantage cultivators may think they gain by so doing will not compensate for the destruction of quantities of roots that are at the outside of the ball, which cannot fail to perish when subjected to this drying ordeal. Later batches, and those that have only just flowered, should be pushed forward to make their growth before autumn approaches, as they can afterwards be retarded for late flowering by being placed in a house with a northern aspect, and the frost only excluded.

Heaths and *Epacris* will be in frames and now growing vigorously, and should have all the light possible consistent with the wellbeing of these plants, to harden their growth, with abundance of air circulating amongst them day and night. Care must be taken that they never suffer for want of water, or they will soon present a sickly appearance, and the foliage turn yellow, and eventually fall off.

Hybrid Perpetual Roses that have flowered may now be plunged outside in a sunny position ; while Tea varieties for autumn flowering and early spring should still be encouraged to grow under glass, removing all flowers as they appear, especially from those required first. Zonal Pelargoniums, Solanums, Salvias, and many other such plants, can now be got out and placed in their summer quarters. The two latter are best planted out ; while the former should be placed upon beds of ashes, and will only require attention in watering, feeding, stopping, and removing the flowers and bad leaves as they appear. Any of the young stock that may yet be rather small should be encouraged indoors until of a suitable size, and then be placed out to harden and ripen the wood. Callas do best when planted out ; and what looks more beautiful during the dreary months of winter than a good plant with, say, twelve or more of its large spathes open at one time ? For room decoration, where groups or large plants are employed, none can surpass for lasting and beauty the Calla when in flower. When planted out, their culture is so simple that none need fail. A trench should be prepared as if for planting Celery, with plenty of manure at the bottom, and plenty at hand to work round the ball during the operation of planting. If the stock is to be increased, the plants can be divided and planted out at once, or they can be allowed to grow into larger specimens. When planted, a thorough soaking of water should be given, and liberally applied through the summer. They will, after planting, go naturally to rest, and about August commence throwing up immense shoots. Early in September they should be lifted and placed in pots suitable to the size of the plants. They are not injured in the least by reducing the ball considerably at lifting time, so as to place them in moderate-sized pots. After potting, a thorough watering should be given and the plants placed on the north side of a wall where the sun will not strike upon them until they have commenced again to root, and should be kept well syringed and moist at the root. The same applies to Solanums and Salvias when lifted ; and if treated as described for about a fortnight, they will not suffer when brought into a lighter position.

The earliest batches of Poinsettias, Euphorbias, Begonias, Plumbagos, and many other plants, will have been propagated ; but later batches should be put in at once, and again towards the end of the month. Capital plants of Poinsettias can be produced if rooted towards the end of July or early in August, if strong cuttings can be obtained. Poinsettias are liable to grow very tall when propagated early and kept in heat. They should, after this date, be gradually hardened, and brought on under cooler treatment, which will induce a short, jointed, sturdy growth, well furnished with leaves, and capable, if properly treated in autumn, of producing immense floral bracts. Not unfrequently in autumn they lose a good percentage of their leaves ;

and this is often due, when grown in cold frames during the summer, to a check sustained by being left too long when the nights have become cold. If starved at that season of the year the roots soon go, and then, when placed at once in heat, off goes the foliage—which cannot be prevented—and no future treatment will produce fine bracts.

Celosias are amongst the most useful of flowering plants for winter, but are too seldom grown for that purpose. Their easiness of culture, combined with the lasting properties of their flowers, both when cut and for decoration, make them well worth the time or trouble that may be devoted to them. They will stand in a conservatory, where the temperature ranges about  $45^{\circ}$  during winter, from the end of October until the end of January or beginning of the following month. Their beautiful plumes of gold and scarlet stand out well above other flowers, and in plant-houses have an imposing effect. The only drawback in the commencement of their cultivation is the spurious strain too frequently obtained from purchased seed. This difficulty in a season or two can soon be overcome by selection. If “anybody’s” fine strain is obtained and sown, every plant should be grown, and the bad ones as they show themselves thrown away, and the best only retained. It is questionable if more than one or two really fine plumes are produced in the lot that are worth retaining for seed: many may be good enough for decoration, until a really fine strain is selected. As a rule, fine strains of *Celosia* produce but little seed; the better the plume the less seed it appears to bear,—such, at least, is my experience. The seed should be sown at once in a pan and lightly covered with fine soil, placing the pan in heat in a shady position, and covering it with a sheet of glass until the seeds germinate. When the seedlings are large enough, they should be pricked off into other pans to prevent them being drawn up weakly. After they have become established in the pan, they should be grown close to the glass; and when sturdy little plants are produced, they should be placed into 3-inch pots, shading for a time until growth commences. They should then be gradually hardened and subjected to more air, taking care that they are not checked, or their progress will be considerably impeded. Good plants can be grown in 6 and 8 inch pots suitable for all decorative purposes. The soil should be light, consisting of fibry loam, rotten manure, and leaf-mould, with plenty of sand to keep the whole porous. While growing, a good supply of water should be given; and when the pots are full of roots, stimulants may be freely applied. Syringing should be attended to twice daily during hot weather, to keep the plants free of red-spider. In September they must be moved to a house where the temperature will not fall below  $50^{\circ}$  at night. I have invariably found the plumes to be much finer and brighter in colour when developed in heat during their latter stages, and then gradually hardened again for the conservatory.

WM. BARDNEY.



## NOTES.

ONE of the loveliest of all Orchids now in bloom is the deep rosy-flowered *Vanda teres*—a beautiful thing truly, but with a reputation of being shy in producing its flower-spikes. A Continental authority some time ago suggested slitting the leaf-sheath at the nodes in order to induce flowering. That may be one way, but not the best. Cutting a knot is all very well sometimes, but there are cases in which it is best to untie it. The case of this *Vanda* is that of the majority of Orchids; if it be well grown, and kept on the dry side of moistness at the root, I find it easy enough to flower. Don't try to make a short bushy plant of it. A good strong stem 7 feet high, trained up the roof of our Orchid-house, is now producing two spikes, one above and the other below last year's flowering node. Some Orchids seem to require length of stem ere they bloom well and regularly year after year. The *Renanthera* is a case in point; and *Vanda teres* would be found to bloom far more satisfactorily if length of stem was sought after instead of a bushy habit of growth.

One of the rarest of all wind-flowers, and one of the most beautiful also—viz., *Anemone sulphurea*—has just opened its flowers, and has been much admired. It has delicate sulphur-yellow flowers, and finely cut hairy leaves, and is one of the most distinct and striking of all the species. *A. fulgens* is a blazing beauty for a rather dry and sunny border—its gorgeous scarlet black-eyed flowers lighting up with glowing colour the whole place where it grows. Less conspicuous, but scarcely less beautiful, is the purple form of the last named, the buds of which are so rich as to seem lined with purple velvet: all these should be grown by all lovers of rare and lovely hardy flowers.

Of good hardy climbing shrubs for blooming in May, there are many more costly and far inferior to *Clematis montana*. Well planted at the foot of a dead tree of low bushy habit, and allowed to take possession of the branches, it with a little timely assistance will become a thing of beauty not readily surpassed. Its white flowers are produced in wreaths and festoons in the most lovely way. There is a more beautiful *Clematis* for May blooming, but it is not so easily obtained, or so easily satisfied with soil or climate, as *C. montana*,—I allude to *Clematis alpina* (*Atragene austriaca cærulea*), which is now (May 12) a mass of fresh green leafage, studded with hundreds of delicate lilac-blue, four-sepalled bells, each having a soft white boss of stamens in the centre, which lends a delicate charm to the whole flower.

Of all Primroses, the dainty, wee, purple-flowered Bird's-eye Primrose of the Orkney meadows, *P. scotica*, is to my mind just now most charming. It is easily raised from seeds sown as soon as ripe every summer,

and a full-sized specimen looks quite at home in a tiny thumb-pot, which should be plunged in sand or ashes to the rim, in order to prevent extremes of drought. Its broad leaves are farinose below, and barely an inch in length; the flower-scape rises 2 or 3 inches in height, each crowned by four or five purple flowers, with a conspicuous iris-like ring around the eye or tube,—hence the popular name of Bird's-eye Primrose.

Amongst our grandmothers' favourite garden-flowers, few are more distinct or beautiful than the Virginian Lungwort, just now bearing its nodding clusters of delicate sky-blue bells, in a shady corner of a moist peat-bed. In the open border its beauty fades rapidly and its roots soon decay; but in a suitable position like that above indicated, few plants give more satisfaction than *Pulmonaria* (*Mertensia*) *virginica*.

Anent that gorgeous scarlet Pau *Anemone fulgens*, I have just been lucky enough to meet with a gentleman who paid some olive-skinned peasants well to dig roots of it by the sackful from among the friable red earth of their vine-fields. Both parties to the bargain were delighted—the peasants with their silver coins, and my friend with his bags of dry withered-looking roots. It is curious that any kind of *Anemone* once introduced should become scarce in our gardens, since their roots are capable of growing after the most minute subdivision; and my friend tells me that although the hot southern sun does much by ripening the roots in summer and autumn, yet he believes that the cultivation they receive unwittingly from the peasants, when scratching amongst their vines, does much also, by breaking and so propagating and distributing them into fresh soils; hence those gorgeous sheets of colour which are the delight of all travellers in the sunny south early in the year.

Of all popular names given to plants popular or unpopular, I think one of the most ghastly is that of the "Bleeding Nun," as applied to the Canadian Blood-root (*Sanguinaria canadensis*). In its original French form it is a trifle less repulsive, but, any way, it is not pretty, or agreeably suggestive, as all good and right plant names should and must ever be.

Some of the old Daffodils—"one flower on a stalk," as Parkinson describes them—are beautiful enough, but we have now new races of seedling kinds which bear several flowers on a stalk,—so that we have now, in fact, "*Polyanthus* Daffodils," as we have long had *Polyanthus Narcissi*, and so much more variety is thereby added to our gardens. Some seedlings raised by De Graaff Brothers, of Leyden, from seeds of *N. bicolor*, are very fine and bold, bearing two flowers on a stalk, and having a very rich and agreeable perfume.

Of all the many points connected with the now important question of hardy flowers, the first and most urgent is their nomenclature. The more you know of hardy flowers, the more inextricably confusing do their names become. Old Parkinson, when writing of *Narcissus* 250 years ago, lamented this question of incorrect names. "There hath" (said he) "been great confusion among many of our modern writers of plantes in not distinguishing the manifold varieties, . . . for every one almost, without consideration of kinde or forme, or other speciall note, giveth names to diversify one from another, that if one shall receive from severall places the catalogues of their names (as I have many) as they set them down, and compare the one catalogue with the other, he shall scarce have three names in a dozen to agree together,—one calling that by one name which another calleth by another, that very few can tell what they meane."

As John Parkinson was two centuries and a half ago, so are all growers of hardy flowers to-day: one can never be sure of what is intended by the names in most catalogues, and the result is dire confusion, loss of money, labour, energy, and sometimes temper also. The way out of the difficulty is not short, nor easy, nor inexpensive. We must look to the more intelligent cultivators, and induce them to work out reliable monographs of their special favourites, just as Mr Elwes did the Lilies, and as Mr Maw of Brosely is now doing the *Crocus*. Here is honourable labour awaiting those cultivators who have leisure and means.

These same hardy flowers have had an exceptionally bad winter and spring to contend with this season. Drought and frost and east winds ruined the spring blossoms in all exposed places. Of all the sufferers through climate, however, the mortality is greatest among half-hardy shrubs, which are pretty generally cut down to the ground-level, and not seldom killed outright. If we are to have winters of like severity, Briar stocks for Roses are doomed to a certainty, and own-root Roses will be in great demand.

*Cattleya citrina* is not a showy Orchid, but a great favourite with ladies on account of its delicious fruity, citron-like odour. It is like *Lilium auratum*, in having been imported by the thousand—and like it, also, in blooming well for a year or two, and then dying out altogether. A gentleman wrote the other day to ask me how he should grow it in order to keep it permanently, and that is a question many Orchid-growers would like to have thoroughly answered. Its period of growth is during our winter months, and I find that it grows quite freely in a temperature only a few degrees above freezing-point. A plant grown in a house from which frost was barely excluded last winter, made growths twice the size of those made in a *Cattleya*-house (never below

50°) the year before, and is now producing two flowers to a growth. Of course it must be suspended head downwards, or it does not thrive satisfactorily, and it enjoys all the light and sun our cold clime affords during winter. Just when the flower-buds are half grown, it should have a higher temperature until they expand, when it may again be returned to a cool house. A very little peat, surfaced with sphagnum moss, on a teak-wood raft, is the best compost.

One of the sweetest and best of white flowers for cutting during the latter end of May or beginning of June, is undoubtedly the double-flowered form of the poet's Narcissus. Once well established in good deep soil, its flowers never fail. By many they are liked even better than Gardenia flowers, to which they bear some resemblance, and they endure for many days in water after being cut.

One of the most lovely of thoroughly hardy spring flowers is *Anemone apennina*, which, during April, is most floriferous in all soils and situations. Under trees, or on grassy banks, it is equally at home. If you take a spade and think you have dug up every bit of it, up it comes next year in a bigger patch than ever. It rivals Couch-grass in its capacity for increase under spade cultivation. If it once gets loose in a rich wood, it runs about like a child at play. It is by some called the "Blue Marguerite," a somewhat pretty name for it. Years ago it grew splendidly in a verger's garden, under the shadow of Peterborough Cathedral, seemingly as much at home there as if on its native Apennines.

F. W. B.



### THE FLOWER-GARDEN.

OLD-FASHIONED flower-gardens will again be either filled, or all but filled, with their summer or autumn occupants. Plants such as Geraniums, Lobelias, Ageratums, make the most satisfactory progress here when planted about the beginning of June, therefore we do not hurry to get our "bedding-out" over. Much of the lateness in getting beds filled with flowering-plants lies at the door of putting these out too early. In many situations it is not until the "turn of the day," at the end of June, that real fine continuous growing weather can be looked for. May is commonly a cold month, so far as nights are concerned; and with the exception of hardy plants, or those nearly so, we get as near to the fine weather as possible before we plant. During the past month much work that used to be overtaken in March and April has had to be done. We used to get all hardy plants into their places in these months, but had to wait till May this year, through pressure of other work. Planting up bare places amongst shrubs cut down, or damaged by frost, has entailed a good deal of labour, but we hope to be amply repaid for it all. Laurustinus, Sweet-Bay, and Arbutus

bushes have been mostly all cut down, besides many other shrubs more or less damaged. The spaces these have left bare have been thickly planted up with free-flowering and showy herbaceous plants and hardy florist-flowers. One large group of shrubs has had the ground entirely dotted over with Phloxes; another has Sweet-Williams, dotted with Foxgloves. One large space is planted thickly with double Pyrethrums, dotted with *Verbascum nigrum*. The double red *Campion* is dotted with the same plant; *London Pride* with *Canterbury Bells*; *Doronicums* with *Aconitums*, and other groups in the same style. We have left room for *Dahlias*, *Sun-flowers*, and other things to be planted this month. In the case of bulbs to flower on grass, we have tried a plan which is hoped will be successful with these. Dotted plants singly, or in groups of five or six, has always been a failure here. This year we have lifted the turf over as much space as wanted to make a group of *Hyacinths*, *Tulips*, or *Narcissus*, then dug and prepared the ground, planted out the occupants of the several groups, and then relaid the turf amongst them. There is nothing to compare with spring flowers on grass for simple quiet beauty—some plants lending themselves to it without any trouble, though others are more difficult to get to flower yearly, and to thrive. Whilst writing this, there is a “garden on the grass” close by, of some 15 to 20 acres in extent, the greater portion of which is covered with *Primroses* in every possible shade of colour, from white to maroon. They are absolutely countless in number. When they first were planted no one seems to know; but the first few flowers have multiplied by seedlings to an enormous extent, and at the present day the result is one which only nature could give. I have been induced to note these matters whilst fresh in my mind, as many others may have it in their power to do a little to beautify odd corners at this season; but as a first step to make a successful end, I would strongly advise the lifting of turf, and cultivating the ground underneath before planting either bulbs or other hardy spring-flowering plants which are herbaceous in their habit of growth.

This is the month when herbaceous borders are at their best, and when work multiplies rapidly in keeping them tidy and attractive. Plants requiring stakes must have them without delay, as a thunder-storm may, without warning, do damage impossible to repair, where strong growing plants are unsecured. I think I have before pointed out how many plants may be efficiently supported without employing stakes the entire height of the various plants; but one important point in this plan is to have the plants staked before they have become “straggly.” Lines of *Gladioli* or *Asters* are quite securely supported by placing a stout stake two feet out of the ground about every third yard, to which a strong string is attached; the spikes or flower-stems are tied by a single tie each to the string. I do not think as much is made out of *Dahlias* as might be, as they will now

be ready for planting. Let me say that the difference a little rich compost makes to them, even when the ground has not been particularly well prepared, is simply wonderful. The way to do is to mix an extra rich compost, and place a spadeful and a half of this where each plant is to be put ; this is mixed with the natural soil before planting.

R. P. B.



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

### NO. VI.

IN many well-managed gardens, where there is a great demand for forced flowers especially, the wall-borders are made to play an important part in the preparation of the plants for that purpose. Very much depends upon this preparation. Not only will they be much improved by being planted, or, in some cases, merely plunged, and the roots encouraged to ramble through the pots ; but much labour, in the shape of innumerable waterings, will be saved. In some gardens a good piece of ground may often be seen either unoccupied after the first crop, or else cropped with some kind of vegetable that might with advantage be grown elsewhere ; while, at the same time, in frame ground, numbers of Callas, Deutzias, Solanums, Capsicums, Eupatoriums, and other serviceable kinds of flowers, may be seen in a semi-starved state in pots. Those who are in the habit of thus treating their plants, I advise to try the effects of a more liberal treatment, which I will endeavour to briefly detail, commencing with

*Hoteia japonica*.—A more generally useful and more easily grown flower cannot well be mentioned. At one time it was the fashion to purchase imported clumps ; now, however, they are being pretty generally home-grown, and with better results. Supposing, at the present time, we had only a dozen strong plants that had been recently flowered in pots, we should at once prepare part of either a south or west border for them. Should the soil be light and poor, it would be freely manured and deeply dug ; if heavy and strong, a quantity of leaf or other light soil would be worked in, or otherwise the plants will not so readily establish. The same remarks apply to the preparation of the ground for other plants. The Hoteias would be turned out of their pots, split in halves with a plunging fork, the halves rounded off, saving the corners, and the whole planted ; the large round patches growing in rows about 2 feet apart and 1 foot asunder in the rows, and the smaller pieces somewhat closer. They require to be planted firmly, and should the soil be at all dry, be watered in, and receive occasional waterings till established. The whole of the strong clumps, however little fresh top-growth they may have made, may be forced the next season ; but if allowed to remain till the second season, will give much better results. In this case they will require to be potted

into 10-inch pots, the smaller clumps by that time being suitable for 6-inch pots. There is no necessity to lift the whole in the autumn, but batches may be taken up at any time, provided the ground is not frozen, which, of course, can be prevented with the help of litter. The clumps when lifted may be freely disrooted, and when potted may be forced at once.

*Lily of the Valley.* — Of these, again, I much prefer home-grown clumps or single crown to those imported, and, where possible, shall grow my own accordingly. The east border, well manured, is the most favourable site, but I have seen good crowns taken from a north border. The time for dividing the clumps is past; this being best done before growth commences. If, during the winter, I had an old bed to break up, the crowns would be separated, the plumpest that gave promise of flowering being either potted or packed closely in shallow boxes, forcing them as required. The remainder would either be planted rather thinly and irregularly in beds 4 or 5 feet wide, with 1-foot paths between to admit of hand-weeding, or, as many prefer, especially if the preference is given to single crowns, in lines 9 inches apart and 1 inch asunder in the rows. Many of these would flower the next season, but it is advisable to simply mulch with rotten manure, and allow them to remain for another year. These Lilies are surface-rooting, and should therefore be planted shallowly and be hand-weeded. Whenever a breadth is lifted, another should be planted with the small crowns separated from the flowering ones. For the earliest supply of bloom, both in the case of Lily of the Valley and Hoteia, it is a good practice to retain a few in pots of the strongest and least forced, watering these frequently with liquid manure, plunging them in a warm border, and encouraging to root through. These will mature early, and be most suitable for early forcing.

*Callas* (*Richardia æthiopica*). — Although I am no great lover of these, they will still be largely grown here, both for conservatory decoration and also for cutting purposes. Few plants give better returns for liberal treatment, seeing that strong specimens in gentle heat continue to produce their flower-spathes from January to May. Early in June the whole of the stock will be planted on a west border — first, however, dividing those requiring it — single growths being preferable. Being a moisture-loving plant, the border selected is deeply dug and freely manured, which, under these conditions, is made somewhat retentive. The strongest pieces are disposed 18 inches apart, in rows 24 inches asunder, and the smaller ones closer in proportion. They will be watered during the prevalence of dry weather, and be lifted with good balls of earth attached in September, and kept rather close and shaded till established. Where fruit-bushes on sheltered borders are not crowded, *Callas* are sometimes planted among them with good results.

*Flowering Shrubs.*—In the southern counties, many such kinds as Double Deutzias, Spiræas, Dwarf Lilacs, Veronicas, Prunuses, Abutilons, &c., are frequently hardened off, cut back, and when breaking afresh are planted on a well-prepared, sheltered border, having first had their balls of soil considerably reduced and the roots trimmed. In this manner the majority of the plants recruit their strength sufficiently to admit of being forced the following season. Many err in not hard-pruning these forced shrubs, forgetting that the weakly growth that has resulted in many instances will not flower. Cut back hard, and if the locality be warm, plant out, or if the reverse is the case, shake out the roots, trim them, and repot into good rich soil. When well established, plunge in the open borders, and encourage to root through into the soil. When plunged in pots, they will of course require to be watered occasionally.

*Berry-bearing Plants.*—Although somewhat uncertain to which of the foregoing methods to give the preference, I have no doubt as to which is most suitable for *Solanum capsicastrum*, and *Capsicums* of sorts. The former, especially, are frequently planted out and lifted again in the autumn, by these means securing a good set of berries; but I much prefer to shake out and repot when breaking afresh after being pruned, and when well established, hardening off and plunging at the base of a warm wall. This plan checks luxuriant growth, and at the same time, by encouraging the roots to work out into the soil, they are sufficiently vigorous to perfect a good crop of fruit, without the risk of injury by lifting. In warm localities, *Capsicums* will ripen well under a south wall, but if required more for ornament than use, they are best plunged in pots. *Capsicum Princess of Wales* is particularly ornamental during the early winter months, and may be grown as above advised. This variety, or, indeed, any of the *Capsicums*, should not be pinched back at any time, and a few strong branches on the *Solanums* are generally more effectively fruited than a greater number of weaker ones.

*Violets.*—I am referring to these only to condemn the practice of planting them near the roots of any valuable fruit-trees, as I know of no more “hungry-rooted” plant. The roots spread rapidly, and frequently to a very great depth, and quickly absorb all the fertilising properties of the soil, to the obvious detriment of the only legitimate occupants. By all means grow as many *Violets* as possible, especially if there be ladies to please; but, if possible, keep them clear of valuable fruit-trees. After all, a large frame full of *Marie Louise* will yield as many large beautifully-scented double flowers as will be required.

Although I have by no means exhausted the list of plants that may be grown on south borders, what I have already written will occupy as much space as our editor will feel justified in allowing.

W. IGGULDEN.



## HINTS FOR AMATEURS.

## HARDY FRUITS.

It will now be generally known what the crops of fruits are to be. Except in the case of those which are not right at their roots, and liable to throw off the greater portion of what have set, one may fairly judge of the amount of thinning which will be required. This operation should not be left in the hands of a novice, who might remove the most promising of the crop. The finest and best-placed fruit now, are generally the best in the end; but better to go over the trees several times with the view of doing the safe thing. These remarks apply more to Peaches, Pears, Plums, and Apricots on walls, than to standards; but with them it is better in every way when they are not overcrowded. The distance between fruits on walls is a subject which cultivators are undecided on. Peaches, to average all over, about a foot apart is a safe distance; and if such can be had year after year, we would consider it successful growing, and wish that we could always be content to act on this principle; but circumstances often compel one to crop too heavily all kinds of fruits. Nectarines may average 8 or 9 inches apart; but the strength and health of the trees are a guide to practice, and when the roots are a mass of fibre, quantities of manure-water can be given with great advantage. The thinning of the shoots is a matter of much importance. When a tree is so well under command that all the wood can be removed except that which is to bear next season, the work is made very simple. The new shoot starting from the base of the predecessor, and one leader left to each shoot with fruit on it, may meet all wants, except when trees have to be extended or vacant spaces filled up. Whatever form the tree is in, the same rule applies as to absence of crowding. With amateurs, smaller sizes of trees are preferred—many have cordons for sake of variety; but on the whole we prefer moderate-sized trees—and one objection to large ones is, when accidents occur a large space is denuded, and the loss is greater than when trees of moderate size are grown. The form of training is more a matter of taste than any advantage to fruiting or to quality. We find our few horizontally trained trees more easily and quickly managed than other forms. Pears are as common in this form as any other; Plums, Peaches, Apricots, and Cherries are not so common. One thing we would consider of much more importance is to be able to save the trees from the mischief caused by late frosts. We have often alluded to the destruction, more or less every year; and although every precaution is used as a preventive, in no case is there absolute success. Protecting material is too often useless. For example, during the last week in April, when we had a splendid set of Apricots and Peaches about casting their flowers, frost from 8° to 10° continued the most of the week. The Apricots are severely handled, and Peaches are shrivelled up in great numbers—probably

enough left, but such thinning we would like to dispense with. A friend called on us lately from Inverness-shire, and he describes his Peaches and Nectarines as most promising, his Apricot-trees in perfect health, and fruit in clusters all over. This, from former information, we were prepared to hear. What can experienced men in the south do to help us to similar results? Former directions as to watering young trees, and old ones too if they want it. In training the newly planted trees, cover as much of the wall near the base of them as possible—a few extra shoots will do no harm where there is space to place them; stop any shoots which are robbing their fellows; get all growth even. Let trees which are spurred, such as Plums, Pears, and Cherries (not Morellos), have the thumb and finger applied in due time; but not so close as to cause the buds at base to start. Examine grafts and remove clay from them if they are advanced enough. War against insects and grubs,—Gishurst's Compound, 2 oz. to the gallon, is a remedy now much used—also fir-tree oil. Net Cherries, &c., from birds. Place litter between Strawberries to keep the fruit clean. Figs may be stopped at fourth or fifth leaf; these are too often crowded: mulching may be used with much advantage to roots.

#### ORCHARD-HOUSE.

In this structure the success or non-success of the season may depend on one item of management—viz., watering,—that is, if the trees are restricted at the roots by pots or otherwise. Where there is a mass of fibre with plenty of drainage, it is difficult to over-water; but not only the pots or the immediate locality of the roots should be watered, but the whole mass of soil should be soaked, and a colouring of manure-water at each watering to the roots is better for the trees and fruit than stronger doses at longer intervals. The usual stopping and thinning of shoots will be necessary; syringing to keep off insects, and at no time should the trees be allowed to suffer a check of any kind. Shutting a house close at night, then throwing the whole wide open at once of a morning, is a mischievous practice: a little air should be on at night, and as the season becomes mild the whole air may be left on. Clean open surfaces, neatly mulched, is very desirable. Dustings of soot through the house are helpful to the foliage.

#### FLOWER-GARDEN.

Newly planted beds may require a good soaking of water, and the hoe nicely used afterwards when dry enough to form a loose surface: very little water may be wanted for some time to come. Proceed with tender kinds as soon as they are ready. Alternantheras, Coleus, and others of this class, may be planted into their various forms forthwith: thorough keeping will do the rest. Box-edgings well trimmed; grass close and velvety, free from weeds;

clean weedless walks,—are some of the items which go far to make a garden enjoyable ; but reverse this, and gardening loses its best charms. We would therefore urge amateurs and others to be contented with small space well done, than larger breadths in shabby condition. In gardens of a larger class disorder is too common, and those to blame in most cases are the proprietors themselves. Annuals for late bloom may now be sown, and all plants of a hardy character prepared for autumn flowering should now be out and growing. This applies to Stocks, Asters, Marigolds, Dahlias, &c. Stake the latter early and securely, also Hollyhocks and other tall plants. Herbaceous plants may require much labour in the way of staking, trimming off dead or dying flowers, hoeing and breaking the surface. Those newly planted may require water, and give it liberally when it is done. Gladiolus forwarded in pots may now be planted. All should have the appearance of finish in the various beds and borders—whether they be shrubs, Roses, or bedding plants. Cut out all dead branches from shrubs which have remained after the winter's frost : give a soaking of water to those newly planted. Mulching may be of much service to such,—also to Roses ; they should have a good soaking of manure-water as they come into flower. Take off suckers ; look out for grubs curled in the leaf, which eat the flowers. Sow Mignonette in patches where Roses may have died off, and plants are not at hand to fill the space. Place all shade-loving plants behind hedges, walls, or fences : place the pots on ashes. This applies to such as Polyanthus, Carnations, and Auriculas.

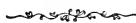
#### PLANT-STRUCTURES.

As plants come into bloom outside, and gardens become gay, all plants inside should be of a showy or interesting character, not merely for a glare of flowers, but handsome and graceful in form, striking foliage, and well grown in every respect. Crowding is very objectionable. Ferns of sorts, Palms hardy enough for greenhouse, *Ficus elastica*, *Cordylines*, *Dracænas*, variegated *Yuccas*, &c., mixed with *Coleus*, *Fuchsias*, *Abutilons*, *Aralias*, Oranges in fruit, and suchlike ; then to enliven the whole, a few well-grown *Azaleas* (some flower as late as July), *Acacias*, *Summer Heaths*, *Liliums*, *Pelargoniums*, *Tropæolums*, *Pimeleas*, *Lapagerias*, *Genetyllis*, *Fuchsias*, *Begonias*, *Kalosanthes*, *Hydrangeas*, and others. But to fill the space and make a “blaze,” one may cheaply pot on the choicest and most suitable plants left from the bedding stock. There is no difficulty in filling a structure, especially what amateurs generally can command. *Balsams*, *Cockscombs*, *Globe Amaranthus*, coming forward for flowering, should have plenty of room, light, and air : prepare them by air and light before they are moved to windows, vestibules, &c. Insects must be fought against at all points. *Quassia-water* syringed over plants once or twice weekly as a preventive, may keep the enemies off. As plants get past bloom

ing, let them be potted either into same size, first reducing the balls, or into larger if they require such. All New Holland plants require to be secured from strong sun. The pots placed on slates, and ashes laid round them, will help to save much watering, and be much better for the roots. Pot on all plants for autumn flowers—Chrysanthemums, Eupatoriums, and others. Get a good stock of Cinerarias, Calceolarias, Primulas, Salvias, Cyclamens, and Harrison's Musk on the way. Take Camellias and other plants from shade or heat, gradually and carefully, to stand outside.

#### STOVES.

The plants in this structure should now be in vigorous growth ; and proper attention to watering, free drainage to the pots or beds where plants are turned out naturally, cleanliness from insects or dirt, careful ventilation (preventing cold drying winds from passing through the house), judicious shading or potting on the plants as they require it, are the chief wants of stove-plants between May and September. Get collections in batches (in pits or other positions) to grow on for winter decoration. Now is the time to get a stock in order. Among the most useful are Poinsettias, Bouvardias, Eucharis, Epiphyllums, Gardenias, Plumbago rosea, Calanthes, Libonias, Thysacanthus, Scutellararias, Euphorbias, and Begonias. They should have good wholesome soil. Peat, charcoal, turfy loam, and sand, well chopped to pieces and mixed, suit most of them ; but one can ascertain the kind of soil wanted by examining that in which the plants are growing. If they are doing well in such soil, the same kind may be used again fresh and sweet. Gloxinias, Achimenes, Gesnerias, Allamandas, Anthuriums, Rondeletias, Stephanotis, Clerodendrons, Bougainvilleas, Begonias, Jasminum, Sambac (a continuous-flowering white gem), are among the free-flowering stove-plants at present. Temperature may range from 65° to 70° with fire-heat, but it is hoped not much of this may now be wanted. Shut up, after syringing, with a good sun-heat 80° to 85° or so. A breath of air put on at top of structure at night is a natural strengthening agent to the plants. Shade from sun ; but when there is no bright weather, the plants are better without shade. M. T.



#### AURICULAS.

THE flowering season of Auriculas is again past, and before it passes out of mind, I would like to recommend the self section of Stage Auriculas to gardeners as decorative flowering plants of some value, both as grown and staged in pots, and when used as cut-flowers. Any gardener with a stock of fifty flowering plants of Lord Lorne or C. J. Perry, would have a display which would cause a sensation in most gardens. Both kinds, and many others, are quite easy to grow—strong off-sets

giving good trusses of bloom the first year. One of the best of the Midland growers, grows and flowers numbers in boxes; and I have no doubt that they would do perfectly well planted out under proper conditions, lifting the plants, and potting in autumn if wanted for flowering in pots. It is always to be remembered that Auriculas are quite hardy—winters like those we have experienced of late years having no effect on them whatever; that they require water just like other flowers; and that small pots give better results than those of a larger size. They make fresh roots every year; and as the plants cannot be said ever to make much top-growth, it will be apparent that pots above 4 or 5 inches in diameter will be too large. A correspondent writes that a collection of Auriculas entails a greater amount of work than does one of Orchids. That depends. Orchids can be successfully grown with as little labour as most plants, and so can Auriculas. But people who have time can expend a vast amount of labour on either or both.

R. P. B.



#### NOTES FROM THE PAPERS.

WE have been lately reading a new work on Horticultural Buildings by F. A. Fawkes, of the firm of Dennis & Co., Horticultural Engineers, &c., and published at the 'Journal of Horticulture' office. It is a good book, containing much particular information concerning the planning and construction of garden buildings of all descriptions, besides much other information on subjects connected with gardening, which it is exceedingly desirable gardeners should learn; and we can recommend the book to learners as the best, if not the only one of the kind yet published. The worst fault of the book is that there is too much of the "shop" about it. It is well got up—pretentious, indeed; but the numerous references to "the firm" is certainly a blemish, because, whatever may be the excellence of any vendor's goods, one is usually disposed to discount his own account of the same to some extent. Mr Fawkes, too, has ideas—probably born of his connection with the firm—that gardeners will not coincide with. There is a suspicion, indeed, that on the subject of "art" connected with horticultural erections he is just a trifle tainted with the "Postlethwaite" school, so much and so often satirised by 'Punch' of late. We should say Mr Fawkes was, if anything, a "blue teapot" man. He is too practical to be quite content, like "Postlethwaite," to breathe out an ecstatic existence while being permitted to embrace a "blue teapot;" but some of his "artistic" garden structures are tainted by the "quite too—too"—overpowering—high art school. One of Mr Fawkes's productions is an "improved summer-house" of an emasculated type, which irresistibly reminds one of the man who fell among savages and was robbed of his clothes, and described his

costume as consisting of "a waistcoat, a hat, and a pair of boots." The base of this summer-house is of stained red deal, the sides of glass, and "*the roof is of red tiles.*" This garden horror is used by the author himself, he tells us. Apart from their ugliness, such glazed structures are simply stew-pots in summer; and after sitting in one it would be almost a luxury to crawl under an inverted sugar-cask with a hole in the top. The "usual rustic thatched summer-house" Mr Fawkes, like all professed makers of summer-houses, condemns. Those who have used such will, we are told, "be fully alive to its disadvantages." We have not heard that any discovery of this kind has been made yet. There are a number of summer-houses, of the rustic kind, scattered over the gardens and estate of the Duke of Buccleuch at Drumlanrig Castle, and at other places, that it would do some horticultural architects good to see. They are clean, cool, comfortable, pretty, and attractive retreats, and perfectly in keeping with their surroundings. It would be an outrage on good taste to put a skeleton glass house with a red tile roof in such situations. An "exterior view of a conservatory," and a "panel of lead glazing," show more of Mr Fawkes's taste as a horticultural architect, and are suggestive, in conservatory culture, of unclean corners, dead wasps, and flies, and of spider-webs—things which usually congregate in corners created by the kind of glazing and decorative style there indicated. As in conservatories of the older type, Mr Fawkes neglects (and, we think, misunderstands) the wants and needs of the inmates of a conservatory, compared to which the construction is an entirely subordinate affair.

The author also condemns the system of glazing in which the putty is only used for bedding the glass, and considers it "by no means sightly." We never knew before that top putty was an ornament, and the rabbet, when top putty is dispensed with, does not need to be so deep and conspicuous. The opinions of those who have tried the plan are that it has the advantage in appearance: in other respects it is every way the best. If Mr Fawkes had seen large houses glazed in this way, such as some of the vineries at Clovenfords and elsewhere, he would not have stated that it was a system only fit for Cucumber-frames and suchlike.

There are a good many other points upon which gardeners will disagree with Mr Fawkes. They would want to know, for example, how he proposes to water a Vine-border, like figure 90, page 156, and which is something like a lump on a camel's back. His lean-to vineries, too, with fronts 5 feet high, including  $2\frac{1}{2}$  feet of brick-work, are an entire nuisance, as every gardener knows. The brick frontage is a wholly useless part, and only adds to the cost of erection and the trouble of raising the Vines, that is all. With the exceptions here stated, however, the book is a good and useful one.

One of the prettiest floral sights we have seen this spring was a

collection of Primroses of numerous shades of colour—all of the common Primrose type. Some of the name kinds are very distinct and showy, but it is probably to the seedlings raised from these that we must look for a cheap and ready supply of these attractive spring-flowers. The various shades of colour comprise pink, rose, maroon, crimson, lilac, purple, violet, &c., with numerous intermediate shades. For planting along with the common wild variety on the grass, to succeed Snowdrops, Crocus, and other early spring flowers, these Primroses are invaluable, and they thrive in any situation. A gentleman who cultivates them extensively, says, the single varieties are far superior to the double ones, being, as a rule, more vigorous, as well as of a freer-flowering habit. About the end of April, on the margin of a broad lawn in a large garden, we saw a number of the coloured Primroses growing in a semi-wild state, just at the skirts of the trees, and a more attractive sight it would be hard to imagine. The only fault was, they were not in sufficient quantity. The plants, in order to be effective, want to be scattered broadcast. Seedlings raised during the summer will flower next year. Many of the Polyanthus are also suitable for the same style of garden decoration, and present many shades of colour; and, if anything, they stand up out of the grass better than the Primroses. As spring bedders, of course the Primrose excels. One of the most striking and effective beds we have ever seen was an oblong bed filled wholly with Primroses of various hues—not an inch of ground being visible, and the whole a sheet of flowers. It was bordered with Box and a gravel walk, which did not add to the effect; but the same nestling in a grassy corner of the lawn would have been attractive and natural-looking.

A correspondent writes to us saying, “The exigencies of space and labour compel me occasionally to do things in the cheapest and easiest way; and as we require to grow many Carnations and Picotees, I have begun to dispense with frames and pots for their protection in winter—the common practice—and instead, to plant them out as soon as they are established in autumn, when they are to flower. I have had many out in this way all the past winter, which has been severe enough in all conscience, and have not lost one. They are now growing very nicely, and look well.” Of course the Carnation is one of the hardiest of hardy plants, and in some old-fashioned gardens it is quite a common thing to see old plants of the popular red and scarlet cloves that have survived on the same spot for years.

[We propagate thousands of Carnations every year, and have found that in our very unfavourable climate, they stand such winters as the three last ones best when left in the beds untouched till spring. It often occurs that one or two beds are left to bloom without transplanting the young plants, and the result is such a crop of bloom for denseness as cannot be had any other way.—ED.]

Dr Lindley expressed the opinion that if the physiological principles on which the operations of horticulture depended were correctly appreciated, the grounds of our practice would be settled upon a more satisfactory foundation than at present can be said to exist. This is no doubt true; but things are just now pretty much where the doctor left them. It might be pertinently asked, "Who are the physiologists" who teach correct "principles"? Are they those who merely chronicle the changes of opinion and practice that continually occur? or are they those who make the said changes and prove their utility? If our professed physiologists, who deliver oracular discourses before scientific committees and the like, understood their work, such matters as planting, pruning, training, and potting, &c., should have been settled long ago upon sure foundations; but every cultivator is left to do whatever seems right in his own eyes, and the physiologist is always ready to adapt his views to the necessities of the hour; and the general and somewhat vague and varied practices of the practical horticulturalist form the basis of all his theories and deliberations. The vegetable physiologist has, and always had, far more abundant and more accommodating materials to work upon than the physician, but he has not made the same use of them, and is inconveniently far behind the latter in his profession. The doctor does know when and where to amputate a limb, and has ascertained, with some degree of accuracy, how his patients, under certain conditions of health and circumstances, should be treated; but the vegetable physiologist has to wait and learn, and is in a gulf of doubt and uncertainty on every occasion that anything new in practice is announced.

Mr Shirley Hibberd appears to have retreated from the field of fruit-culture, and joined himself to the "Florists." The florists, whatever crotchets they may entertain, are a body of gentlemen, and will no doubt appreciate their latest recruit as highly as he deserves. Mr Shirley Hibberd has lately read a paper on the Tulip, giving us details from the older catalogues, and no doubt considers he has obtained his degree, and hence the characteristic manifesto which appeared in the 'Gardeners' Magazine' lately, on the subjects of florists and their favourites. There are a great number of worthy people who do not believe in the creed of the florist in its entirety; and Mr Hibberd, who has always been great in the "parts of speech," in his new-born enthusiasm applies to those people who think differently from him on the subject, the following euphonious terms in about the space of a column or so: superficial, shallow, flippant, low-bred, ignorant, floss-brained, sour, nasty, and mean. If this does not crush "those who write" against the florists' ideas, they must be credited with belonging to the pachydermatous order of writers, and invulnerable. But we are curious to know what the florists themselves think of their champion.

It is but a short while since that a lecture was delivered on pruning



and training fruit-trees, in which the lecturer, adopting the suggestions of previous writers and practitioners, advocated what is now called the extension system in its most extreme form. At that time, the 'Gardeners' Chronicle' took up the subject in one of its leading articles. It lamented that the lecturer had not deemed the Royal Horticultural Society "a fitting place for such a disputation." It wanted, it said, "a professor of the art of pruning" there, who was glib of speech and dexterous with the knife, "to show how it was done." Your contemporary adopted the lecturer's views then, and declared that "*it required no great amount of perspicacity to see*" that the advocate of no pruning was "*perfectly right, however much his assertions might go against the grain of some folks;*" and it demanded to know "how we should prune, or rather if we should prune at all." Answering this question itself, it asserted that "under a healthy state of things we ought never to prune at all, *whether for timber or for fruit;*" and it cautioned gardeners to follow the example of the surgeon, and "avoid the use of the knife"—to learn to look "with reverence on the tissues they could destroy, but not replace;" and upon the whole, to regard pruning in general as a very bad thing. It deprecated "ignorant clamour," and ended by "laying it down as a principle, and having reference solely to the life and vigour of the plant, that *all pruning was mischievous.*"

The article in the 'Chronicle' containing these statements will be fresh in the minds of readers; for it is but yesterday, one might say, that they were written, and nothing has happened in the interval to change its opinions on the subject, but rather the reverse.

But turn we now to a leading article of the same type, in the same paper, and on the same subject, in its issue of May 7th:—

"Every one admits that pruning is more or less an unnatural process, though it is by no means wholly so, *for Nature does a good deal in that way herself.* Every one admits that a great deal of unintelligent, unnecessary, and, worse still, mischievous pruning is done. But because this is so, it by no means follows that all pruning is bad. . . . In most cases, and especially in small private gardens, we want the tree to conform to our requirements and the exigencies of time and space. *We secure this, amongst other things, by judicious pruning. It may well be that in the long-run the trees suffer in some way by this mutilation—but if it be so, it has to be proven, and in any case this can be provided against; there are more behind, and, under the circumstances, the advantages more than compensate for the disadvantages.*" (The italics are ours.)

What is any one to think who began by following the advice given in the first article when he reads the last? If your contemporary forgets what it says and does, its readers have better memories. In its former article, it declared that it was "clear from the teachings of science that the practical rule to be laid down in *all cases* is not to prune more than is strictly necessary;" and how much it considered "necessary," may be gathered from its other admissions recorded above.

READER.

## NOTES ON DECORATIVE GREENHOUSE PLANTS.

## LAPAGERIA ROSEA AND L. ALBA.

THE above are two of the most beautiful and striking flowering greenhouse climbers in cultivation. The sprays of flowers are lovely objects for hanging over the edges of vases filled with cut-flowers; and both of them, if trained on balloons and well flowered, are two of the very choicest of exhibition plants: indeed it would be difficult to conceive of a more beautiful and telling plant for this purpose than the white variety. They are both natives of Chili, and thrive well in an ordinary greenhouse after they are fairly established; but until then they are all the better of being kept rather close, and in a temperature that does not fall below  $50^{\circ}$  at night during winter. After they are well established, they will stand it a little lower without suffering any damage. They are grand plants for training up rafters; and in this position, where they are always exposed to the full light, it will be found that they flower much more freely.

The *Lapageria* is propagated by seed and layering the shoots, and sometimes by cuttings. The wood, however, is so hard and wiry that they do not root very readily as cuttings, so that this method of propagation is not often resorted to. The soil which suits them best is turfy loam and fibry peat in equal proportions, with plenty of sharp sand, and some lumps of sandstone or charcoal incorporated with it. The soil should be used in a roughish condition, according to the size of pot, and the drainage should be perfect, as they are strong feeders, and in the height of their growing season delight in abundance of water, which should have a free exit, else the soil will become soured, and in consequence the plants will fall into weak health. An occasional watering with liquid manure may be given when they are in vigorous growth, and the syringe may be applied at times, so as to keep the foliage clean and healthy. They keep blooming continuously for a long time, and no collection of plants, however select, should be without one or both of them. The price at which the white variety has hitherto been sold has prevented it from having been introduced into many places where it doubtless would have been, so that it has only been some of the more enthusiastic lovers of plants who have ventured to become the purchasers of it. It is now becoming much cheaper, however, and more within the range of moderate purses, so that we may soon hope to see it in every collection of greenhouse plants.

## THE CLIANTHUS (PARROT'S-BEAK, OR GLORY-PEA OF AUSTRALIA).

The *Clianthus* is one of the most showy and most suitable plants for training up the rafter or for covering the back wall of the conserva-

tory—especially if planted out in a suitably prepared border. The flowers, which hang down in drooping racemes, are seen to much better advantage when trained up a rafter. They are naturally of straggling habit, and more suitable for training up the roof than for pot-culture: still, with due care and attention, very good plants can be grown in pots, and when well done makes a very good exhibition plant. There are three varieties of *Clianthus* in general cultivation—*Clianthus Dampieri*, *C. magnificum*, and *C. puniceum*. By far the most showy of the three is *C. Dampieri*—in fact it is one of the most gorgeous of our cool greenhouse plants. The flowers are of a bright orange-scarlet, with a large black blotch in the centre of each flower. It is generally considered a very difficult plant to grow well; indeed it is but very rarely seen in flower at all, being very much subject to the attacks of red-spider, and liable to damp off suddenly in its earlier stages of growth. *C. magnificum* is almost hardy, and in many places would do very well trained against a south wall, provided a little protection was given it during winter. In many parts of Ireland it stands without any protection whatever; and we have seen plants of it against a wall with stems as thick as a man's arm, and they flowered most profusely every year.

The soil best adapted for the cultivation of the *Clianthus* consists of good fibry loam and peat in equal parts, with a goodish sprinkling of silver sand. The pots should be well drained, as they require plenty of water when growing, and the syringe should be applied pretty frequently to keep red-spider in check; but the best antidote for spider is to keep the plants in vigorous health. The *Clianthus* roots readily from cuttings, which should be of the half-ripened wood, and put in under a bell-glass, and the pot plunged in a mild bottom-heat. The young plants should be grown on as quickly as possible—especially in the case of *C. Dampieri*. After they are established in their pots, a cool pit or frame will suit them well. They should be kept moderately close, and slightly shaded from bright sunshine, and syringed every evening during the summer. The aim should be to get the foundation of good plants made during the first year, rather than the production of flowers; they should therefore be pinched frequently in order to induce them to break into many shoots. They may be wintered in a house or pit where the temperature ranges about 45°, and the amount of water given during the winter should not be in excess of the demand for it. After growth begins in the spring, they may be shifted into larger pots, or planted out if intended for that mode of culture. In forming the bed, care should be taken to secure good drainage, and the soil should be used in a rough state: some charcoal may be added, which will help to keep the soil sweet. Their season of flowering is from the end of May onwards, and they are certain to be very much admired when in flower.

## DENDROBIUM NOBILE.

WE propose giving the details of our mode of cultivating this beautiful Orchid, for we have been singularly successful in its cultivation ; and as it is very seldom seen in robust health, or producing the quality or the quantity of flowers of which it is capable, we think we cannot do better than tell everything we know connected with the cultivation of this much-written-about, much-appreciated Dendrobium.

To give minute details on the subjects taken up by nearly all horticultural writers, is such a rare thing, that we feel we ought to apologise for so doing in this particular instance. And yet those papers which do so are of most value. We expect to find principles and general directions only in such volumes as those written by B. S. Williams, F. W. Burbidge, and many others ; for it is impossible to describe every particular in octavo volumes of two or three hundred pages : and indeed such would be out of place. In weekly or monthly magazines we expect more ; and those who write for such, and yet fail to give more, merely repeat what has been often better said before. Why this should be, we do not understand. Possibly some writers think details below them, or, understanding what they write about themselves, think that all small matters ought to be known by their readers—although only the vaguest hints are given, and these often by no means plainly put.

The plagiarism of horticultural writers is being continually talked about ; but the evil does not abate. Few, indeed, imagine themselves plagiarists, even when recasting what has been recast and re-repeated hundreds of times for a generation or two. Surely there is enough original experience to fill all our papers, if only writers would condescend to tell us the little almost-nothings which yet make up the sum-total of our everyday practice. We are told that drops make the ocean, and grains of sand the mountain : just so in the case of horticultural practice. Those who succeed attend to every little, and it is by neglecting the littles that others fail. Those who essay to teach should tell us all about the little steps, slips, jumps, by which they have climbed the mountain called Difficulty. The ordinary readers who get their horticultural knowledge from books and papers, too frequently attempt success by bounding from stage to stage, instead of feeling their way step by step.

We hope the above will be taken partly as a broad hint to gardening scribes, partly as an apology for details which may to adepts seem whimsical and superfluous.

But to return to our subject. When flowers are wanted from plants of *Dendrobium nobile* at once, or within a year, flowering-plants must be secured for commencing with. If telling success be the aim of the cultivator, healthy, one-year-old, just-as-they-are-going-to-start, young growths from off the base of old ones are to be preferred ; at least we

prefer these—and we have tried two or three ways of getting up a stock rapidly. If anybody knows a better way, they may be sure one cultivator, at least, will be glad to hear of it.

However, having mentioned flowering-plants first, we will say something on how to treat these best. When they are grown in an ordinary stove or house of similar temperature, they will be pushing new shoots and new roots by the beginning or middle of February. At this stage they should be repotted. The first thing to do is to carefully pull off any young stems which may be growing near the tops of old ones, and to pot them off on their own account in the manner to be afterwards described. Do not begin these operations until growth is apparent—although orthodox growers all advise this course. From John Bull to John Chinaman the nightmare of orthodoxy hangs about the necks of men like a millstone, and encumbers their progress like a Sindbad! The orthodox time of potting *Dendrobium nobile* certainly stands in the way of success. The orthodox mixture of moss, peat, crock, charcoal, and sand, is another hindrance—inherited, like other evils, from our fathers. They first potted the plant in ordinary soil; that rotted the roots and killed the plant. Some thinking person broke away from this and used the above mixture with a good deal of success. We ask you to discard this practice also, and to use only living sphagnum moss and charcoal. You may object that there is no nourishment in either of these articles. Never mind; they are better alone than with any other substance added or substituted.

In potting, turn the plants out of the pots carefully, so that neither root nor pushing growth be injured. Carefully pick away every particle of the old potting material, and cut away all decaying roots. Wash the remainder until perfectly clean in the water-tank, and then lay them aside,—they are ready for potting. Pot them into clean, dry pots, of a size that will just allow the roots to be comfortably accommodated. (Pots large enough to hold a quantity of material which is never taken possession of by the roots, is an unmitigated evil in Orchid cultivation. They do far better when the roots are crowded—not too much—in the pots). Fill the pots just about half full of fresh charcoal; put a thin layer of fresh sphagnum on the charcoal, and then distribute the roots carefully and evenly in the pot; afterwards work in an equal quantity of sphagnum and charcoal among the roots, and make it moderately firm. Some Orchids require firm potting, others are better loosely potted: this one thrives best in a compost moderately firm. It is a good plan, especially for careless waterers, to have the base of the plants a good deal higher than the rim of the pot; and we also advise pieces of charcoal to be placed underneath the bases of the bulbs. Over all a layer of fresh *growing* sphagnum should be placed; but care should be taken not to put it over the base of the bulbs, for that will cause them to break half an inch or so up the stems; and growths which do not start from the *very base* are not worth having.

After the plants are nicely potted they must be put into the stove, although a vinery—especially where Muscats are grown—will suit them. A warm moist atmosphere they must have while growing. At first the material must be kept only moist and no more; and a thorough watering once a-week in a moist house will be sufficient to secure this. To keep the surface-moss fresh, and to encourage it to grow, a slight damping with the syringe once a-day will be necessary; and growing moss is of some importance, for if it dies and gets covered with slimy matter, the roots as they descend from the base of the bulbs, instead of penetrating it healthily, will rot and die, and your bulbs will be weak and annually weaker, instead of strong and annually stronger.

All through the summer the plants should have stove-heat, and be shaded during the hottest part of the day, until their bulbs are nearly made up. They should then be removed to a warm place—such as a Melon or Cucumber pit—and treated to a dry, airy, warm atmosphere, and be exposed to the full blaze of the sun. At this stage, just as much water as will prevent their shrivelling, and not a drop more, should be given. They ought to go days and days without a drop. Six or eight weeks of this treatment will turn the bulbs hard and amber-coloured, and the plants will go to rest. They should have a couple of months' rest, in a temperature not much under 50° nor over 55°. When wanted to flower they should be treated to stove-heat. By forwarding the plants a little each year, a batch may be timed to flower at Christmas; and by retarding others they may be had all through the early months of the year. We have seen them as late as June, but in this case they are so late in making their annual growth that it cannot be ripened properly for want of sun—at least north here; and consequently they do not flower well the following year. When a young stock is being continually raised, only worn-out plants should be kept for very late work, and then, when flowering is over, thrown away. Thrip (yellow), red-spider, and mealy-bug all thrive on *Dendrobium nobile*. The two former are easily kept down by the syringe. The last needs picking out with a sharp-pointed stick.

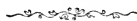
And now for the best way of getting into a stock. It requires a few years of patient good treatment, but the results will justify the waiting and the work. We have said what beginnings are best. Given one, or one hundred,—it is all the same—year old stems, of the length of one's finger and upwards, such as we described before, they should be cut carefully from the parent stems so as to injure neither. Take care of the whorl of roots at the base. When the buds at the base begin to push and the roots to grow, pot them up singly into 3-inch pots, among a compost of roughly *bruised* fresh charcoal and the freshest sphagnum procurable. One crock over the hole in the pot will be sufficient for drainage—the whole material will be open enough for drainage, for it will speedily become one mass of roots. "Half-and-half" is the proportion to employ of each. Into this the

shoots are *not* to be embedded, but the plants should rather stand on "tiptoe" on their own roots. The base of the young bulbs should just touch the moss—which should be kept slightly moist and growing, and no more. Kept in stove-heat and carefully treated, these plants will soon fill their pots with roots, when they should be treated to pots one size larger.

Instead of ripening off these small plants in the way advised for flowering-plants, they must be retained in the stove, or East Indian Orchid house, where such exists, and kept growing. Treated thus, they will make from two to three growths a year instead of one, and will double their number of breaks every time. Continual growing, and continual shifting on as this becomes necessary for four years, should produce plants a yard across, from 2 to 3 feet high, and with from twenty to thirty leading bulbs.

Such treatment produces rude health and rank growth but no flowers; and some little skill may be necessary to throw them into a flowering state, for when in this robust condition they are generally breaking at the base before the preceding bulbs are half grown. This habit has got to be changed. To do this, water should be sparingly given long before the growths are completed. Even with this stinting they will break again at the end of summer, and if these new breaks are allowed to grow, your purpose will be frustrated. Allow them to grow 6 inches, and then *pinch them*. At the same time ripen the bulbs off in the way before mentioned. In spring you will find that the pinched stumps will break grandly, and the plants produce such a crop of flowers, on two or three sets of bulbs, as will be a reward for time and labour.

The time at which the flowers are wanted must regulate the time when they are to be removed from the place where they are resting to a warm house; but this plant is very patient in this matter, and a few weeks longer or shorter of a rest will not harm it much. However, after it has once begun to grow, it must have a continuous growing temperature until its bulbs are again made up. While in flower the plants may be put into a house considerably cooler than a stove, but it is not wise to subject them to greenhouse treatment. A. H., H.



#### NOTES ON THE VINE.

IN some cases Vines are cultivated in winter, in many instances in spring, but it is in summer when the great majority, especially of small growers, prefer to cultivate them; and no doubt they are right in selection of season, as Vine-culture in summer is an easy matter compared with winter and early spring culture; but at certain times in summer the requirements of the Vine are varied and numerous, and according to the manner these are attended to so will the results be.

The value of natural aid in Vine-culture cannot be overestimated, as abundance of light and plenty of sun-heat are the most important agents to insure the perfect development and thorough maturation of branch and fruit alike ; but artificial assistance must also be given by feeding at the root, training the branches, and helping nature in other ways.

I am sure all your readers will agree with me that there is no fruit more pleasing to cultivate than the Vine, and there is nothing more gratifying than securing a fine crop of well-finished Grapes. Our greatest gardeners are delighted with this ; and amateurs have more reason to feel satisfied, as a well-managed vinery in the hands of one of these is no mean accomplishment. At times we meet with such, and in other instances the Vines and fruit may be seen suffering from lack of proper attention—not that their owners do not wish to give them this, but they do not know how. It is in aid of such growers that I send you these few notes ; and at the present time words cannot be directed to more important operations than watering the roots, training the shoots, and thinning the fruit. When the borders are properly drained, no one need ever be afraid of giving Vines too much water at the root during the time they are in most active growth. I do not think any one could point out a case where Vines were injured, either temporarily or permanently, through overwatering at the root ; but cases innumerable might be found where Vines have been much crippled through want of sufficient water. Surface-dribblings are evils to be rigidly avoided in all watering operations, but in the Vine more than anything, as the roots are sometimes a little distance from the surface ; and when these are starved for want of sufficient moisture, the few feeders on the surface will not sustain the Vine in a vigorous condition. It is well known that all plants which grow quickly must have an unlimited supply of water at the root, and few plants grow at the rate of the Vine. We have known shoots extend 3 or 4 inches on a sunny day. At such times watering the border once every eight or ten days is not too often, and it must be given then with unstinting hand. For old Vines, manure-water each time is of the greatest benefit, and nothing is better than guano : an allowance of about 2 oz. to every square yard at each watering is a fair dose. In sloping borders care should be taken that the surface is rough and open, for if fine and smooth, the water may run off without penetrating more than a couple of inches below the surface. Inattention to this simple precaution has frequently done much harm.

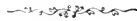
In attending to the shoots, two extremes are often followed : one is to leave the young growths much too close together ; the other is to restrict the shoots to a much greater extent than is good for the wellbeing of the Vine, or the perfect colouring and swelling of the fruit. As a rule, one shoot from each spur is quite sufficient ; but it is no rare occurrence to see several all starting from the same spur, and the conse-



quence is, that every one of them is weak in growth, and the Grapes deficient in size of bunch ; and so long as this practice is continued, the Vines become weaker year after year, until they cannot be considered to be in a satisfactory state. Of course, when the spurs are far apart, two or three shoots may be taken from each, but they should be trained in opposite directions, and not crowded closely together, as is the case with those we have just been objecting to. Stopping each shoot two joints beyond the bunch is advice often given, but we are being convinced that in practice this is oftener wrong than right, especially if the stopping is persisted in after the first time. Vines which are the least inclined to degenerate will never improve under this system, but they will go back annually. On the other hand, sickly Vines may be vastly increased in health and vigour if they are allowed to make an extra proportion of wood and leaves. We would rather have them with two feet than one foot of wood beyond each bunch.

Vine-wood closely stopped appears to ripen much earlier at the base than when allowed to run out. We have seen shoots under such circumstances begin to have a brownish hue before the berries were thinned, and in their case the fruit always ripened before the berries were of any great size. With plenty of growth this does not occur so prematurely ; and as to colour, I am of opinion that all Grapes except Muscats will finish much more perfectly under rather a dense shade than under the influence of more light. It is surprising the deep colour and rich bloom Hamburgs and others will assume when the rays of the sun are prevented by the leaves from ever reaching them. Some growers never stop their lateral growths after the fruit begins to colour, but we leave them alone a considerable time before this ; and should they become such a mass as to interfere with the ripening of the wood in autumn, a few of these can be removed then without injury ; and allowing the shoots a good deal of latitude has not the same disadvantages as allowing a crowd of stems to grow from each spur. At the present time Vine-shoots require stopping in every vinery, and the operation is one of no little importance. Thinning the fruit is another seasonable subject which must be attended to before it is too late. Many rules are given as to the number of bunches to leave on each rod, but all such may be right in one case and wrong in ten. This all depends on the size of the bunches and the condition of the Vines ; and the manner the crop finished last and former years, if taken carefully into consideration, will offer safer guidance than any which an outsider could give as a rule. In thinning the berries from the bunches, no mistake can be made, provided this is not overdone at first ; and this will hardly be the case if half the berries are clipped out soon after they are well set, finally thinning them when about the size of Peas. All thinning later than this stage should be avoided, as the bloom forms on Grapes from the very first ; and those who wish to have it untarnished should bear this in mind. By a little

experience any one can readily tell which berries will swell large and which remain small; and of course, as all desire evenly swelled bunches, the latter will be removed and the former left. As insects generally increase with the hot weather, the utmost care should now be taken that Vines do not get overrun with any kind of pest. Prevention is always better than cure in this. In fact, the first is easy, but the last most difficult to accomplish, as a rule. To begin and syringe Vines with insecticide stuffs when the fruit is advanced in growth is generally to blemish its appearance; but by keeping an eye daily on the foliage, and sponging off all insects on their very first appearance, damage to the wood, leaves, or fruit, may certainly be averted. J. MUIR.



### “CONSIDER THE LILIES.”

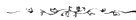
YOUR correspondent “F. W. B.,” p. 145, indulges in a grim joke on the price of Lily bulbs, possibly deriving his inspiration from the well-known but misleading advertisement which has appeared in the columns of a horticultural journal ever since its first published number, and will appear, so we are informed, unaltered till the last number of that journal is issued, which, judging from its present success, will not be till the end of time.

But lest your readers should fail to see the joke and be deceived by the statements of “F. W. B.,” permit me to state that good bulbs of the Lilies he mentions—viz., *Neilgherriense*, *Wallichianum*, *Polyphyllum*—may be obtained from the New Plant and Bulb Company, Colchester (and I doubt not from many other firms), at the low price of 5s. each, and 10s. 6d. for the best bulbs. When, therefore, “F. W. B.” indulges in such tall talk as 36 to 50 guineas a dozen, he is simply drawing a very long bow. Lilies may be “considered” at a much more reasonable rate.

ALEXANDER WALLACE.

COLCHESTER, *April* 20, 1881.

*N.B.*—The three above-named Lilies are about the rarest and most highly priced of all. A fairly good representative collection may be obtained in the autumn for three guineas, well worthy of “consideration.”



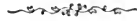
### SUGGESTIONS FOR YOUNG GARDENERS.

THERE seems to me to be one point in the successful management of gardens too much overlooked in gardening literature generally—that is, the important part which young men play in large or moderate-sized gardens, where there is necessarily so much committed to their care. However well-appointed a garden may be, it is almost impossible that it can be successfully managed without every detail—which it is im-

possible to supervise—is assiduously carried out by the young men to whose care, intelligence, and abilities so much must be intrusted. Therefore it may not be out of place in this paper to give a few words of advice to young men. I am but a young gardener myself, but I have seen and experienced the influence which young men have upon a garden, the gardener, and even their employer. Work done and plants cultivated, or rather uncultivated, in a slovenly, half-hearted, or unintelligent manner, has a bad influence on the proprietor, who, if he does not get disgusted with his garden, at least will become indifferent to it, and the consequent discouraging circumstances will follow. Whereas work well done, and plants cultivated in a creditable manner, will add to your own and your employer's highest enjoyment and pleasure, and will exercise an influence on the latter in fostering a love of gardening, thereby advancing your own interests, your master's, and that of your profession. We must not be afraid of hard work. There is nothing great attained without a lot of hard work, bodily or mental; and never perhaps was this more necessary than at the present day, when employers seem to look more and more on gardening from a commercial point of view, and want good value for their money. But you will not think work hard if you throw your whole heart and mind into it: in time you will certainly be amply rewarded for well-directed labour by the gratification of seeing everything prospering under your charge, and by the approval of your master, independent of any pecuniary advantages which may follow. I must say that the remuneration paid to gardeners is small indeed, compared with other occupations, for the amount of skill required. But we must feel that we have a higher duty to perform than the mere accumulation of wealth, which is certainly not to be disregarded by all honourable means. Gather all information you can from books, periodicals, or whatever source you can, bearing on your profession, and compare it with your own observations and experience; but without observation and practice reading is of comparatively little value—you will be but a blind imitator. I would impress upon you, above all, to observe and study the laws and operations of nature closely, and the conditions under which plants arrive at the greatest perfection. Nature is the greatest teacher and the surest guide. With your principles of gardening based upon nature, you will be on solid ground, and you certainly will not be disappointed—it will enable you to avoid many an error. There is another important point I would press upon you, not to be in too great a hurry to become head-gardeners until you feel yourselves masters of your profession, as I am convinced that there is an amount of valuable knowledge which can only be gained by practice at the potting-bench and in the general routine of gardening, and which is indispensable in guiding others under you. Conform to your present circumstances and make the best use of them, and endeavour to improve them, remembering

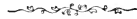
that a man can often make circumstances for himself. We may often feel that our capacity is not great, but let us endeavour to improve our opportunities, that we may thereby act our part well in the great programme of life.

C. M.



#### THE GARDENERS' BENEVOLENT INSTITUTION.

THE Managing Committee of this excellent Institution have resolved to make an effort to raise the pensioners' allowances from £16 and £12 to £20 and £16 per annum to male and female pensioners respectively. To enable the Committee to attain this desirable end, they purpose carrying out a scheme proposed by the secretary, Mr Cutler, of appealing to the gardeners of Great Britain, and recommending that a simultaneous collection be made in every garden in the kingdom on Saturday the 30th of July next. To alleviate the privations of aged and indigent gardeners and their widows, who have either from old age or misfortune been reduced to poverty, is surely a laudable object, and we wish the proposed scheme every success.



#### HORIZONTALLY TRAINED PEACH-TREES.

IF "J. S." will pay a visit to Rangemore, the seat of M. T. Bass, Esq., near Burton-on-Trent, I have no doubt Mr Bennett will have great pleasure in showing him horizontally trained Peach-trees above fourteen years old which will please him; and by the time he has gone through the Peach ranges and seen several trees of various ages trained on the same system, all laden with fruit and clothed with spurs, and bearing wood from main stem to tip of branch, the opinion which he formed of the system when visiting the French gardens may be changed a little. I have visited Rangemore Gardens annually for nine seasons, and I have always found the trees mentioned carrying a full crop of fruit. Like "J. S.," I was prejudiced against the system, having seen it tried by a good gardener for a few seasons, and then discontinued because it did not answer. Now I am convinced it was through mismanagement.

R. PRINCE.



#### CŒLOGYNE CRISTATA.

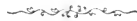
ON the 11th May, we received from Mr Speed, of Chatsworth Gardens, a fine example of this Orchid, which is known as the Trentham variety, the chief and valuable characteristic of which is, that it blooms fully two months later than other forms of this Cœlogyne, and so prolongs the blooming season of one of our most useful and beautiful Orchids. This variety has been in commerce for some time.

## DUNDEE HORTICULTURAL ASSOCIATION.

THE ordinary monthly meeting of this Association was held in the Templar Hall, Reform Street, on Friday evening, the 6th ult.—the President, Mr D. Doig, Rossie Priory, in the chair. There was a full attendance of members. Mr J. D. Ker, Douglasfield, read an interesting and exhaustive paper on “The Culture of the Stage Auricula.” He said the Auricula stood pre-eminently a working-man’s flower,—it required little room to grow an even extensive collection. As many as from two to three hundred could be cultivated with success in a garden of but a few square yards—the only requirements necessary being a good dry frame and a little careful attention on the part of the cultivator. Unlike many other flowers, the Auricula, provided it got a fair amount of light and air, would thrive and bloom to perfection in almost any atmosphere. Having described the sub-classes of the Stage Auricula, Mr Ker said there were now practically two distinct races—the Alpine Auricula, in which the centre part of the flower was more or less green; and the Stage Auricula, in which the centres were always white. Some of the rarer sorts were very difficult to propagate, as shown by the fact that some varieties which, fifty years ago, could be bought for from 10s. to 15s., were not now procurable for double and sometimes triple that sum. This did not result from the delicate nature of the constitution of the plant, but because they were very shy in giving off lateral buds or branches. Mr Ker’s remarks were illustrated by a selection of choice plants of Auricula in splendid bloom, thereby corroborating all he had said as to their culture.

Mr John Stewart, Arbroath, then read an instructive paper—illustrated by drawings—on the “Relations of Bees to Flowers.” In the course of his remarks he said: “Orchard and garden fruit growers are almost entirely dependent on bees to fertilise the blossoms so as to ‘set’ the fruit. The stigmas of Strawberries, Blackberries, Apples, Pears, &c., come to maturity long before their anthers, hence bees are necessary to convey the pollen from the old to the young bloom. In Gooseberries the anthers are ripe long before the stigmas, so that self-fertilisation is impossible; and unless there are bees to transfer the pollen from the young to the old bloom, the ovary always withers and drops off along with the flower. The showy colour and sweet scent of flowers attract bees. The variegated lines and spots guide them to where the honey is situated. At the same time, when the visits of insects are to benefit the flower the honey flows more freely. Thus bees get their supply of food, and for this treat they fertilise the flower. Bees, therefore, depend on flowers for their subsistence. In return, the very existence of many flowers depends on bees.” In addition to the Auriculas exhibited by Mr Ker, a large branch of the inflorescence of a splendid double rose-coloured Cineraria was exhibited by Mr Joseph Robertson, gardener, Bayfield, West Ferry. Messrs

Laird & Sinclair also sent a neat tray of spring flowers from their Monifieth Nurseries, amongst which were the two very fine Narcissi, "Emperor" and "Empress," the two best varieties of this interesting genus; several very pretty Primulas, including *P. ciliata purpurea*, *P. denticulata*, *P. marginata*, and the comparatively new *P. platy-petala*, the blue-flowered *Arobis cyanus*, the interesting *Trillium grandiflorum*, &c. All these exhibits were much admired, and were minutely inspected by many of the members at the close of the meeting. Hearty votes of thanks were awarded the several speakers, and the meeting terminated.



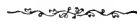
### ORCHIDS IN BLOOM

AT NEWBATTLE GARDENS, MAY 10TH, 1881.

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <i>Ærides Fieldingi.</i>            | <i>Masdevallia bella.</i>       |
| <i>Cattleya citrina.</i>            | " <i>Harryana.</i>              |
| " <i>Mossiae.</i>                   | " <i>ignea.</i>                 |
| <i>Cypripedium barbatum.</i>        | " <i>Lindenii.</i>              |
| <i>Dendrobium Bensoniæ.</i>         | " <i>Veitchiana.</i>            |
| " <i>chrysotoxum.</i>               | <i>Odontoglossum Alexandræ.</i> |
| " <i>crystallinum.</i>              | " <i>cirrhosum.</i>             |
| " <i>Dalhousianum.</i>              | " <i>Hallii.</i>                |
| " <i>densiflorum.</i>               | " <i>Pescatorei.</i>            |
| " <i>Devonianum.</i>                | " <i>Rœzlii.</i>                |
| " <i>Falconeri.</i>                 | <i>Oncidium concolor.</i>       |
| " <i>Jamesianum.</i>                | " <i>flexuosum.</i>             |
| " <i>literiflorum.</i>              | " <i>Welltonii.</i>             |
| <i>Epidendrum vitellinum majus.</i> | <i>Phajus grandifolius.</i>     |
| <i>Gongora maculata.</i>            | <i>Saccolabium ampullaceum.</i> |
| <i>Lælia purpurata.</i>             | <i>Vanda gigantea.</i>          |
| <i>Lycaste Skinnerii.</i>           | " <i>suavis.</i>                |
| <i>Masdevallia amabilis.</i>        | " <i>tricolor.</i>              |

W. PRIEST.

[One of the varieties of *Odontoglossum*—*Pescatorei*—at Newbattle, is the most distinct and beautiful we have ever seen, the peculiarity of its markings being a large purplish blotch, or rather spot, in the centre of each petal, which makes it very effective and distinct. Arent the price of Orchids in those days, a small plant of a new *Cattleya* was sold a few days ago by Messrs Thomson & Sons, of Tweed Vineyard, for 200 guineas.—ED.]



### THE ASPARAGUS COMPETITION.

THIS will be held in the horticultural department of the Bath and West of England Society's Show at Tunbridge Wells, commencing on Monday, June 6th. Notice from those desiring to compete should be given to the secretary of the horticultural department, the Hon. and

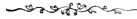
Rev. F. T. Boscawen, Show Yard, Tunbridge Wells. All exhibits should be staged on the morning of Monday, not later than twelve o'clock. The following prizes are offered for the first year's exhibition, and are (except the last two for market growers in Kent) open to growers in any part of the United Kingdom.

*Prizes for Gardeners in Private Places.*—For the best bundle of Asparagus grown by the exhibitor: 1st prize, £4; 2d, £2, 10s.; 3d, £1, 10s.; 4th, £1. The bundle of Asparagus is to consist of sixty heads. The prizes will be given to the largest Asparagus, provided it be in all other respects unobjectionable. Prizes will not be given where, in the opinion of the judge, there is no merit. The Asparagus must be free of earth, and the bundles will be opened by the judges in all cases where they think it well to do so. No imperfect or "double" heads will count.

*Prizes for Amateurs not Employing any Regular Gardener.*—For the best fifty heads, £2, 10s.; 2d, £1, 10s.; 3d, 15s. Grown by the exhibitor.

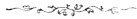
*Prizes for Cottagers.*—For the best twenty-five heads grown by the exhibitor, £1, 10s.; 2d, £1; 3d, 10s.; 4th, 5s.

*Prizes for Market Growers.*—For the market grower who shall exhibit the best three bundles, each containing one hundred heads, £5, 5s. This prize is offered by the Bath and West of England Society. For the market grower in the county of Kent who shall exhibit the two best bundles of Asparagus, each containing one hundred heads: 1st prize, £3, 3s.; 2d, £2, 2s.



#### BEDDING TROPÆOLUM WORSLEY HALL VARIETY.

THIS is the most effective of all the compact Nasturtiums that we have seen, and for small beds is no doubt the best in cultivation.



#### ROYAL HORTICULTURAL SOCIETY.

MAY 10TH.

EXHIBITS on Tuesday last were not very numerous, though both the Council-room and the conservatory contained some groups of interest and several promising new plants.

FRUIT COMMITTEE.—Harry Veitch, Esq., in the chair. Messrs C. Lee & Son, Hammersmith, sent three plants of an Alpine Strawberry named Duru, with long conical bright scarlet fruit, which the Committee desired to see again. Mr Woodbridge, The Gardens, Syon House, exhibited a dish of Sutton's Scarlet Globe Radish, neat in form

and bright in colour, but considered to closely resemble a variety certificated at Chiswick last year as Round Rose Hatif. Mr A. Mann, St Vincent's, Grantham, sent a fruit of a new Melon named Sir Garnet Wolseley, of medium size, about 5 inches in diameter, with yellow flesh and well netted, but deficient in flavour. It was stated by the exhibitor to be three weeks earlier than Reid's Hybrid, having been in use since the 18th of April. Mr Mann also sent fruits of Rollisson's Telegraph Cucumber and one named Excelsior, the latter long, of good shape, and bearing moderate bloom. Mr Buchanan, gardener to Dr Siemans, Sherwood, Tunbridge Wells, exhibited a fruit of Wm. Tillery Melon grown under the influence of the electric light. It was firm and of good flavour, a cultural commendation being awarded for it. Some Wheat was also shown which had been sown on December 7th, and subsequently grown in the electric light, and it was then over 2 feet high. A vote of thanks was accorded to Mr Z. Stevens of The Gardens, Trentham, for a bunch of Black Hamburg Grapes. A collection of Apple flowers of several varieties was sent from the Royal Horticultural Society's Gardens, Chiswick; and Mr R. T. Veitch, Exeter, sent fine examples of his late white Broccoli Exeter Market.

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair. Messrs Veitch & Son exhibited a group of new plants, of which several were certificated and are described below; but in addition to these the following were noteworthy:—A *Primula* from Telang, said to be hardy, with loose umbels of pale purplish-white flowers something like the light-coloured varieties of *P. cortusoides*. The leaves were bright green, roundish or heart-shaped, with stalks 3 or 4 inches long. The Committee desired to see it again from out of doors. *Indigofera decora alba* had racemes of white Pea-shaped flowers and light green pinnate leaves—a pretty variety of a well-known plant. *Chionographis japonica*, which was exhibited and certificated last year, was again shown in good condition with two spikes of its curious flowers, the linear irregular petals of which impart a very distinct appearance to the plant. A basket of an excellent dark-red Japanese Maple named *Acer polymorphum latifolium atropurpureum* was also contributed, with specimens of *Alpinia albo-vittata variegata* very freely streaked with white. Sir Trevor Lawrence, Bart., sent a plant of *Cypripedium Wallisi* and flowers of *C. caudatum* for comparison, both having very long narrow petals, greenish flowers, and a large white blotch inside the lip; but in *C. caudatum* the lip is tinged with brown, while in the former species it is light green. A plant was also staged as *Cattleya Reineckiana*, but the accuracy of the name was questioned by some members of the Committee. The flowers were fine, with broad white petals and sepals, a large lip with a crisped white margin, crimson centre, and yellow base. A vote of thanks was accorded to Mr W. Fyfe, gardener to W. F. Dick, Esq., Thames Ditton House, Surrey, for a stand of excellent Maréchal Niel Roses.



Messrs Laing & Co., Forest Hill, contributed a group of *Caladiums* and *Tuberous Begonias*. Among the former *Alfred Bleu*, *Mithridates*, and *Princess Teck* were especially remarkable for the size and bright colour of the leaves, but the Committee wished to see the varieties again, as they were scarcely developed enough to judge of their respective merits. Three beautiful *Begonias* were exhibited, all scarlet—one named *Scarlet Gem*; another, *Mr Alfred Brassy*, with broad petals of a very bright tint and neat habit; and the third *Begonia Davisii flore-pleno superba*, which was deservedly certificated, and is referred to elsewhere. A *Coleus* named *Mrs Baxter* with crimson leaves margined with green was shown by the same firm. Colonel Trevor Clarke, Welton Place, Daventry, showed a hybrid *Elisena* bearing two white *Pancreatium*-like flowers on a scape  $2\frac{1}{2}$  feet high. It was referred to the Scientific Committee. Mr Croucher, gardener to J. T. Peacock, Esq., Sudbury House, Hammersmith, sent a plant of *Masdevallia Harryana*, a very fine variety, the flowers about 2 inches in diameter and rich in colour. Messrs James Carter & Co., High Holborn, sent a pretty double *Primrose*, and plants of what they termed “a new hybrid *Marguerite Chrysanthemum Prince Rudolph's Bride*,” with white flowers very like *C. frutescens*, but apparently rather more compact in habit and bearing light green pinnatifid foliage. Mr R. Dean exhibited specimens of his new dwarf *Red Wallflower*, very dark in colour and excellent in habit. The strain was commended. A dwarf double yellow variety with small bright-coloured but full flowers was also noticeable. Mr G. Bethell, Sudbourn Hall, Wickham Market, staged plants of a white variegated *Spiderwort* named *Tradescantia argentea*, and some seedling *Coleuses*; one, *Mrs Baines*, neat, mottled, with crimson green and yellow—and *Mrs Bethell*, with a rosy centre and green and yellow margin. Mr Harrison Weir, Weirleigh, Brenchley, Kent, sent pretty dark-ground, gold-laced *Polyanthuses*, named respectively *Heart's Delight*, *Triumph*, and *Goldfinch*. Mr James Kelman, Chingford, Essex, exhibited plants of a dwarf *Musk* with yellow crimson-spotted flowers. Mr Edward Bland, Cranbourn Court, Winkfield, Berks, staged a plant of seedling *Anthurium Schertzerianum* with brightly coloured spathes 4 or 5 inches long. Mr J. Copley Far, Headingley, near Leeds, was accorded a vote of thanks for a *Tropæolum*, said to be a seedling from *Ball of Fire*, which it greatly resembled, but the flowers were perhaps a little larger. Messrs Rivers & Son of Sawbridge-worth contributed trusses of two seedling *Zonal Pelargoniums*, both with shades of pink with full double flowers; and the Royal Horticultural Society exhibited specimens of the pretty purplish blue *Tropæolum azureum*, and the elegant *Onychium auratum* from the gardens at Chiswick.

In the conservatory the principal group was from Mr B. S. Williams, Upper Holloway, which comprised an abundance of choice *Orchids* and

other plants, and well merited the silver Flora medal awarded for it. Several Dendrobes were especially notable. *D. Griffithianum*, having nine fine trusses of bright yellow flowers; *D. fimbriatum oculatum*, also fine; *D. Dalhousianum*, with pendulous racemes of large flowers; *D. rhodopterygium*, pale mauve or pinkish; and the well-known *D. Pierardi*,—were all admirably represented. *Aspasia lunta* was bearing several flowers; the imposing *Oncidium Marshalli* and the distinct *Epidendrum paniculatum*, with several fine *Masdevallias*, as other beautiful plants, rendered the group highly attractive.

Messrs Osborn & Son, Fulham, were awarded a silver Banksian medal for a pretty group of stove, greenhouse, and hardy plants. In the centre was a large basket of *Gentiana acaulis* with abundance of brilliant blue flowers, forming by far the most important feature in the collection. Mr Aldous, South Kensington, staged a miscellaneous collection of decorative plants; and Messrs Barr & Sugden, Covent Garden, were accorded a silver Banksian medal for their extensive and beautiful collection of *Narcissus* flowers. Mr Turner, Slough, sent baskets of the richly coloured *Tricolor Pelargonium* Mr Henry Cox, and a fine double white *Azalea* named *Madeleine*. The latter was extremely fine, some of the flowers exceeding 4 inches in diameter, very full, of good substance, and pure white. Several tastefully arranged groups were also contributed from the Society's gardens, the *Azaleas* and varieties of *Primula cortusoides* being particularly fine.

The following first-class certificates were awarded:—

*Aralia Chabrieri* (Veitch).—A very elegant plant with linear leaves 6 to 8 inches long, dark green, the midrib being dark red. They are arranged in a pinnate manner on the slender branches; and the plant, being compact in habit, has a very neat and pleasing appearance.

*Gloxina Radiance* (Veitch).—An erect-flowered variety, the flowers of medium size, very smooth, and symmetrical in form; the corolla rich crimson, the tint extending nearly to the base of the tube inside, the outer part very pale pink. It was very free and compact in habit, the leaves 8 inches long by 5 broad, bright green.

*Primrose Cloth of Gold* (Messrs James Carter & Co.).—An excellent double *Primrose* of dwarf habit, and bearing numerous large pale-yellow flowers. The plants shown were from the open ground, and proved how well adapted the plant is for growing as an edging to borders.

*Begonia Davisi flore-pleno superba* (Lainig).—Probably the finest double scarlet *Tuberous Begonia* yet in commerce. The flowers exceed 3 inches in diameter, very full of petals, and of a most intense scarlet tint. It is dwarf in habit, and has the small dark-green leaves characterising the species.

*Ribes pumilum aureum* (Osborn).—A dwarf *Ribes* only a few inches high, and well suited for pegging down as an edging to beds. The leaves are very small, and possess a well-marked yellow tint.—*Journal of Horticulture.*

## NOTICE OF BOOK.

EPITOME OF GARDENING. By Thomas Moore. With an Introductory Chapter on the Principles of Horticulture, by Maxwell T. Masters. Edinburgh: Adam and Charles Black.

THIS work was originally written as a treatise on horticulture for the 'Encyclopædia Britannica.' It is published in book form, the author tells us, with the object of its being useful as a handy-book on horticulture in general; and to such readers who may not have time or patience to wade through more elaborate and comprehensive treatises, no doubt this Epitome will be of good service. To write a book like this is, in many respects, more difficult than to write more minute instructions; and, to do the author justice, he has done his work very well. His training and experience fit him much better for striking out the more salient points of practice than for minute and discriminating details; and this Epitome, embracing the formation of gardens, garden structures, and the practical parts of all branches of horticulture in a very condensed manner, will meet the wants of those who require only a few leading hints, and who have time and observation to grapple with and apply the rest themselves. The principles of horticulture by Mr Masters are equally condensed and brief, and we would advise all readers of the book to thoroughly digest them before proceeding to the practical part.



## Calendar.

## FORCING DEPARTMENT.

**Pines.**—Young plants that were shifted into their fruiting-pots three months ago will now have good hold of the fresh soil, and should be growing freely. With the stronger sunshine of midsummer and the full ventilation required, they will need much more water, and should never be allowed to remain dry for any length of time, or they may get a check that will cause them to start into fruit. Consequently it is indispensably necessary that the soil be kept constantly moist; and every time they are watered, give them weak guano-water, not stronger than two ounces to the gallon, or just as much as well colours the water. The ventilation should now be carefully regulated, or with the rapid growth the plants ought to be making they may get drawn, and lack that sturdiness so desirable in all Pine-plants. Let the ventilation commence as soon as the thermometer rises to 75°, and increase until by eleven o'clock there is a free circulation of air about the plants. Let the shutting up be done by degrees, closing the pits so that with sun the heat may touch 85° for a short time. Syringe the plants and damp the paths and walls at closing time, but do not carry syringing to excess, or the growth may be soft and watery from an accumulation of water at the axils of the leaves. Just give sufficient fire-heat at night to prevent the temperature from falling below 65° in the early morning. If the pots are plunged in tan-bark and it has shrunk away from the pots, press it to their sides firmly. If the plants have been placed thickly together as a temporary arrangement, they should now be replunged at 2 feet apart each way. The crowding of Pines thickly together is a great evil. An effort should be made to get plants intended to supply ripe fruit in autumn started by the end of the month; and provided they have been

kept cool and dry, as directed in former Calendars, they are sure to come into fruit by applying moisture and increased warmth now. Let them have a bottom-heat of 90°, a night temperature of 70°, and a good watering; and if their roots are healthy, they will soon show fruit. Plants intended to supply fruit in winter should now be kept cool and dry for a month; and treated in the same way after that time, the result should be the same. Look over plants in fruit, and thin off all suckers not required for stock. Give ripening fruit a free circulation of dry warm air, but do not dry them off too severely at the roots. Fruit swelling off in various stages should be stimulated with liquid manure and a warm moist atmosphere. Remove ripe fruit that it is desirable to keep in good condition for a week or two to a vinery where the fruit is ripe, and that is being kept cool and airy.

**Grapes.**—Keep Vines cool from which the Grapes are all cut, and syringe the foliage three or four times weekly to keep it clean and healthy. See that the inside borders are not over-dry. They should have a good watering as soon as the fruit is all cut. Keep all Grapes colouring freely aired night and day, by having the front ventilators open about 3 inches, and the top ones to half that extent. If the borders are in want of water when colouring commences, give them a thorough watering; and if not already attended to, mulch them, to prevent the border from drying and cracking before the Grapes are all used. The same applies to all Vines swelling off crops—water them freely up to the colouring point. Air all Vines early in the morning, so that damp be dried off the leaves before the sun gets powerful, and injury by rapid evaporation is caused to the foliage. When sudden bursts of brilliant sunshine succeed a period of dull weather, rather shade the Vines slightly than run any risk of injury to the leaves. This is very efficiently and speedily done by putting a handful of whitening into a pot of water and syringing it on the roof. If the weather is at all summer-like, next to no fire-heat is required, unless it be for Muscats and other sorts requiring more warmth and a long

season to ripen them properly. In thinning crops that are to be kept through the winter, the berries should be thinner than is desirable for such as are to be used before winter. Look over all Vines at least once weekly, and remove fresh lateral growth, and keep a sharp look-out for red-spider, giving it no quarter: a vigorous washing or two with clean water through a fine rose, and a coating of sulphur on the pipes, will check it. Attend carefully to young Vines planted in spring, and tie them to the wires several times weekly. Allow them to cover the roof without crowding, letting air and light play freely, especially about temporary Vines intended to bear a crop next season. These should not be allowed to make more lateral growth than two leaves. If not already done, lose no time in getting Vines intended for fruiting in pots next year into their fruiting-pots. Keep these in some light place near to the glass, so that they may get full sun.

**Peaches.**—Give the earliest trees a good washing with the engine as soon as the fruit are all gathered, and continue to do this frequently to keep them clean and healthy. If there be any spider about them, put a handful of sulphur in the water. Look to the inside border, and if it is dry give it a good watering with manure-water. Look over the trees, and remove any superfluous shoots, so that sun and air may circulate about every leaf and shoot. Air freely all fruit now ripe and ripening, and look over them daily and gather those that are ripe. If to be packed and sent to a distance, gather before they are quite ripe. Trees swelling off their crops in various stages should be well syringed at shutting-up time. Very little fire-heat is needed now; but if the weather be dull and damp, keep a little heat in the pipes, or mildew may put in an appearance. Thin the fruit in late houses, and all shoots not needed to furnish sufficient for next year's crop should be removed at once. Pay particular attention to the state of the borders, and never let them get dry. All borders should be mulched with manure. Pinch and regulate the growths of young trees inclined to grow unequally.

**Figs.**—Whenever the first crop is gathered from early forced trees, give them a good watering with manure-water, and syringe them every afternoon. Thin off the second crop if there is more than sufficient for a good crop. Ripening fruit should be well ventilated to bring flavour to the highest pitch. Young trees in luxuriant growth and not bearing freely should not be stimulated, but watered with pure water.

**Melons.**—Give plenty of air to ripening fruit, and just sufficient water to keep the plants fresh and active. Plant out more plants for supply of ripe fruit in August. Give them 10 inches depth of a good holding loam, with about a sixth part of rotten manure, and make it firm before planting. Syringe all plants, except those ripening their crops and setting, at shutting-up time when the weather is bright. Attend to the setting of fruit, and stop fruit-bearing shoots one or two joints beyond the fruit. Sow more seeds for succession crops.

**Cucumbers.**—Do not let the plants

make rambling growths. Keep the growths well thinned out, and stop young shoots at every joint. Do not allow them to bear too many Cucumbers at a given time, or the plants will suffer. Water copiously with dung-water, and syringe the foliage every afternoon when the pit is shut up. The heat may run to 90° for a time with sun-heat. Put a chink of air on for the night at 6 P.M.

**Strawberries in Pots.**—The crops from these will now be nearly all gathered, and any that are not now ripe may be removed to cold pits or frames, where they are not so likely to be attacked with spider, to which Strawberries in pots are very subject at this season if standing on hot dry shelves in houses. As soon as runners can be had, commence layering plants for next year's crop. These will be later than usual this year, and the first should be secured, for all those intended for early forcing should be in their fruiting-pots by the middle of July at the latest. As soon as layered, keep them well watered, and stop runners beyond the young plants.

#### KITCHEN-GARDEN.

Our last paper was written when drought was accompanied by cold "nor'-easters," and to-night (11th May) we seem much under the same influence, only vegetation is more advanced, and consequently suffering from the trying weather. The advantageous effects of mulching are very visible wherever we were fortunate enough to have the means to apply it to surfaces. Globe Artichokes, which were well protected with dry litter, have done better than we anticipated: wherever they are springing up thickly, and likely to become crowded, a general thinning should take place, and good suckers with "heels" on them planted in rows for future supplies—a late supply may be had when the first lot is past for the season. Jerusalem Artichokes, which are cultivated in the slovenly system of allowing the crop to be had from the remains of last season's supply where they escaped being lifted, may require thinning and regulating; then a free use of the fork over the surface. Yearly plan-

tations are always the best, treated as one would Potatoes. Asparagus should now be at its best. Some differ in opinion as to when cutting should cease; as it has been generally late this year, we would proportionately cut late,—say to end of June,—taking all as it comes, then leaving the crowns to grow unmolested if they are regular as to distance. On light dry soil salt may be applied, but we have little faith in its application on heavy, wet, or cold land; though the effect of salt is good by the sea-shore in poor sandy soil. More Beans and Peas should be sown. Where the former are wanted late, which is not often, sowings may be made to end of month; but Peas are always desirable at any season, and may be sown till end of month in most districts with fair success. Some sow in open ground till 10th or 12th July, and then follow up with successions of dwarfs in pits. Mulch and water them; to keep in the moisture, a quantity of dry soil may be drawn over the

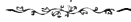
damp surface to prevent evaporation. Early kinds should be chosen for late sowings. Full crops of French Beans may be sown; they should have well-prepared rich soil. Scarlet Runners should be staked by those who adopt this system before they fall over; but when kept as dwarfs, they require picking frequently, and the young growths stopped. Sow for late crops, Broccoli, such as Snow's and Osborn's; and plant out without delay those which are of good size, with the view of lifting them to be placed in turf pits or other protection during severe weather. July is early enough for general plantations; all the Broccoli may be planted into stove-beds of rather firm soil, and transplanted when wanted to fill up ground from which Potatoes and other crops have been lifted. Brussels Sprouts, Cabbage, Cauliflower, Savoy, Kale, and any other of the Brassica family, may be planted where wanted to stand permanently. Draw drills and water the plants well at the root when they are placed in the soil; the past winter has taught many lessons on these points. Hardy green crops have been of extra value this season, and should be well prepared to meet another severe season should one come. Crowding is much against their wellbeing. Red Cabbage planted now, will in most districts be in good order for pickling at the right time. Small heads are generally best coloured. Cabbage may be planted thickly, and when they are ready for use every alternate one may be cut out, and a crop left. Early Cabbage should be well hoed and mulched after they are cut, and they will throw out sprouts tender and plentifully; these are in most cases valued more than fine-grown Cabbage. Cauliflower turning in may have the leaves tied over the hearts instead of breaking them down, and if the heads are turning in too quick, lift a quantity and take them, "root and branch," to a cool cellar to retard them till they can be used.

Carrots, Parsnips, and Beet may be thinned; the two latter may have the thinnings planted for crops should such be desirable; they require puddling in soil and water as thick as paint, drills drawn, well watered, and the young plants nicely planted. Sow

Turnips every ten or twelve days; they may be sown in larger breadths than heretofore. When soil is dry, a good soaking may be given the night before, and the sowing done first thing the next morning. Guano sprinkled in the drills is a good old practice in starting the plants quickly and growing them out of the reach of "fly." Good kinds are Red and White Stone, Strap Leaf, and Snowball. Parsley, sow for late crops, and transplant thinnings of early sowings; these stand the winter best. Radishes may be sown often, and in every respect treated like Turnips; French Breakfast is always welcome as a fine mild kind; long red, white, and red Turnip kinds will meet all wants. Shading till they are coming up is of much advantage. Mustard, Golden-curbed, and American Cress, may be sown among bushes or in shade of hedge or wall often, to meet the demand, if it is in much request. A pinch of Endive may be sown at end of month in the shade. Lettuce may be sown where it is to grow; the thinnings can be planted in rich soil, in the shade, for a succession—larger quantities may now be sown. Leeks may be planted in rich soil. To have them finely blanched, trenches to hold 3 to 6 rows heavily manured, may be formed, and the young plants planted and treated like Celery, where they are grown rough and ready. Sown where they are to remain, they may be thinned, and mulching placed between the rows. Celery may be pricked out ready for main crops, and plants ready may be planted in the trenches at once, and well watered. Potatoes may be thinned in the stems if they are thick; the size and quality of the tubers are thus improved. A free use of hoe or fork among them is of great moment in helping them along. Cut seed-stalks from Rhubarb and Seakale before they do mischief. Sow Salsify, Scorzonera, and Chicory as required to supply the demand, and thin to a foot apart or more. Spinach, to be of service, must be sown often, and in the shade if possible. Mushrooms are now liable to be attacked by "fly," and maggots will appear and render them useless. Ridge Cucumbers, Gherkins, and Vegetable Marrows may be planted as early as possible if not done; if protected with hand-lights so much the better. Shade them from bright sun

till they are in full growth. Those started on gentle beds of fermenting material, such as leaves and manure, will fruit long before those unaided. Marrows, however, do best as to quantity when they are planted in a solid bank of good soil, making a small pit, and filling it with turfy loam to start them in. Surface stirring, cleaning, mulching, and watering, will now demand much attention. Either give a good soaking of water, and have done with it for a time, or let it alone.

M. T.



## Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

O.—We use the paraffin for Peach-trees at the rate of a wine-glassful to a gallon of water. In applying it, one person is employed lifting a syringe-ful out of the pot or pail and discharging it vigorously back again, while another syringes the trees with it, and in a few minutes they are syringed with clean water. This is done immediately after the trees are pruned and tied in winter. We have not had to fumigate a Peach-tree this season for green-fly, and last spring the only trees out of many that were not affected with fly, were two that had been syringed the previous winter to kill brown-scale. We do not approve of the cutting-back system in rearing Peach-trees. We have large trees that were planted in 1878 now in full bearing, that under the cutting-back system would have taken double the time in attaining the same dimensions.

MR GREENFIELD.—Your double Cineraria is a marvel of its kind. The colour violet purple, large truss, and each bloom about  $1\frac{1}{2}$  inch in diameter.

A READER.—The excrescence in your Vine-leaves is caused by a too moist atmosphere and insufficient ventilation, and those who tell you that it will not do your Vines any harm are blind leaders of the blind. Keep your vinery less damp and give more air, and, though it will not cure the foliage already affected, it will check the progress of the evil.

S. Y.—The undergrowth plant on the stove-shelves is *Fittonia argyoneura*, and the apron was of *Panicum variegatum*. There is no soil mixed with the gravel, but a little weak guano-water is applied occasionally; and both plants are planted as cuttings, where they grow, every March.

F. G. S.—Your *Begonia* seed may have been covered too deeply. We never cover at all. Seed saved from some varieties—such as *Monarch*, *Kallistii*, and *Charles Raes*—we have never been able to get to vegetate, while the seed was as carefully saved and otherwise treated as others that came up by the million.

BEGINNER.—Shift immediately the plants are done flowering, and have begun to push young growths. See an article giving every detail of culture in our present issue.

S. W.—Two of the best Ferns for baskets are *Adiantum cuneatum* and *Pteris scaberula*, but you are rather late to make baskets of these this season in the way you propose, unless you have a stock of young plants in small pots. Both Ferns named do well in light loam and leaf-mould—about a third of the latter to two-thirds of the former.

JOHN GORDON.—Your specimens did not reach us till the 16th, and were very much dried up. 1, Cannot recognise; 2, *Adiantum assimile*; 3, *Adiantum trapeziforme*; 4, *Adiantum coccinum*; 5, *Adiantum setulosum*; 6, *Habrothamnus elegans*; 7, Cannot recognise. 4 and 5 were so shrivelled up that we cannot be certain about them.





THE  
GARDENER.

JULY 1881.



THE ELECTRIC LIGHT AS APPLIED TO HORTICULTURE  
at Sherwood, Pembury Road, Tunbridge Wells.



MUCH of your readers as may have seen the observations made by me in your number for July 1880, and felt any further interest in the question, will probably be expecting to hear whether any progress has since been made in the application at Sherwood of electric light to horticulture; and I regret to have to say that, in my judgment, no progress has been made towards a successful application of it.

There has been in use since December last, until about ten days ago, a larger electric lamp than the one used last year, with an illuminating power equal to 4000 candles, enclosed in a glass globe, to prevent wind blowing it out, hoisted on to the top of a high mast placed outside of, but almost touching the low-pitched Melon and Cucumber house, which I call No. 1; and in a square glass house, which I call No. 2, at one end of, and close to the roof, there is a small electric light enclosed in a glass casing, with a zinc chimney-like opening into the external air, to allow of the noxious products of combustion passing off. The steam-engine which sets in motion the dynamo-electric machine is much larger than the one previously in use, and, in fact, during the day is employed in transmitting power through an electric continuator to the farm, where chaff-cutting, turnip or wood cutting may be carried on.

The electric light has been, during the period alluded to, applied to both of these houses, from the hours of six o'clock P.M. to six o'clock A.M. I incline to think that there is no appreciable increase of temperature of atmosphere beyond the distance of about a foot from the

electric light ; but so many changes by way of experiment have been made during the period alluded to, that it would not be just to consider that either in house No. 1 or in house No. 2 has it yet had a fair trial.

My object is not to criticise the work, but rather to draw attention to some of the results originally expected, and to consider how far they are likely to be realised.

It was suggested by its promoters that the provision of the alternate influence of light and darkness during the twenty-four hours was not necessary for plant-life. That, by the aid of electric light, the colouring matter of chlorophyll in the leaves of the plant could be produced ; that it aids the growth of plants ; that it will counteract the effects of night frosts, and will promote the setting and ripening of fruit in the open air. That plants when growing continuously, as in the arctic (northern was intended) summer, develop more brilliant flowers, and larger and more aromatic fruits, than when grown under the usual old-fashioned way of light, followed by its diurnal absence or darkness. Now let us try and consider how the matter really stands.

1. Light and heat (whatever their physical differences may be) always travel together in lines or rays, as they are called, from the sun to the earth. Their joint use in plant-life is supposed to be fairly understood and appreciated ; but it is not so easy to say accurately whether one of them, separated from its companion, is a more active promoter of any function of plant-life than the other. But when light and heat are made to travel by different routes, and arrive at the plant-house by different vehicles (excuse the word), as light by the electric lamp, and heat by the hot-water apparatus, it is hardly safe to conclude that they will do the work as well as when harnessed together as in a sunbeam.

2. Supposing the plants of the northern (not arctic) summer to be similar to those that horticulturists here would wish to grow, it does not follow, even if continuous light—that is, solar light, followed on by electric light—had been applied during our summer months when the temperatures of the external atmosphere of air and of soil would have been more congenial to plant-life, that the same results of a northern summer would have been obtained here, even if these results are desirable. They were stated by Dr Schübeler in effect to be—that the further north we go within certain fixed limits, the more energetic is the development of the pigment in flowers, leaves, and seeds ; while the aroma of wild and cultivated fruits is much greater than that of the same fruits in more southern countries, but that this excess of aroma coexists with an inferior degree of sweetness. Such of us as are gardeners will at once see that one of the important factors in the question is the wood being well ripened during the northern summer ; another, the inspissated state of the sap of the plant, probably arising from the dry state of the atmosphere ; and a third is long rest

during the northern winter, and the absence of heat,—any of which would go a long way to account for the results of the northern summer, without entirely giving the continuous light of the summer the credit of them.

3. The application of continuous light—that is, solar followed on by electric light—however applied, whether outside or inside during the low temperatures of soil and of atmosphere, of our winter months, is not likely to be productive of high-coloured flowers, and of fruit with high aroma.

4. Again, as to the statement that electric light produces green colouring matter in chlorophyll corpuscles, that may, or may not, be correct; but in any experiments made after the absence of solar light with the electric light, who is to decide whether the green colouring matter is not due to the action of solar light during the daytime, rather than to the action of electric light during darkness? Here I would remark that chlorophyll is not now considered to have any power to decompose carbonic acid (carbon dioxide); it only absorbs or quenches some of the solar rays, allowing others to pass on to where the protoplasm is at work, which, with the aid of these rays, alone possesses the power to decompose its own food-material (carbon dioxide).

5. As to the electric light aiding growth, it hardly applies, as plants grow in darkness. The question is, whether it does enable a plant to assimilate its food, ripen its wood, and otherwise perform its functions.

Upon a careful consideration of the whole matter, I think the following are fair observations to make:—

6. So far as regards the primary question as to whether the provision by the Creator, of alternate light and darkness during the twenty-four hours in our climate, can be dispensed with by plants, I doubt it. It may be possible to interfere with it for short limited periods, as for forcing or for growing short-lived plants, as Melons or Cucumbers.

7. So far as an application of electric light during the winter months to counteract night frosts to outdoor wall fruit-trees, or an application of electric light in the spring to outdoor wall fruit-trees, after they have been started naturally by solar light and heat into growth, and continued on during darkness by electric light until the fruit is ripe, I give no opinion until they are tried.

8. So far as regards its application during the winter months by the outside electric light to the cultivation of Melons and Cucumbers, grown inside a house heated with hot-water apparatus as in house No. 1, the results are not at present such as to warrant any favourable expectation from its adoption.

9. So far as regards its application during the winter months by means of an electric lamp placed inside the house, as in house No. 2, specially glazed in to prevent injury to the plants, in which case the light might be said to assume the appearance, if not the characteristics, of daylight, I do not give any opinion until it has been fairly tried.

10. So far as regards any form of application during the summer months, I do not give any opinion until it has been tried.

11. In my simplicity I previously suggested that it would have been desirable for horticulturists to have had two houses similar to No. 1 house started at the same time—one of them treated in the usual old-fashioned way, with alternate light and darkness, and the other treated with solar light by day and electric light by night, but both of them heated with hot-water apparatus, and the work respectively done by them properly compared and measured up. I regret to have to say there is no probability of that being adopted.

12. So far as regards a combined application of electric light as a motive power to purposes of horticulture as well as agriculture, it is not desirable for many reasons, into which it is not worth while entering.

At present the electric light at Sherwood has ceased burning, and its consideration by me stands adjourned to another year (*D. V.*)

LUX VENIT AB ALTO.

May 19, 1881.



#### NOTES.

“*Consider the Lilies.*”—Thackeray in one of his books made a very nice little sketch of a small boy vigorous in urging his home-made boat across a tiny pool with the breath of his own lungs. “Urging the sail of his own work” was the legend below the wood-engraving. So on reading Dr Wallace’s notes on p. 276 of last month’s ‘Gardener,’ it occurred to me that there are others who, like Thackeray’s small boy, are adepts at urging the sale of their own goods. Of course Dr Wallace’s motives in writing to the ‘Gardener’ were of the best; but I very much question the taste which prompted him to advertise his own “New Plant and Bulb Company,” and to stigmatise a brother nurseryman’s *bonâ fide* advertisement as a misleading one. How an advertisement which offers certain Lily bulbs at a stated price can mislead any one it is difficult to see. It is quite different when a nurseryman offers you Lily bulbs at a certain price, and when you give the order for them he neglects to send them; or when he advertises a good plant, and on your ordering it he sends you another thing altogether!

I know a good many people who now purchase their Lily bulbs at the London auction-rooms, where I have myself bought all the good and generally expensive kinds very cheaply. Good sound bulbs of *Lilium auratum* at 30s. to 50s. per hundred is cheap enough, and not unfrequently the best and largest bulbs may be purchased at that rate.

Of course a “fairly good representative collection” may be bought for three guineas—no one disputed that. For the same sum I can get a “fairly good representative collection” of Orchids, Ferns, or Stove-

plants. My object in writing my "Consider the Lilies" note (at p. 145) was not to make a "grim joke," but to show that Lilies being fashionable, were also expensive in some markets. Nor has Dr Wallace shown us the contrary. No: he offers us three species of *Lilium* at £3 to £6, 6s. "per dozen;" or a "fairly good"—not a "first-rate" or "select" collection, mind, but a "fairly good"—collection of Lilies for £3, 3s. I speak from experience, and the only good and cheap Lilies I ever procured were from public auction-rooms. By judicious purchase of Lily bulbs at auction sales, amateurs near London might make £3, 3s. go a very long way,—indeed I could thus secure a first-rate representative collection in that way.

I quite agree with Dr Wallace that Lilies may be considered at a reasonable rate—at auction sales.

Amongst seasonable flowers there are few of the more distinct and showy sort which attract the eye more than the now numerous and beautiful new forms of *Pyrethrum roseum*. Pure white, rose-pink, rose-purple, rose-crimson, and magenta are well represented, and in form and size the individual flowers remind one of the finest of *Asters* or *Chrysanthemums*; and the finely cut foliage is fresh, and of a vivid green tint, which enhances the beauty of the flowers. Either for open-air or conservatory decoration these plants are useful, and as cut-flowers they are worthy of especial notice, as, in addition to their bright shapeliness, they endure for many days in vases or glasses indoors.

The old Double White Rocket is worth all attention from lovers of white and fragrant blossoms. It blooms in June, and is very effective in sheltered beds or borders, and its tall spikes of pure rosettes continue fresh and fragrant for a long time in vases. This is one of the old-fashioned herbaceous plants that well repays one for a little extra attention in the way of propagation and culture.

Those who have no hothouses, and to whom *Cattleyas* and *Lælias* are therefore an impossibility, should get up a collection of *Iris* of various kinds. The forms of *I. germanica* are now numerous and variable, and to these may well be added the finer of the English and Spanish bulbous-rooted kinds. The man who plants these well can afford to smile at the fate which forbids his indulging in *Orchids* or rare stove-plants.

By the same token, *Caladiums* may well be replaced by the hardy and altogether lovely kinds of *Funkias*. Mr Barr sent me a splendid collection of twenty-four distinct kinds of these last January, and they are now quite a feature here. In addition to their ample and shapely leaves, they produce long spikes of drooping

bell-shaped flowers of a purple or white colour. The only secret in their culture is to plant in a deep rich border; and while they should never be disturbed in the autumn or winter, they may be cut into bits in April just as they start into growth, and every bit grows away without the least check whatever. These fine-leaved plants are now most effectively used in the London parks, and should henceforth find their way into all good private gardens.

Anent the price of Orchids, I hear of two plants of *Cattleya Mendeli* having recently been sold for £200 each. This is a lovely Orchid, and these especial plants were exceptionally fine forms, of course. Then Sir Trevor Lawrence gave £50 for a plant of *Cattleya exoniensis* the other day with seven leads—a good specimen, in fact. Then that lovely pure white variety of *Cælogyne cristata* exhibited by Mr Titley of Leeds the other day, was so much admired in London that Mr Bull secured it for his patrons, the new plant buyers, at a cost of £200. At this rate, Orchids offer to the careful and experienced buyer as good a rate of interest as pictures or other works of art.

*Cattleya labiata*—the true old autumn-blooming variety collected in Brazil many years ago, and first bloomed by the late Mr Cattley of Barnet—is still rare, and so costly. Mr Day's plants fetched from £20 to £40 each. When it cannot be obtained, however, a good form of *C. Warneri* may be sufficient for one's appetite in that way. I have now two forms in bloom, and one, a native seedling now blooming for the first time, is little, if anything, inferior to *C. labiata* in size and colour of the flower.

A very distinct and effective hardy rock-plant, now in full beauty, is *Onosma taurica*. It is sometimes called the "Golden Drop," and bears its pure yellow *Erica Cavendishii*-like flowers on a twin-forked, leafy spike, 1 foot in height. It is not at all a common plant, but may be increased by cuttings in April. Either for open-air culture or for cut-flowers it well deserves a place in all gardens.

Nearly all *Gladioli* are beautiful, but one pure white kind now in bloom is especially lovely, and welcome for cut-flowers. I allude to *G. Colvillei albus*—sometimes called "The Bride" in bulb catalogues. About eighteen months ago we planted a few dozen bulbs of this kind out in a deep rich sandy border close to a low wall, which affords them shelter. They bloomed well the first year, but this season they are very much stronger, and so more floriferous. The long spikes of pure white flowers are peculiarly attractive for large drawing-room vases. The only other flower I know which can compare with it for this purpose is the large St Bruno's Lily (*Anthericum liliago*), which comes in a fortnight or three weeks earlier. Those who have

not these two lovely white-flowered plants in their collection should make a note of their names now, and secure roots for next autumn planting season.

Of dwarf wall-shrubs, a note should be made of *Veronica Hulkei*, a lovely little bush, now bearing panicles of delicate lilac flowers in the open air. It is also useful and effective as a greenhouse shrub, in pots, being quite distinct from the better-known kinds of the *V. Andersoni* section.

A good climbing shrub for a cool greenhouse is the lovely white-flowered *Jasminum jasminioides*, now in bloom. Its dark-green pinnate leaves set off its clusters of white flowers and pearly buds to perfection. Planted out, it makes rapid growth, and blooms most profusely for several months.

Rooted cuttings of the white and sulphur-coloured Paris Daisies or Marguerites may now be planted out in the open air, and if pinched judiciously, and the flowers picked off carefully, they will form handsome little bushes for lifting and repotting next September for conservatory or greenhouse decoration. They yield cut-flowers in quantity all through the winter months. These plants are all varieties of *Chrysanthemum frutescens*; but a still better winter-blooming Daisy bush is *C. tanacetifolia*, an old plant, with bright-green leaves, and snow-white yellow-eyed flowers.

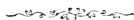
Anent sales of imported Orchids I hear many complaints. A friend of mine who paid rather a long price for *Lælia anceps alba* found out when they bloomed that they were of the old type. He was further taken in some time back by buying what he took to be large "masses" of *Odontoglossum Alexandræ*. On more closely examining these preparatory to starting them, however, he found out to his great disgust that they were little pieces, and odd eyeless pseudo-bulbs, sewn or tied together with soft twine in such a way as to deceive even the wary in such matters. So it has come to this,—a state of things sure to meet with its just reward.

If one could always attend these sales in person there would be less risk, but in commissioning auctioneers they themselves are not unfrequently deceived. Of course they would soon put a stop to manipulative trickery, or the selling of ordinary kinds under high-sounding or erroneous names, if they once detected the thing.

Nevertheless the main facts remain unaltered, that if due caution be exercised, Orchids, Lily bulbs, and many other plants may be obtained of as good quality and at a cheaper rate from these sales than elsewhere. Now and then one is lucky enough to get a good thing unexpected, and that takes the rough edge off previous disappointments.

The great thing is to attend in person, and examine everything carefully. After all, it is a question of whether you really know the physiognomy of the plants you wish to buy.

Mr John Dominy, whose name is "familiar as household words" to all gardeners, and especially to cultivators of Orchidaceous plants, having definitely retired from the management of the Chelsea nursery of Messrs Veitch, some of his friends have selected the time as the one best fitted to offer him some little memento of a well-spent and active life. This is as it should be. Mr Dominy's work has benefited all gardeners. He was the first hybridiser of Orchids and *Nepenthes*, and if it be true that a "man's best work is his best monument," it will be especially true of the man who has given us *Cattleya exoniensis* and *Calanthe Veitchii*, which are in their way two of the finest of all known Orchids. What Sir Trevor Lawrence and others desire to do now, however, is to offer Mr Dominy some little present as a token of esteem—an acknowledgment that his life's work has been a worthy one in his own—our own—profession. Those who wish to contribute are invited to send their contribution, of not more than £5 nor less than 10s. 6d., to Sir Trevor Lawrence, Bart., Burford Lodge, Dorking; or to the London Joint-Stock Bank, Pall Mall, S.W. F. W. B.



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

### NO. VII.

*Successional Crops.*—Although I have previously written at considerable length under the heading of "Useful Successional Crops," I may perhaps be allowed to briefly recapitulate my experience, adding any fresh hints that may occur to me. With me, the object in view is not only to secure as many crops from the borders as possible, but also to crop them evenly and neatly. Peas are the only tall-growing vegetables grown, and these are either sown at one end of a long border, or, as at present, completely fill one border. As soon as these have ceased bearing, they will be cleared off, and the ground at once filled with early and second early Broccoli—such as Snow's Winter White, and the more dwarf-growing Osborn's Winter White. The ground will not be dug for the Broccoli, both because they will make sturdier, and therefore hardier, growth on solid ground, and also for the simple reason of its being almost an impossibility to get the ground in good working order after being much trampled when occupied by the Peas. At the same time, seeing that early Peas invariably leave the soil in a dry impoverished state, I find it advisable to cut out drills for the Broccoli, lengthways of the border (the Peas were across) with a heavy half-mattock hoe. These, if liquid manure is



available, will be soaked with it prior to planting, and failing liquid manure, with water. This will enable us to plant with a trowel—our plants being previously pricked out,—and therefore in the hottest of weather, without any very serious check to their growth. The drills can easily be filled with water when necessary; afterwards, when the Broccoli is well established, the soil, immediately after the last watering, can be returned to the drills, thereby enclosing the moisture and steadying the plants. To crowd Broccoli, wherever grown, is a decided mistake; and in the above case our drills will be drawn about 3 feet apart, the plants of Snow's variety will be 24 inches asunder in the drills, and Osborn's somewhat thicker. None of these will be lifted, at all events till the heads have formed—the aim being to get them as early as possible, preferring to lay in and thereby check those grown in the open.

It is scarcely possible to crop a garden as one would wish during the first, or even the second, year of management. And here, for instance, on taking charge, I found the wall-border so occupied, that it was impossible to plant, as I like to do, a good length of early Potatoes. These, by being cleared off early, liberate a good piece of border for such crops as early Strawberries, late Cauliflowers, Carrots, Tripoli Onions, &c. When lifting, the ground is forked over, levelled, and all clods broken—this preventing undue drying, and also preserving neatness.

Few require to be told that the earliest Strawberries are usually to be had on a south border: but if it is generally known that the youngest plants give the earliest pickings, the knowledge is not always acted upon. According to my experience, it is unprofitable to crop Strawberries a second season on a sheltered border: invariably plant afresh, thereby securing valuable early fruit, and also a quantity of strong early runners. Some of the strongest of the latter, when well established in the pots, layered in, are taken off, and at once planted on part of the ground previously occupied by the Potatoes. It cannot be too often stated that the soil for Strawberries should be made as firm as possible; loose planting on light poor soil resulting in weakly growth, and on rich soils exuberance of growth—of course at the expense of the crops in both instances. Plants to be fruited for one year only are disposed in lines 2 feet apart, and 12 or 15 inches asunder in the rows, and the soil is rammed firmly about them, as with plants potted for forcing. In dry seasons it is advisable to water the ground some hours prior to planting, and to frequently water the plants till well established. They will repay the trouble taken. The site of the old bed is not dug, but prepared and planted as advised in the case of the Pea ground. Savoys succeed admirably when planted in this fashion.

The autumn-sown Spinach with me is frequently most profitable when sown in succession to Potatoes, and on a raised south border.

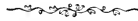
In this position good even beds may often be seen, whereas those in the open are, at the same time, very patchy and poor. Our seasons being so variable it is advisable, in the southern districts at all events, to make at least three sowings—the first early in August, the next towards the end of the month, and the last early in September. As a rule, the intermediate sowing proves the best, but in 1879 the two last sowings were profitless. The round or summer Spinach appears to be quite as hardy as the prickly or winter variety; and where the summer crops of any vegetables are cleared off early, rather than waste seed, or allow land to be idle, I much prefer to sow this Spinach. If the produce is not wanted it can easily be dug in for manure whenever the ground is wanted. Spinach delights in a tolerably rich soil, and to stand the winter should be sown in drills 15 inches apart, and thinned lightly in the first instance, and at the second thinning (using the thinnings) to about 9 or 10 inches asunder.

Leeks, I should imagine, are most valued in the northern districts; but the past severe winter will have converted many southerners into Leek admirers. In many instances Leeks were the only “bit of green” left in the garden, thus demonstrating their value as a hardy vegetable by no means to be despised when served up *as* a “vegetable.” Where but few have been grown previously, they will, if the lesson has not been taught in vain, be grown extensively, even if it be at the expense of a breadth of the uncertain Broccoli. If extra fine Leeks are required they may be grown in a manner similar to Celery; but they can be had good enough for ordinary purposes from well-manured deeply-dug ground. They succeed admirably on an east border, and may be planted according as the early Turnips are cleared off this site. The young plants should be carefully lifted from the seed-bed with a fork, and may be either dug in in lines across the border—as Potatoes are sometimes planted, freely working in the manure at the bottom of the trenches—or, what is a better plan, be dibbled in. The rows in this case may run lengthways of the border and about 18 inches apart, and the holes made with a blunt dibble, about 9 inches asunder, 6 inches deep, and 3 to 4 inches in diameter; the Leeks to be dropped into these holes, working in only just sufficient soil to cover the roots. Unless the soil be rather stiff, no further moulding up will be required, otherwise a little fine soil should, as the plants develop, be worked in. One good watering to fix the plants is all that is usually administered. I have also grown excellent Broccoli, Savoys, and Coleworts on east borders. They were planted after early Turnips, without redigging the ground.

A few early White Tripoli Onions fully deserve a place on a south border. The ground for these should be heavily manured, deeply dug, and afterwards trodden firm. Early in August is a good time to sow the seed, and the drills may be 12 inches apart. The seedlings when large enough to handle, should, if at all crowded, be thinned out

slightly, deferring the final thinning till the spring, when the thinnings may be either transplanted or used for culinary purposes. The Onions may be disposed from 4 to 6 inches asunder in the rows, according to the size of bulb required. Early White Naples or its synonym the early White Italian, are the best early varieties; and their flavour is much appreciated by some employers not fastidious.

W. IGGULDEN.



### ROSES UNDER GLASS.

ROSE-CULTURE under glass is a practice which has been, if anything, rather neglected in gardens; and yet, perhaps, the gardener who has to supply cut-flowers for the house could not grow any one plant that is equal to the Rose for such purposes between January and June. The introduction of the *Maréchal Niel* led to the extension of indoor Rose-culture, and, incidentally, to the trial of other varieties for planting out in houses; and at the present time a good few gardeners are extending their experience in that way. Pot-Roses are useful for pot culture, but whether we consider the quantity or the quality of the flowers, there can be no doubt that planted-out trees succeed best from the middle or end of February. Here we have for some time back depended a good deal on the Rose in spring for cut-flowers; and now, from being scarce with us, if anything, for floral decoration, it has become a common practice, when other things happen to be scarce, to "make up with Roses"—in other words, the extra demand is provided for by the Roses, but we have never too many for house purposes or for giving away. Our success with the *Maréchal Niel*, like mostly all who have tried it anywhere round here, has not been satisfactory without frequent planting and renewals; and consequently we have for some years back taken to other varieties most extensively, and the three best of these are *Gloire de Dijon*, *Cheshunt Hybrid*, *Souvenir d'un Ami*, and a few others; but the two first—a light and a dark—are regarded as the best for our purpose. Two years last November we planted an old but strong standard *Gloire de Dijon* in one of the greenhouses, allowing it a few square yards for extension. The second year it bore several hundred blooms, and this season it has borne close upon 700, and all were good, large, and fine, many of them quite fit for exhibition purposes—the greater proportion being produced in March and April, but the house had to be kept as cool as possible to keep them back to that period. Another lesser plant, put in at the same time, and allowed to ramble up the gable of the house, has done equally well. From these two plants alone we have often had several hundreds of blooms standing in water in the fruit-room, because they were not wanted at the time. A *Cheshunt Hybrid* covering a large space of the roof in the same house has bloomed contemporaneously with the *Gloires*, and produced a great quantity of flowers, and is still flowering at this date, June 8th. In addition to

those used by ourselves in our own establishment, about eighty dozen blooms have been sent away during March and April to other people. Our outdoor Roses are late in flowering, and to succeed the early house plants we have just erected and planted a kind of lean-to orchard-house structure, 45 feet long, with all the best climbing Roses, which we propose training as methodically as Vines on the long-rod system, which answers admirably for Roses, especially the stronger-growing trees. I could at times have cut shoots of Gloire 15 feet or more in length, that were wreathed with flowers in all stages of development their whole length, so regular had the buds broken. It is the young *annual* shoots, however, that break best, no matter how long they are. In training, the original stems are led off horizontally along the bottom of the wall, and also along the front to the bottom wire, and from these shoots are led upwards, about 6 inches apart, just like young Vine-canecan, and they are encouraged to grow as much as they will, and allowed the following spring to bloom their whole length. When done flowering, every alternate shoot, at least, is cut down to a bottom bud, to insure plenty of wood at the base for the following season, and the others are allowed to extend till the space is filled. In order to furnish a house regularly with wood all over, some methodical system of training of this kind is necessary, and far more easily carried out than the haphazard method of taking shoots when they are formed, and scheming how and where to train them.

The varieties we have selected for indoor work, all good kinds, presenting distinct shades of colour, are Gloire de Dijon, Cheshunt Hybrid, Maréchal Niel, Devoniensis, Madame Berard, Reine Marie Henrietta, Solfaterre, Madame Levet, and Souvenir d'un Ami. Before the planted-out trees flower, plants in pots are forced. J. S. W.



## FRUIT-CULTURE.

### THE APPLE.

*Medium Trees: Management of the tops.*—Having disposed of the root-management of Apple-trees on Crab and Paradise stocks, we will now turn to the tops. As we have already indicated, we consider that trees which are to be allowed to attain the greatest development that Apple-trees are capable of, should be on stems a few feet in height. In the case of large trees, which will ultimately wholly occupy the space allowed for them, it is necessary that they should have clear stems 5 or 6 feet high, that room may be afforded underneath their branches for all necessary operations. Where only single rows are grown this is less necessary, and where high winds prevail, it may be an actual evil. In the case of medium-sized trees which are planted singly, or in single rows, trees with stems from 1 to 2 feet will answer well. If trees are to be kept, either by necessity or choice, from becoming more

than medium-sized, regular pruning of the branches, both in summer and winter, will be necessary; hence it is desirable that the branches to be operated upon be *not* elevated unnecessarily. Whatever form of tree may be adopted, then, trees with short stems should be chosen.

*Form.*—We are somewhat at a loss whether to advise beginners to train their trees in a cup-shaped or pyramidal form. We have seen handsome fruitful trees both ways, and think that we cannot do better than describe both methods, so that, whatever form may be fixed upon, the pruning may be successfully carried out.

*Cup-shaped trees* are more easily produced than pyramids, for some varieties can only be made to assume the latter form with a good deal of trouble and labour. In the case of young trees a couple of years old or so, with from half-a-dozen to a dozen shoots, the shoots may be so regularly placed that nothing is required but a shortening back of the growths. Strong vigorous shoots need to be shortened back more than half-way, for if left long, the basal half of the shoots will fail to push into growths, and so remain bare, and long bare branches should be guarded against; every portion requires to be clothed with fruit-bearing spurs, and one thing necessary for this is a proper shortening-in of the shoots annually. No two kinds of Apple-trees need the same kind of treatment in this respect. Some kinds are naturally furnished with a profusion of spurs, while others have a tendency to remain bare to a great extent. Those which have a tendency to remain unfurnished, should be shortened further back than those with a different tendency.

Although some trees may be well provided with shoots to form a good foundation for the future tree, the majority will require assistance in this matter. Some may require hard cutting back, in order to induce them to push a sufficient number of shoots. Others may require the centre to be cut out, if the centre should be strong and the side branches weak. In the majority of cases it will be advisable to place a small hoop in the centre of each tree, to which the shoots are to be securely yet loosely tied. At first the shoots should leave the main stem at an angle of something like  $45^{\circ}$ . Should some of them run away much stronger than the rest, they (the strong ones) should be pinched—that is, have the growing point removed—about midsummer. The weaker ones will then grow stronger and make up lost ground to some extent; and if the practice is persisted in year after year, a proper balance will be established. The pinched shoots will probably push again, but must be repinched, and so restrained from running away with more than their proper share of the sap. The second year they should again be shortened back as before, and the hoop enlarged and moved upwards, and the shoots again properly fastened. This process should be repeated yearly, until the trees have been brought to assume the desired form. We may say here that the branches should be kept parallel with each other, and about a foot apart, while one tree should not approach nearer to its neighbour than

3 feet. This room is necessary, not only for space required when performing the necessary operations connected with their proper cultivation, but also for the purpose of admitting sun and air, without which success cannot be had.

In pruning such trees in winter, all side-growths from the main branches must be pruned back to one or two buds. In summer all side-shoots should be pinched back, after they have made six or seven leaves, to three, and this must be repeated if necessary. All terminal shoots must be allowed to grow on, and not be stopped until the usual shortening-in in winter. Such restriction will naturally tend to the production of fruit-buds in abundance, but not if the trees are over-luxuriant. It is therefore necessary, in almost all cases, to periodically raise the roots and shorten back the strong fibreless ones—in other words, root-prune them, as we have already advised under another head. Only a moderate growth can be fruitful. When weakly, there is not vigour enough to produce quantities of fine fruit. The cure is assistance by means of manuring, as before treated of. When the trees grow rampantly, flower-buds do not form: the cure is their root-pruning and root-lifting. When trees grow moderately and bear freely, neither operation is necessary.

Perhaps we ought to caution beginners against stumping off all annual growth—leaders and everything. Trees which do not or are not allowed to progress within certain limits annually, soon get into a bad way. Restriction, to some extent, can be practised with safety, if a proper balance between top and root be maintained, and even with profit: but when this restriction becomes absolute, either by starvation, root-pruning, or top-pruning, especially the latter, trees (especially small ones) soon get into a bad state. There are scores of trees representing all the modes of absolute restriction to be seen all over the country; we hope these remarks may be the cause of such trees being properly treated in numbers of instances. Absolute restriction *has* to be adopted inside glass structures, on walls, &c., and Nature herself adopts the plan in the case of full-grown trees; but with trees which have not attained half or quarter their natural dimensions, or have not filled their places on walls, &c., the case is very different. Most cottagers and villa-owners have to complain that their space is very limited. Land *is* scarce in this densely-populated and wealthy country, but we presume nobody is restricted from going either upwards or downwards. Soil may be made any practical depth, and depth of soil, especially in the case of fruit-trees, is nearly as good as width. An acre of ground with 12 inches of soil is nearly worth twice as much as one with only 6, for it will produce twice as much, and land should be valued more in accordance with its capabilities than its extent. Of course 6 inches of soil may be made 12. Indeed we rather think the acre of deeper soil worth *more* than twice as much of the thinner; for while the labour necessary for two acres

of poor soil is twice as great as for one of rich, the produce is often not more—sometimes less. For trees, then, the soil should be *made* deep, if it is not so to begin with, and then the right thing to do is to let your trees up, up—gradually but steadily up. Gradually, so that the individual branches may have time to grow stout as they grow tall, and so be able to stand beating winds. By this means much of what is wanting in length and breadth may be made up in height and depth.

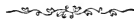
This is a little of the nature of a digression. The remarks were prompted by the sight of a wall of fruit trees when every growth made had been snapped off—leaders and all—although two-thirds of the wall was uncovered. Pruning, to some persons, simply means cutting off all annual growth. In many instances no pruning is better by far than this system, which has nothing to recommend it except simplicity. The system is simple.

*Pyramids.*—Many Apple-trees would naturally assume a pyramidal shape if let alone; others require a little pains in order to induce them to take on that habit. The first thing necessary in order to succeed in the formation of a symmetrical pyramid is to fix a straight stake in the centre of the tree to which the leader is to be tied. Only young trees should be chosen for forming pyramids from, for trees some years old which have been allowed to grow irregularly are not at all well suited for the purpose. Maiden trees—trees a year from the bud or graft—which have never been cut back, are best. The centre shoot should be cut back in order to induce it to push side-growth, and then tied to the stake. Two or three shoots will push in spring; the uppermost must be trained straight upwards, and the others allowed to grow outwards. If all grow equally strong, no further attention will be necessary the first season; but if one or two (of the side-shoots) run away much stronger than the others, they must be pinched in whenever it is seen that they are stronger, in order to equalise the growth. The second year's pruning consists in again shortening the leader, and also the side-shoots; the leader, in order to induce the formation of another set of side-shoots—and the side-shoots, in order to cause them to form spurs. The second year's training must just be the same as the first year's, but, in addition, the superfluous growth on the first year's side branches must be pinched to three leaves as soon as they have formed six. All terminal growths must be left to grow on untouched, unless they are growing very strongly,—in that case the points should be taken out of the side-shoots when they are about 10 inches long, and out of the leader when it is about 15 inches. This will cause a *second* growth (which will be equal to a year's gain), which must by no means be again pinched. All superfluous shoots must be spurred in by pinching as before. We need not repeat the above. Year by year the operations are the same. The aim and object of shortening-in the leaders is to cause enough of furnishing shoots to

push. The end and aim of shortening-in the side-shoots is to cause them to push enough of spurs, and also to secure that the branches be strong enough to bear up loads of fruit without breaking, or even unduly bending. Branches whose side-shoots are being continually pruned in, and whose leading shoots are allowed to run out unchecked, grow very slender, are only partially covered with spurs, dangle about in a useless way with every gust of wind, and break down with less than half a load of fruit. Perhaps we should add that the branches should be from 8 inches to 1 foot apart, and as regular as possible. If necessary the branches should be regulated by being tied down, up, or sideways, as the case may be. When the trees are 5 or 6 feet high, and growing vigorously, but showing no signs of fruit-bearing, lifting and careful root-pruning should be practised, and the trees carefully replanted among fresh soil. In all cases of root-pruning and replanting, fresh soil—that is, soil which no tree-roots have impoverished—should always be used for putting round the roots. Should a dry season follow lifting, mulching should be given, or the trees may get too severe a check. Even supposing that the trees grow with a moderate amount of vigour—which is what ought to be aimed at always—the mulching should still be given in order to prepare the trees for bearing a heavy crop the year following; for a dry summer, following upon root-pruning the previous autumn, is sure to cause a great number of flower-buds to form, to be followed, if no untoward event happen, with a heavy crop of fruit, and this will absorb what would otherwise be expended on useless shoots. When once the trees are brought into a bearing condition, less pinching and root-pruning will be necessary; but care should be taken that a fairly vigorous growth is maintained, and for this reason winter top-dressings and manure-waterings should be given whenever necessary, and over-cropping should be avoided. Some varieties, when once they commence bearing, make little headway; and although it is a desirable thing to turn over-vigorousness into fruit, it is a most undesirable thing to cripple young trees. When some kinds—Stirling Castle, for example—commence forming flower-buds, flower-buds often terminate the leaders. These, if left alone, will develop into clusters of Apples, but the result is that the tree extends no further. When small trees show this tendency the points of the shoots must be shortened back, however short they may be already, to a wood-bud, the tree fed by some means, and only a few fruits be left to mature until the tree is again in a vigorous state.

A. H., H.

*(To be continued.)*





## HINTS FOR AMATEURS.

## HARDY FRUITS.

THERE is always plenty of work among these for the enthusiast at this season. Thinning, topping, syringing off insects, and maybe a good soaking of water for young trees especially, will do much to help them to swell off their crops of fruit, which I trust are heavy everywhere ; but at present great complaints are rife in our district, known so favourably as a hardy-fruit locality ; for frost such as we had during the last week of April and several nights early in May, was what the hardiest and best of crops would suffer from. Trees of a coarse watery growth, and not likely to bear fruit next year, should be taken in hand without delay. Examine the roots, and see where the mischief originates. Tap-roots may be at work, and these we never hesitate a moment with, but arrest their progress with the knife, ramming lime-rubbish and soil underneath them, and plenty of fibre is formed in a very short time. Early in May we noticed a Plum growing very strong, the shoots starting off like gross willows. A man was digging close by ; we called him, and had the soil removed at one side, and found a strong tap-root going down by the base of the wall. We cut it off about a foot from the trunk of the tree, lime-rubbish and some stones were rammed in the excavation, the root covered neatly with good soil, and a soaking of water given, the shoots were thinned, a number being stopped. The tree is struggling into healthy stiff growth, but of a different character to what it was previous to manipulation of its "tap." Strawberries and cherries will require protection by nets if not already done, also small fruits. Training may now be fully considered, and at the early stages of growth the shoots had better be taken along evenly and neatly—it saves much time in winter. Twigs placed neatly across the young shoots (though an old-fashioned plan) will keep them close to the walls and save much hammering of nails. Where wires are in use the case is different, but twigs may be used advantageously with them. Avoid all crowding, which is so common, and stop leaders taking undue share of growth. Examine grafts, and remove ties which are too tight ; place stakes to shoots growing up which are in danger of being broken by wind.

## ORCHARD-HOUSE.

In this structure large supplies of water will be required, and to trees heavily cropped a colouring of guano in the water will be of much service. When fruit is ripening, water must be given moderately and free from stimulants. None should be allowed to become sodden. Syringe freely to wash off insects ; mulch liberally, give plenty of air, and keep all surfaces sweet and clean. Expose fruits in all stages, especially when ripening, to sun and air.

## FLOWER-GARDEN.

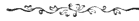
There will now be abundance of work pegging young growths into their positions. Trim any which are out of bounds, and pick off decaying flowers which have served their purpose. No weeds should find a place in either beds or borders. Surface-stirring may be done freely ; it is more advantageous than some believe. Good soakings of water may be given when necessary ; dribbling on surface is worse than useless. Smooth firm walks often rolled, especially after being softened by rain, well-mown grass, and neatly-cut edgings, are some of the items which make gardens pleasant-looking. At end of month is a good time to begin propagating any scarce plants, a stock of which is desirable. Verbenas when established early stand the winter well. Dahlias and Hollyhocks require staking and thinning. Hollyhocks for competition should be kept thin of stalks and flowers. Gladioli and all tall herbaceous plants should be neatly staked ; and Roses now require frequent attention. Dead flowers, suckers, and insects must be dealt with in a summary manner. Give soakings of manure-water. Budding may be commenced as soon as stocks are ready.

## PLANT-STRUCTURES.

It is often a difficult matter at this season to get all plants requiring potting attended at the proper time. There should, if possible, be no time lost in placing well-rooted plants into pots large enough to meet their requirements. When balls have to be reduced to allow fresh material without increasing size of pots, careful cutting of old roots should take place. Plants such as Azaleas, Heaths, and other subjects often require reducing. They must be dealt with carefully ; cutting too deep into the ball might ruin them. A firm surfacing with suitable soil may be all that is needful by some. But when potting is done, let the soil be firmly packed between sides of pots and roots. Careful potting and watering are indispensable with hard-wood plants which grow slowly, and are easily killed : a large proportion of peat is necessary for these plants.

Cinerarias, Primulas, and early Calceolarias may require shifting. They do well in turfy loam and well-rotted leaf-mould mixed with a little sand : keep them cool and in a shady position. More Calceolaria seed may be sown for main late batch. Old plants kept for stock do not answer so well as seedlings. Cinerarias to be divided for cuttings must not suffer from want of water, or be left a prey to vermin. Chrysanthemums must be kept growing freely by being shifted to larger pots as they become ready. When stunted at roots by want of water or pot-room, their lower leaves are sure to become rusty and drop off. Stake them carefully. Flowering and foliage plants to keep the conservatory gay during autumn should now be well advanced and growing freely. Fuchsias drop their flowers readily when stunted by want of pot-room. Plants must be taken carefully from heat to

the show-house; air them by degrees to withstand the change. This applies to Achimenes, Gloxinias, Gesnerias, &c. Stove-plants must not be subjected to drying winds when in the show-house. Plenty of free-flowering plants to keep the structure gay were mentioned last month. In stoves all plants are growing freely. Frequent examination for vermin, keeping the roots in healthy soil, and moisture properly applied, are their chief wants at present. Plants for autumn, winter, and spring display must be frequently examined at their roots to keep them healthy. Pot them as they require more room for their roots. Shut up early with moisture, and give a little air at night. M. T.



#### TABERNÆMONTANA CORONARIA FLORE - PLENO.

As a useful flowering-plant during winter, spring, and summer, this plant should be grown where only the most limited collection of plants can be accommodated. A well-grown plant will not fail to produce hundreds of its delicate pure-white flowers over a long period of time, especially if a little pinching of the shoots is attended to at intervals while growth is being made. Fortunately its flowers are fragrant, which alone should render it as popular as the Gardenia—an evergreen plant it much resembles, both in appearance and in its cultural requirements. It is unquestionably one of the most useful stove-plants that can be grown where button-holes and bouquets are largely in demand. This plant is seldom seen figuring in the exhibition-tent, yet it is worthy of extended cultivation for that purpose; and I am inclined to believe, if employed for exhibiting, it would soon occupy a foremost position. Certainly its blooms do not last long individually, but the succession in which they are produced would more than balance the deficiency in that respect. Another objection I have heard raised against it is, that it will not open sufficient flowers at any one time to render it attractive; but this is a mistake, as sufficient can be produced to give to the plant a white appearance. I have at the time of writing a plant nearly 4 feet through, literally covered with fully expanded flowers, and hundreds yet to open. *Tabernæmontanas* can be retarded and kept back for a long time if not wanted to bloom until later in the season; but this must be done by keeping them in a few degrees lower temperature during winter, and avoiding pushing them forward into growth during the early part of the year. They can easily be trained to make growth either early or late, and thus produce masses of bloom so as to suit the different requirements of various cultivators.

Propagation is effected by means of cuttings, which root freely at almost any season of the year, from the young or half-ripened wood. In the latter condition they are preferable; and no better time can be selected than towards the end of the present month, or beginning

of next. The cuttings can be either inserted singly in thumb-pots, or round the sides of a 5-inch pot, which should be well drained and filled with sandy peat, with a good dash of silver sand over the surface. When inserted they should be well watered, and, if possible, plunged into bottom-heat, and covered with a bell-glass or placed in the propagating-frame. They will root readily enough without bottom-heat if kept close and shaded from the sun, but not quite so quickly. When well rooted, they should be placed into 2 or 3 inch pots, and grown in the shade until established. Under the shade of Cucumbers and Melons is a capital place for them. If well rooted and established in the small pots before winter, a vigorous start can be made the following year, and much valuable time saved when good-sized plants are required quickly. I have always found it advantageous to get an early start in the season, and push forward as rapidly as possible consistent with the nature of the plants to be grown, when large ones are required in as short a space of time as possible. If once checked, or left to look after themselves from time to time, instead of obtaining a rapid growth, it takes a much longer time, if ever a good plant is produced. This applies with equal force to the majority of plants. The small plants should not be allowed to flower when specimens are the object, so that their whole energies may be devoted to the production of wood. When allowed to flower, their progress is considerably impeded, and a much longer time is required in which to produce a good-sized plant. The young plants, when established in small pots, should be wintered in a temperature of about 60°. Towards the end of January, if strong and well rooted, they can be placed in 5-inch pots, and introduced into a little higher temperature than the one recommended for wintering the plants. If in good condition at potting-time, growth should be rapid, and by the end of July or beginning of August they should be placed in pots 2 inches larger. While growing, air should be freely admitted when favourable, so as to produce a strong sturdy growth. The house or frame in which they are grown should be closed early in the afternoon, so as to run up the temperature considerably with sun-heat. The winter treatment is simple, merely keeping the plants in the temperature named, and in a light situation where they can enjoy plenty of room, which is as essential during winter as in summer when growing, if the symmetry of the plants is to be maintained. Potting should be attended to the following year, as the plants require it, giving a 2-inch shift each time, until placed in 12-inch pots, which is large enough to grow a good specimen at least 4 feet through. Potting will scarcely require to be done once a season after the first year; but this the cultivator will be best able to determine according to the progress of the plants and the condition of the roots. It is preferable to repot them twice a-year if they require it, rather than allow them to become checked by being pot-bound, and remaining in that condition during

the winter. At the same time, it is not advisable to leave the second potting until late in the season, or the plants will not pass the winter so well as if thoroughly established in their pots. In potting, the pots should be well and liberally drained, the drainage being covered with a layer of moss before placing in any of the soil, which should be pressed moderately firm into the pots. The old ball should not be disturbed more than is really necessary in removing the crocks or any loose soil on the surface of the ball. *Tabernæmontanas* do well in a mixture of peat and loam, but all peat is preferable, as it keeps in good condition for a greater length of time. The peat should be good, and not of a wet, sour nature, or the plant will not thrive in it long. A few small bones and broken charcoal can be mixed with the peat, with plenty of coarse sand, to keep the whole open and porous.

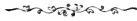
While growing, liberal applications of water should be given both at the roots and upon the foliage. The syringe should be used twice daily, and well applied to the under side of the leaves, which will keep them free of red-spider and thrip. When plants have received their final shift, and well filled the pots with roots, weak stimulants may be freely given. Nothing is better than clear soot-water given alternately with water in which a little guano has been mixed. Careful watering is necessary in all stages, especially for a time after repotting; but in no stage of growth should they become saturated or dust-dry, or considerable injury will be the result. If the flower-buds are advancing, either condition will cause a large number to fall off. During winter, while at rest, they will not require nearly so much water, and may with advantage be allowed to be much drier at the root, but not so as to injure either roots or foliage. Rest is best produced by subjecting the plants to a little lower temperature, say  $55^{\circ}$ , a little more on mild nights, or  $5^{\circ}$  lower during severe weather. No advantages are gained by striving to maintain the temperature of a house to any given degree during winter: many are too particular on this point; and to keep the house right, the pipes are scorching hot one night, and nearly cold another, thus doing more harm than good. The best guide is to maintain the internal temperature in accordance with the external one. This may appear to those who are particular to a degree rather an irregular system, but it is nevertheless a natural one, and plants generally enjoy it, and do well under such conditions.

Very little training is required to produce a good plant, as it naturally grows into a shapely bush, especially if due attention is paid in its early stages of development to pinching the shoots as they require it. At first a few of the strong shoots may be brought down to the rim of the pots. If the plant is grown with a stem a foot or so in length, the shoots will eventually come down as they extend in growth to the base of the pot. Good-shaped plants can be grown from the commencement without tie or stake, if room is allowed them

to grow and develop naturally. When the plant attains a fair size, its growths are very regular all over, and no stopping is required, unless it is done so as to cause a much longer succession of blooms on the same plant. It enjoys a little shade while growing during the hottest part of the day; at the same time, it should have abundance of light. Shading can be dispensed with as growth is completed, so that the wood may be well ripened.

Small plants can be grown in 5 and 6 inch pots, and look well for decoration when bushy. They will flower as freely when small as when grown into larger plants.

WM. BARDNEY.



### SHRUBBERIES.

SHRUBS and shrubberies have become institutions as settled as they can very well be under our *régime* of recurring cold winters, during which the shrubs are emasculated or shortened over, or entirely cut down. The inventor of shrubberies evidently arrived at the ultimate limit of the average human mind with regard to this question; for he has had imitators without number in past times, and they are as plentiful at the present day. There are, of course, minor features of detail to be found, but the main features are alike and unchangeable. The lines for the proposed shrubbery bed or border are laid down, the ground prepared, and the shrubs planted in regular order and at regular distances, like so many vegetables of uncertain breed. Weeds are kept down with the greatest severity, or allowed to flourish more or less, according to the exigencies of the labour power, until the shrubs themselves put an end to the fitful struggle by smothering the unfortunate weeds. And then they begin amongst themselves to fight the battle of the fittest, until an extra-severe winter recurs and thins out the half-smothered tenderlings; and for a few years longer the Laurels and Yews have peace, and the Hawthorns and the Lilacs revel in plenty, and give an abundant return of sweetest odours, until these now large monsters approach and touch each other, and are choked for want of air above and food beneath; when some day—as no amount of rough pruning will prevent their straggly limbs from being seen—the whole are decapitated, and a fresh lot of youngsters are set in amongst them to fill the spaces, until the rapidly growing giants again assert themselves, and the smothering process is renewed. With variations these processes are going on throughout the length and breadth of the country. Landscape-gardeners, with their carefully prepared plans, may fill in their shrubberies with plants, some of which are to be permanent in their occupancy, and the greater number tenants at will; but the worst of these arrangements is that the “padding” is never removed, and the shrubbery when full-grown is only a mass of crowded specimens; and all along the newly planted groups are treated in the

light of a portion of the garden, to be kept as tidy as possible through a free use of the hoe, and sometimes of the rake. There are few things which strike one so painfully on an estate as this matter of large shrubs huddled together, and killing each other. There is no reason whatever that it should be so: shrubs are not like a forest of trees grown to produce the greatest amount of saleable produce in a given amount of space; shrubs are grown either as blinds or screens, or as features of ornament, and one and all of these ends can be fully gained without working on the rough-and-ready principle, which has nothing to recommend it other than covering bare soil quickly in the first place. But here again there is no reason for shrubs to grow in a bed of bare soil. Where thorough preparation of the soil is necessary, by all means let it be made, but not to the length of making and keeping the shrubbery like a small nursery. After shrubs have once got a grip of the soil, they flourish quite as well with ground covered with grass round them and kept mown, as they do when growing in a bed of bare soil. But these matters apart, the principle of crowding shrubs together is not a good one. In old places where this system has been in practice for many years, and where shrubs are grown closely together, change is not easy; but wherever alterations are in progress, or new grounds are being laid down, there is an opening for something better for the shrubs. Shrubs are not treated with sufficient breadth; they are tolerated, as it were, as necessary evils, so much space being marked out for them in certain positions, without thinking of the ultimate effects. They are huddled into corners as blinds, and dibbled together in lines or groups as screens, in as little space as possible, to get them to do well for a few years. The ground for shrubs is as niggardly dealt out in policies of tens or hundreds of acres, as if the whole belongings of the place were included in units. Why should this be? Surely a shrub, healthy and well developed, is in itself an object of beauty, as much as is a tree or a tiny flower. Why, then, not allow more space to our shrubberies, more room to our individual shrubs, dotting them, as it were, in groups of single specimens on lawns, with grass underneath and around them, and space sufficient when well grown to allow us to walk in and out amongst them? and with shrubs as blinds it only amounts to granting a little more space, so that they may not be crushed up against buildings or walls, but allowed sufficient room to develop naturally. There is also this practice to be noted, of planting valuable Coniferæ amongst the commoner shrubs. In all such cases, unless the shrubs are entirely cleared out and the Conifers left, this practice means certain destruction to these. Then there is another practice which cannot be recommended, the mixing of dwarf-growing shrubs with those of coarse and quick-growing habit. This is just as bad in its way as the last-mentioned. These refined little fellows should have places by themselves, just as we try to keep our dwarf-growing flowers from getting overgrown by

coarser subjects. Flowers in shrubberies are not in their most becoming positions; and though we have them there, besides many other objectionable features to contend with, the thing we should like to see would be an entire remodelling and rearranging of the place which shrubs occupy in the garden. The subject is worth thinking over.

R. P. B.



#### CULTIVATION OF THE GOOSEBERRY IN THE NORTH OF ENGLAND.

THE Gooseberry is generally supposed to be indigenous to the island of Great Britain; but whether this be so or not, there is certainly no country in which it arrives at a greater degree of perfection than in the British Islands. It is always found to flourish best in temperate climates, and where the climate inclines to cold rather than warm. It is not found, for instance, in Africa, in the South Sea Islands, or between the tropics of either hemisphere, but is found in the temperate parts of Europe, America, and Asia. In the southern and central parts of Africa the plant is perfectly unknown, except in some situations where, among the high mountains, the temperature is low enough to suit its requirements. Persons who have resided a long time in India, and who during that time had never seen a Gooseberry or Currant, speak with delight of the European character which these plants give to the scenery of the mountains in the north of that country.

It is not exactly known when the Gooseberry became an object of cultivation in this country, but it had become a garden fruit in the reign of Henry VIII.; for the old writer Tusser, who lived in that reign, says, in his 'Five Hundred Pointes of Good Husbandrie,'—

“The Barberry Respes, and Gooseberry too,  
Look now to be planted as other things do.”

Soon after this period descriptions were given of about a dozen varieties—and among the rest, one called the *Blue*, a colour not now found among the hundreds of varieties in cultivation. The fruit was apparently very small when the plant was first brought under cultivation, resembling the small tasteless fruit which is still found in the south of Europe; and in point of size, at least, it does not appear to have improved much for more than a century after Tusser's time, as may be inferred from the surprise expressed by Pepys at seeing Gooseberries as big as nutmegs. At every subsequent period (says an interesting and useful little tract, called 'The History and Cultivation of the Gooseberry,' printed at Sheffield, and from which much of the information in this article is taken) the Gooseberry has claimed a share of attention from horticulturists. It has found a place alike in the garden of the nobleman and of the cottager, and has amply rewarded



by its abundant and profitable produce the skill of the gardener, and by its increased size the care of the amateur grower. Indeed, the success which has attended its culture under the spare hours of the artisan seems to entitle it to the distinctive appellation of *the poor man's fruit*.

It has been ascertained that under favourable circumstances the Gooseberry will attain to a considerable age and grow to a great size. Bushes have been grown to measure from twelve to eighteen yards in circumference after being planted about fifty years. The garden of Sir Joseph Banks, at Overton Hall, near Chesterfield, contained at one time two remarkable Gooseberry plants. They were trained against a wall, and the branches of each measured upwards of fifty feet. In this country the plant shows a marked preference to cool situations. The fruit in the southern parts of England is not nearly so good as it is in the north, and in general the flavour of the Scotch Gooseberry is much superior to those produced in any part of England; while in Scotland itself, the Gooseberries grown about Dundee, Aberdeen, and Inverness, exceed in flavour those grown in the southern counties.

As far as regards mere size and appearance, however, the Gooseberries of Lancashire are unequalled by any in the world. Growers there have devoted so much attention to them as to have attained to almost absolute perfection in the matter of their cultivation. In the counties of Lancashire, Cheshire, Staffordshire, and Warwickshire, the striking improvement which has taken place in the cultivation of the Gooseberry is to be attributed less to the professional gardeners or market-gardeners, than to the mechanics who very generally spend their leisure time in the pleasing occupation of gardening, and particularly in the culture of the Gooseberry; and it is to their industry and perseverance that we owe the production of most of our largest and best varieties. The custom of gardening has a tendency to improve both the health and the morals of the people. Any pursuit which makes men acquainted with the peculiarities of vegetable economy, in however small a degree, has a beneficial effect upon the heart and understanding; and it is certainly better for working men to vie with each other in raising large Gooseberries, than in those games of chance, and in cruel sports, to which the leisure hours of the working classes have been too often devoted. The one is a rational and innocent emulation, the other a degenerating excitement or a brutal indulgence.

The origin of the different kinds of Lancashire Gooseberries is often indicated by their names, which are generally fanciful, often local and personal, sometimes even absurd, but frequently characteristic of the manners of the county in which they are produced. Galloper, Green Corduroy, Tom Joiner, Lancashire Witches, Dan's Mistake, Roaring Lion, Richmond Lads, Cheshire Lasses, Jolly Miner, Porcupine, Jolly Painter, Top Sawyer, Crown Bob, &c., are sufficient specimens. It is not to be expected that so much attention should, however, be given

to the cultivation of the Gooseberry in the counties named without the operation of some external stimulus; therefore Gooseberry shows have long been established in different parts of Yorkshire, Lancashire, and Cheshire. The time and conditions of these meetings are determined by certain rules, and the minor details of each show are generally settled in the spring, from which time until the day of the exhibition each competitor entered in the list subscribes a small weekly sum towards the purchasing of prizes. The prizes are sometimes given in money, but often in kind. The exhibition of the fruit, and adjudication of prizes, generally take place in July or August, and the weight of the different sorts is published in the report of the shows given in the newspapers of the town where the show has been held, while the result of the shows in various parts of the kingdom have for a long time been printed in Manchester, and circulated chiefly among the growers, in what is called 'The Gooseberry Book.'

We may now state a few particulars to illustrate the progress which has been made in the cultivation of the Gooseberry. About a century ago it was considered an extraordinary thing when a Gooseberry was grown which weighed down the old spade-ace guinea which was then in circulation. Berries were soon after produced that weighed twice as much; and now, little would be thought of show fruit which would not weigh five or six times as much. The largest Gooseberry on record was a handsome yellow fruit called Teazer, which was shown at Stockport in July 1830, and weighed 32 dwts. 13 grs. The heaviest red berry on record was the Roaring Lion, exhibited at Nantwich in 1825, and weighed 31 dwts. 16 grs. The heaviest white was a fruit of The Ostrich, 24 dwts. 20 grs., shown at Ormskirk in 1832, in which year the largest red was only 27 dwts. 13 grs. In the same season a seedling green was exhibited at Nantwich of the weight of 30 dwts. 18 grs. To this statement of the weight to which the fruit has sometimes been grown, it may be of interest to add that a seedling plant of reputation has been known to produce when sold upwards of £32. This is a rare case; but it is not at all unusual for twenty guineas to be brought in by the distribution of a single bush.

J. G., W.

### STRAWBERRIES.

By the time these notes are seen in the 'Gardener,' many Strawberry-growers will be thinking more of gathering their crops than cultivating their plants; but details of the latter should closely follow the operation of the former; and it will generally be found that July, August, and September are important months for Strawberry-culture. It is then that old plantations must be restricted in growth, good young plants secured, and fresh plantations formed. All the best Strawberries in the garden here are had from plants from six to twelve

years old. Indeed they are so old that every year we think of rooting them out and throwing them away; but they always fruit so well again that all thoughts of the kind are given up. Some growers may differ from us in keeping such old plants, as we know there are many who renew their Strawberry plantations every two or three years; and in some cases we think this wrong, as it gives much labour and not much better crops than would be had from the same plants were they allowed to grow on the same place for many years; and when established plants are bearing a full crop annually, the young ones always being brought forward are not doing anything like this, as two years or so passes before they come into full bearing, and a full crop for one year only is about all that is had from them under such a system. I feel very certain, from experience and observation, that this is not the best mode of growing Strawberries in either large or small quantities, and would advise as a rule that they be left so long as they bear well, whether this be for a period of six, eight, or ten years. At the end of any of these times the crop, so far as number goes, will be better than it was in their best juvenile days, but the fruit individually may not be so large. This, I think, is the only objection which can be raised against old Strawberry plantations; and there is nothing very substantial in it, as we all know that in flavour, which is the weighty point, medium-sized fruits are generally superior to the monstrous samples; and for preserving, the medium-sized are always preferred.

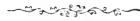
If Strawberry plantations are intended to last in good bearing order for many years, they must be looked to oftener than just when they are in fruit, which in many small gardens is the only time they receive much attention, and before and after they are allowed to become one mass of weeds. Such a state of matters is the surest way to cause degeneracy that any one could possibly practise; and those who have formed ideas of the error of keeping Strawberry plants until they are well up in years from plantations of this kind, should not be too positive in their conclusions, as it is not to such plantations that I refer, but to those which have always been kept clean and free from weeds from their youth upwards, and which receive the same cultural attention as any other permanent crops. In both young and old plantations, weeds will now be inclined to grow freely, and runners will be choking up the parent plants. These, if allowed to remain on after the fruit has been gathered, will do much harm, as they deprive the old plants of much of their strength, shade the main crowns up from the sun, and cause them to be tender and sterile. When kept clean, free, and open, the reverse of this happens: the crowns develop strongly, and reach that state of maturity which will preserve them through a severe winter, and cause them to fruit early, profusely, and perfectly the following season. It is not any attention which may be paid them a month or two before they fruit next year,

but rather their treatment from now on to the end of the next three months, that will be the means of producing a superior crop. Exposing the crowns well now, keeping them free from superfluous runners and weeds, placing a thin coating of manure between the plants where the soil is becoming poor, and hoeing the surface soil occasionally, are a few of the means to be employed to insure success in following years. Plants treated in this way now may want looking to a number of times before the winter, but after that they will be safe, and will need little or no more care until weeds and runners come again about this time next year. Mulching may be done with two objects—one, to improve the soil and plants, the other, to keep the fruit clean; or the two reasons may be combined, and mulch to secure all these benefits,—and in this case September or October is the time to do it. Some use their grass-cuttings for putting round their Strawberry plants, and others use short straw or hay; and both of these materials answer very well for keeping the fruit from mixing with the soil, but further than this their usefulness does not extend, as there is no fertilising properties connected with such materials to any extent. For this reason we do not care to use such mulchings, but prefer stable-manure for the purpose. A mixture of straw and droppings is excellent. When put on in autumn, the fertilising parts are well washed down to the roots during the winter, and only the clean straw remains by fruiting-time. Under this system the surface of the ground about the plants is constantly covered; and this does no harm in wet but great good during dry periods; and hoeing can hardly be done, but hand-weeding may be resorted to.

In forming new plantations, many advantages follow when the plants are carefully prepared previously. All our young Strawberry plants for the open quarters are rooted in small pots in the same way as is done to get young plants for pot-culture. All the strongest runners are layered into 3-inch pots early in July. By August they have formed nice little balls of roots; and then they are planted out, when they receive no check, but proceed at once to grow; and by October they are often as fine plants as many would be at the end of the second year if they were dug up from amongst the old plants in August and planted then, as is the common practice in making new Strawberry-beds. Beds I have said, but this term should not be used, as Strawberry-beds are now out of date. The improved plan, and the one most worthy of being followed, is the style of planting row after row without any formation of bed. 18 inches between the rows, and 1 foot from plant to plant, is a profitable distance at which to plant most sorts. Previous to planting, the ground cannot be too well prepared. Moderately heavy is preferable to light sandy soil. If good, depth is not of so much consequence—from 1 to 2 feet being suitable. To these depths, or more, it should be trenched, rough manure being placed at the bottom, and good substantial stuff near

the surface. In this, growth will be free and lasting. Of kinds, each has his favourite. Ours for early crops is an old sort, which many might laugh at, but with which we have most reason to be pleased—the one we mean is Black Prince. For pot and outdoor culture this variety is an excellent one. None bears more freely, or ripens quicker at mid-winter and early spring; and out of doors it is earlier by some weeks than any other sort. Here we have been gathering it from the open border since the 24th of May. The fruit are about the size of the berry of a Gros Colmar Grape when fully swelled, in colour very dark, and flavour superb. For dessert and preserving it is highly valued. Keen's Seedling is another good old sort. President is well worth growing; and James Veitch and Dr Hogg are other useful sorts. Bothwell Bank Prolific, a new sort which we have had lately from Messrs Dicksons & Co., Edinburgh, is the best of all for exhibition purposes, as in size of berry it is enormous, and its other qualities good.

J. MUIR.



## GREENHOUSE PLANTS.

### NO. V.—THE PIMELEA.

THE plants belonging to this genus are elegant evergreen dwarf shrubs; the majority of them are of a compact habit of growth, forming handsome symmetrical specimens without the aid of stakes or other supports. In this country their flowering season is during the spring and early summer months. The flowers are borne on the points of the shoots, and when the plants are healthy almost every shoot will produce flowers.

At one time several species of the Pimelea were to be seen in all places where plant-growing was carried on with spirit in this country. At the present time, however, it is only from a few plant-exhibitors that the Pimelea receives the amount of care and attention that its beauty as a flowering-plant deserves. Three or four species of Pimelea rank amongst the very best of plants for exhibition purposes; hence, as a rule, we see one or other of them in the winning collections at our spring and summer flower-shows. Their merits, however, are not confined to the exhibition table, as they are very useful and highly effective when used for the decoration of the greenhouse or conservatory, and whether of a large or comparatively small size, are valuable for the latter purposes. One thing that should cause the species of Pimelea named at the end of this paper to be more generally cultivated than they are at present, is that they are not difficult to manage, their cultural requirements in all stages of their growth being simple, and easily attended to by any one who takes an interest in plant-culture. To succeed, however, in growing these plants successfully, the cultivator must supply them in due time with whatever is essential to their wellbeing, otherwise the growth of the plants will be unsatisfac-

tory to him. It matters not how simple the conditions necessary to success in the cultivation of any plants are—unless they are supplied at the right time, the plants will suffer in health through the omission ; and plants of the *Pimelea* are no exception to this rule.

Points to be observed in the culture of the *Pimelea* are, that the plants in all stages of their growth should be placed in an airy position as near to the glass as possible, and should not be shaded except when in flower, or in the case of extra bright sunshine. They should be kept free from insects at all seasons. Red-spider, however, is the only insect that affects them seriously, and it must be kept down by occasionally syringing the plants with cold water in which a little soft-soap has been dissolved. The plants must not suffer from want of water at the roots, neither must the soil about the roots become saturated or "soured" by an over-supply of water or defective drainage. Hence, in the matter of watering, the cultivator should exercise considerable care, and only give sufficient for the requirements of the plants at the different stages or seasons of their growth.

Once in two years is often enough to repot established plants of the *Pimelea*, and the time to do so is soon after they have done flowering for the season. When they become large, they will, with the assistance of weak liquid-manure, given once a-week during the season of active growth, remain healthy and flower abundantly for several years without repotting. The *Pimelea* succeeds in a compost of peat and sand, or in one of loam and sand, in the proportion of 3 parts in bulk of the former to 1 of the latter. Peat, however, of a good fibry kind, is, in my opinion preferable to loam in which to grow the *Pimelea*. Some cultivators recommend a mixture of peat and loam as compost for the *Pimelea* and several other hard-wooded plants ; but I have never been able to discover the benefit arising from the practice, nor understand the theory on which it is recommended. When repotting the plants, they should be supplied with an adequate amount of drainage, and the fresh soil made as firm as possible during the process, remembering not to fill the pots over full.

The *Pimelea* is increased by seeds or cuttings, the latter being the method in general practice. Half-ripened shoots, about 2 inches long, inserted in silver sand and covered with a bell-glass, and treated in a similar way to Heath cuttings, root freely. It requires three or four years, however, from the time the cuttings are rooted until the plants are of a useful size ; and consequently it is better to purchase plants in a flowering state from a nurseryman, than to raise them from either seeds or cuttings.

The five species of *Pimelea* named below are, in my opinion, the most desirable to cultivate, and when properly treated are sure to please the cultivator.

*P. elegans*. This species blooms in April and May. It is a strong grower, producing large heads of flower of a creamy-white colour.

*P. decussata* blooms from April to July. It is a very free-flowering species. The flowers are pink in colour, and the plant is a robust grower.

*P. Neippergeana*. This is a compact-growing species, with white flowers, and blooms in April and May.

*P. spectabilis rosea*. This is a very ornamental kind, the flowers being large and of a rose colour. It is a free grower, and plants of it soon attain to handsome specimens.

*P. Hendersonii*. The flowers of this species resemble those of the former in colour, but they are not quite so large. It is a very desirable kind, however, and if kept free of red-spider, is a handsome and striking plant when in bloom.

J. HAMMOND.

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## BOTANY FOR GARDENERS.

### NO. VIII.—FRUIT.

THE FRUIT is, in the strictest sense of the word, the matured pistil; but Lindley says the term is also applied to the pistil and floral envelopes taken together, whenever they are all united in one uniform mass. The different forms and general characters of the various fruits are very interesting, and are very apt to become stumbling-blocks to many a beginner, as some are so much like seeds, and in some cases seeds are so much like fruits, that at first it is difficult to discern one from another, or, as a Cockney would express it, “t’other from which.”

“As the fruit is the maturation of the pistil, it ought to indicate upon its surface some traces of a style; and this is true in all cases, except Cycads and Conifers” (which, as I said on page 226, have their *ovules* exposed), “which have no ovary. Hence it will be at once seen in the case of grains of corn, and many other bodies that resemble seeds, traces of the style can be seen, so that they are not seeds, but minute fruits.” Seeds are almost invariably contained in a seed-vessel called the *pericarp*, which may consist of the ripened ovary only, or, in the case of the ovary being inferior, of the calyx-tube combined with the ovary. When the pericarp opens, it is said to *dehisce*; when it neither opens nor splits when ripe, the fruit is termed *indehiscent*.

All fruits are simple or multiple—a single fruit results from a single flower, or a multiple of fruits from a multiple of flowers. The numerous forms of fruit may be classed among the following, viz. :—

**SIMPLE FRUITS.**—(1) *Achene*—apocarpous, dry, indehiscent, usually one-seeded, and does not contract any degree of adhesion with the integument of the seed. *Ex.* Buttercup, Rose, Strawberry. (2) *Nut*—a dry, bony, indehiscent, one-celled fruit. *Ex.* Hazel, Acorn. (3) *Drupe*—usually apocarpous, succulent, indehiscent, and one-seeded, with the inner layer of the pericarp stony. *Ex.* Cherry,

Almond, Peach. (4) *Berry*—syncarpous, succulent, whose seeds lose their adhesion when ripe, and lie loose in a pulp. *Ex.* Gooseberry, Currant, Grape. (5) *Capsule*—many-celled, dry, dehiscent, syncarpous. *Ex.* Primrose, Tulip, Violet, Horse-chestnut. There are a great quantity of minor forms that present familiar instances. The following are some of the most familiar, viz. :—

(1) *Pome*, Apple; (2) *Etverio*, Bramble; (3) *Pyxis*, Anagallis; (4) *Cremocarp*, the Umbelliferous tribe; (5) *Pepo*, Cucumber; (6) *Balausta*, Pomegranate; (7) *Cone*, Pinus; (8) *Galbulus*, Juniperus, &c.

The fruit of the Mulberry may be taken as excellent examples of collective fruit.

Of the many forms of fruit, one of the very curious is the edible portion of the well-known Strawberry; and if the reader will just take one in his hand, he will at once detect little longish spots. These are the true fruit, or, more technically speaking, *achenes* (aforementioned). The portion eaten is simply a common receptacle for the true fruit. The chief difference between the Strawberry and Blackberry is very apparent, as the carpels of the latter are succulent, and not the receptacle as in the case of the former. The Raspberry is almost identical with the Strawberry.

Many readers of this magazine would no doubt like to see for themselves flowers gradually merging into fruit. If so, let them take *particular* notice of a certain plant of the common Buttercup (*Ranunculus repens*) when in full flower, and every day for some time, and they will gradually perceive its slowly approaching fruit; first the petals and then the stamens will go, leaving nothing but the *carpels* (pistils), which are gradually going into fruit. Each fruit has a peculiar elaboration of its own to perform; for though the fluids afforded by the branches and leaves be nearly similar, yet each fruit differs from another in fragrance and flavour. Six different varieties of the Peach and of the Apple, budded on the same branch, still retain unaltered their times of ripening, and their distinctive colours and flavours. The processes going on at different periods of a fruit's growth are very opposite in their character. During their green and growing state they are usually converting gummy matter into an acid, but during ripening they as commonly are converting an acid into sugar. To convert gum or mucilage into tartaric acid, as in the early growth of the Grape, oxygen in excess should be absorbed, for their relative components stand thus :—

|                     | Gum.  | Tartaric acid. |
|---------------------|-------|----------------|
| “ Carbon, . . . . . | 43.23 | 24.05          |
| Oxygen, . . . . .   | 50.84 | 69.32          |
| Hydrogen, . . . . . | 6.93  | 6.63”          |

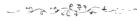
“They might therefore be expected to absorb more oxygen than the leaves, and this is actually the case; for though a Vine-branch will continue to vegetate in a glass globe hermetically sealed, yet the



Grapes upon it will not increase in size unless oxygen gas be from time to time admitted. The same phenomenon occurs during the ripening of the Grapes; oxygen has to be absorbed during the conversion of tartaric acid into sugar, but a larger volume of carbonic acid has to be evolved, and this is coincident with the results of well-established experiments, uniformly testifying that carbonic acid is given out abundantly by ripening fruit."

The forms of fruits we are presented with are innumerable, both in shape, size, and many other characteristics. A very curious one is that of the *Pandanus odoratissimus* (!), whose fruit, we are told, when ripe, explodes with great violence, and sometimes inflames spontaneously when dispersing its seed. Of our native British plants we have *Balsamina noli-me-tangere* and *Cardamine impatiens*, both of which have elastic seed-vessels, which immediately discharge their contents by sudden collapse or recoil of their valves, and the contact of a fly is quite sufficient for this purpose. W. ROBERTS.

(*To be continued.*)



#### HARDY PLANTS IN AND OUT OF DOORS.

WE are in the habit of comparing, rather unfavourably, our hardy plants with our indoor exotics, looking upon the former as coarser than the latter, and less attractive generally; but the comparison is not a fair one. No doubt a plant grown out of doors, exposed to all weathers, looks a little less delicate than one grown under glass and by the aid of artificial heat, just as fruit under glass takes on a more delicate bloom and finish; and in comparing the flowers of the border with those of the hothouse, this should be remembered. It should also be borne in mind that many of our hardy plants, in fact the most of them, are also exotics, existing under, to them, unfavourable circumstances in this country, although succeeding well enough for ordinary decorative purposes. Take the common *Geranium*, for example. In the mass out of doors it does show well enough; but do the individual flowers equal those grown under glass in size and lustre? No: and it is the same with all hardy plants, or nearly all; and there are many that are never seen in perfection except when forced, of which the common *Spiræa japonica* and the *Dielytra spectabilis* are good examples. Neither are like the same plants when forced, or even just protected from the weather. The plant is larger, the leaves of a more delicate hue and more perfect, and the flowers altogether superior. Before the *Spiræa* began to be forced, no one had any idea what a grand thing it was, and it required to be seen well grown and flowered before gardeners would believe in it. We remember it being tried for the first time many years ago in a garden in Scotland, on the recommendation of a party

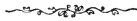
who had seen it in fine condition ; but, as the plants forced had not been properly prepared, the result was disappointing, and the pot-culture of the plant was discontinued at the time. To see the *Spiræa* in perfection as well as in quantity, one must visit Covent Garden on a morning, or the window-boxes in front of the mansions of the West End, where plants in small pots, bearing numerous feathery spikes of flower of large size, attest the beauty of the plant under protection.

Practically speaking, some one may perhaps ask, What inference is to be drawn from these facts ; or if it be proposed to transfer our hardy plants from the garden-border to the hothouse, in order to grow them to perfection ? to which the answer is No, of course ; but it is undoubtedly practicable, as well as highly desirable, to cultivate hardy plants under glass in certain cases more than has yet been done. There are numbers of people possessing, perhaps, one or two glass-houses filled with the usual assortment of indoor plants, that would have far better success and satisfaction with a collection of hardy plants, that would cost much less to begin with, and be far more easily grown and flowered. Such thoughts as these have forced themselves upon visitors to the spring and early summer shows on many occasions within the last few years, since collections of hardy plants have grown to be a feature of exhibitions. These collections, as can be seen at a glance, have not been grown out of doors, but in cool frames or houses for the occasion, and the display is proportionately fine. At some of the late exhibitions the show of hardy plants was second to none, not even to the Orchids, which beat them in the unique character and colouring of their individual flowers, perhaps, but not in variety and general effect—did not equal them in the latter respect, indeed. The display was rich in the extreme, as the plants were well grown and flowered, and tastefully arranged, but without any set-off except their own foliage. There were brilliantly coloured Phloxes, Primulas, Saxifragas, red, white, and blue Lupins—the latter grand plants in small pots, foliage and flowers perfect—Pyrethrums, double and single, some of the latter very conspicuous by their broad star-like flowers of intense crimson colour and many other shades—Campanulas, *Spiræas*, *Potentillas*, *Aquilegias*, *Wall-flowers*, *Iris*, *Liliums*, *Narcissus*, *Funkias*, and many other things, presenting nearly every bright or pleasant shade, and all varieties of form. Such collections give one an excellent idea how rich and effective a flower-border of such plants may be made by a judicious selection of such subjects. The varieties of hardy plants are innumerable almost, but those which have only a botanical interest are not wanted in beds of pretty flowers. The botanical garden which displays the original types of the different species looks very different from a collection of the same species represented by its cultivated varieties, as a rule ; for there are, of course, numbers of original forms that are also attractive and showy. The cultivated and improved hardy border-flowers stand in nearly the same relation to their primo-

genitors that the cultivated Carrot or Cauliflower does to the wild type of their class.

All hardy plants, or nearly all, may be cultivated with great ease in pots either in the border or in the frame or the greenhouse, and the least assistance in the way of protection brings them into flower long before they would flower in the open border,—hence they form an excellent adjunct for conservatory decoration. *Iris reticulata*, for example, displays its beautiful flowers in mid-winter or earlier in a cold pit; and numbers of other varieties come in proportionately early. The mere protection of a hand-light or a *cloche* will cause many spring flowers to bloom long before their time; and if they are in pots, they may be lifted and placed in either the greenhouse or the window. In short, spring flowers bloom, when protected, in winter; summer flowers in spring; and autumn ones in summer. Without exception, one of the finest window-plants we ever saw was an *Anemone japonica alba*,—a large plant that stood on a stand by itself in the bay-window of a drawing-room, where it had grown, and flowered in July. The foliage was as large and green as that of the Vine indoors, and quite spread over and hid the pot, and the flowers were larger and purer than they are even seen outdoors. The plant stood in the window of a mansion on the promenade of a seaside town, and numbers of people stopped to look and admire the fine specimen, wondering at the same time what it was, and many going away no doubt in the belief that it was some rare and little-known plant. It is noticeable now, however, that hardy plants in pots are a greater feature of the market-growers' stalls than they used to be. Anemones and Primroses are common, and the pretty *Iberis corifolia* is becoming a favourite, being of a compact habit of growth, and a great improvement on the old variety.

J. S.



## NOTES ON DECORATIVE GREENHOUSE PLANTS.

### IMANTOPHYLLUM MINIATUM.

THE above is a plant that no collection, however small, should be without one or more of; it is one of the most serviceable greenhouse plants we have, either for house, table, or conservatory decoration, and a well-flowered specimen is unsurpassed as an exhibition plant. With proper management it can be had in flower at almost any time of the year, and with relays of plants, forced on at sufficient intervals, or retarded, as the case may be, they may be had in flower all the year round. Though it stands forcing well, and, indeed, is often grown in the stove, it is in reality a cool greenhouse plant. It belongs to the order *Amarallidacæ*; but, like the *Vallota purpurata*, is evergreen. The leaves are of a deep green, broad and stout at the base, and slightly tapering

towards the point ; they are arranged in two rows, springing from the bulb, and are about 2 feet long. The flowers are borne in umbels of from ten to twenty blossoms on a stout stem, which rises from the centre of the leaves to about the same height. Each flower is about 2 inches across the mouth, of a deep orange colour, somewhat shaded with vermilion. The plant may be either grown from seed or increased by division of the roots : the latter method is that generally adopted, and is the best where it is desired to keep the variety pure ; as, like most other plants, they have a tendency to vary when grown from seed. Good strong bulbs, planted singly in 5- or 6-inch pots, make most desirable plants for house or table work, or for vases, for which it is admirably adapted ; and of course, if specimen plants are desired, a number should be arranged in large pots, suiting the number to the size of pot. They are robust, strong-rooting plants, and therefore require good strong soil, and plenty of water during their growing season. Good fibry loam, with a sprinkling of sharp sand, and some old cow-manure incorporated with it, will suit them well ; or a compost consisting of equal parts of loam and peat, with a handful of bone-meal and a due proportion of sand, will suit them equally well. In wintering them they should be kept as nearly as possible in a temperature of from 45° to 50°.

#### THE BLANDFORDIA.

The *Blandfordia* constitutes another genus of greenhouse plants which have gone out of fashion and become neglected, and yet there is hardly any more showy plant in cultivation, or one that will better repay the very little care that is required to grow it. We are glad to see, however, that the taste for this kind of plant is again reviving, so that one does occasionally come across a plant or two of it. The *Blandfordias* are all natives of the Australian continent, and were so named in honour of the Marquis of Blandford. They are all bulbs, and require much about the same kind of treatment as that given to *Amaryllis*. They shed their leaves in the autumn, and can then be stored away under the greenhouse stage, or other suitable place, for the winter. They are increased by offsets, or can be raised from seed. The soil suitable for growing them consists of loam, peat, and sand in due proportions. The best time to repot them is immediately after they have done flowering, and they should be watered sparingly until they take possession of the fresh soil. Ordinary greenhouse temperature suits them very well, unless when they are beginning to push out fresh growth, when a slight increase of both heat and moisture will be to their advantage. When in full growth they require a good supply of water ; the pots should therefore be well drained, so that the surplus water may easily run off.

There are several varieties of the *Blandfordia*, but *B. Cunninghamii*, *B. flammea*, *B. grandiflora*, and *B. nobilis* are about the best among

them, yet they are all well worthy of being added to the most choice collection of greenhouse plants. They are grand objects when in flower for the decoration of entrance-halls, staircases, and conservatories; the intense brightness of their flowers, being bright scarlet margined with yellow, enliven and light up any arrangement of plants with which they may be associated.

J. G., W.

#### EFFECTS OF LAST WINTER'S FROST ON EVER-GREEN SHRUBS.

ONE of the first questions asked of one another by gardeners when they meet this season is—Are your shrubs much injured by the severe frost of last winter? And as a rule the answer is in the affirmative.

The winter of 1880-81 will be long remembered as one in which great numbers of evergreen shrubs were destroyed by the severity of the frost, leaving sad blanks, that will take years to make good, in the shrubbery-borders and pleasure-grounds of many of the gardens of Great Britain.

Had the summer and autumn of 1880 not been exceedingly favourable to the maturing of the wood or growth of all kinds of trees and shrubs, there would have been a still greater number of deaths amongst the latter to enumerate this season. As it is, however, the number of dead and injured is large enough, especially amongst a few genera that are usually placed in the list of choice shrubs. At this place we are within the influence of the moist breeze that blows from the Irish Sea, and therefore the average winter temperature is a little higher than further inland; consequently, some kinds of evergreen and other shrubs that barely live out of doors thirty miles east of here, succeeded admirably with us up to last winter. On several occasions, however, during the past winter, the temperature here was down to zero, and on one occasion  $4^{\circ}$  below zero, or  $36^{\circ}$  of frost, the result being that a few kinds of shrubs are killed outright, several injured to such a degree that they are unsightly, and will have to be cut down or removed altogether, while nearly all kinds have suffered to some extent.

The kinds injured past recovery are Laurustinus, Sweet Bay, and Arbutus. Of these we had a number that were planted about ten years ago, and were in a very healthy state when overtaken and vanquished by the severe cold of last winter. Common Laurels, Aucuba japonica, and several kinds of hybrid Rhododendrons are much injured. Many plants of the former that had withstood the rigours of at least forty previous winters are killed down to within a short distance of the ground, and at the present time their appearance is not of an ornamental kind, and they will have to be removed. Portugal Laurels have also suffered, but, on the whole, the injury to them is not so great as in the case of the other plants mentioned.

It is instructive to note the different effects of a low temperature, such as we had last winter, on the same kinds of hardy shrubs growing under different conditions as regards shade and shelter. In the case of those growing here in sheltered and moderately shaded situations,—in fact, in situations where, to judge from the luxurious appearance of the plants, the conditions were favourable to longevity,—they have suffered more from the effects of the frost than those exposed to the full force of the wind. This is no doubt in consequence of the wood of the latter being better ripened, through more exposure to the sun and air, than in the case of those growing in more sheltered and shaded situations. It is pleasant to see that there are some kinds of choice evergreen shrubs that have got through the past winter without suffering any apparent injury from the intense cold that prevailed. Amongst these the different kinds of *Retinospora* are conspicuous. These plants are not very common in our shrubberies as yet, but as they have got through the late winter almost uninjured, they will in future be planted in numbers in all places where choice evergreen hardy shrubs are appreciated. *Cupressus Lawsonii* and *Thuja Lobbii* are also uninjured, and both deserve to be planted extensively for their ornamental appearance.

J. HAMMOND.



#### ASPARAGUS.

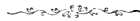
As surely as the seasons revolve in their annual rotation, we have brought under our notice various observations about how best to grow Asparagus, and whether it really is a plant that sends its roots deeply into the soil. Some say it is a very deep-rooting plant, consequently requiring a deep soil in order to produce the best crops. Having seen very different ways of preparing the soil for this esteemed vegetable, and results equally different, I will not here detail these various methods, but simply make a few remarks founded on my own experience and observation.

I have seen acres of Asparagus raised from seed sown on a free loamy soil that had been previously well manured with stable-manure. If May and June prove moist, the plants get a good start, and make splendid plants the first season. As to their rooting deeply, I have, on the other hand, observed that three-fourths of the roots run nearly horizontally from the stems, and only about a fourth of them go directly downwards; and by the end of the first season's growth the horizontal roots were found in whorls from 18 inches to 2 feet long, the majority of the plants having formed several crowns ready to start into growth the following season.

In preparing the permanent beds, it is not necessary to raise them more than 6 inches above the ordinary level. The depth of artificial soil that it may be found necessary to add depends entirely on the

nature of the soil, and more especially the subsoil. If it be clayey and retentive, drainage is of the first importance, and must be efficiently performed, or Asparagus will not last long in good condition on it. If the soil be poor, shallow, and gravelly, it is necessary to success that the staple be deepened with light loamy soil and manure, or the crops will be poor indeed. Anything like good crops need not be looked for unless the staple be at least 18 inches deep; and if it consists of good loamy soil, and about a fourth of the whole of well-rotted manure, all the better. The whole should be thoroughly well mixed, and placed in the beds a few months before planting-time, so that it subsides gradually. Some plant in single rows, others in beds; and, all other things being equal, there is not much difference in the result. I have seen excellent Asparagus grown in 5-foot beds, having 18-inch paths between. In these beds six lines of plants were planted. Instead of laying the roots on the surface, and covering with the soil out of the paths, or artificial soil, I prefer making a little trench for each line, and letting the roots in rather deeply; for if a dry time occurs after planting, they are not so likely to suffer from drought, and the plants sown throw out fresh roots nearer the surface. If a mulching of manure can be laid on the surface of the bed, it is a great help to the young plants; but if this cannot be afforded, short grass will act as a conservative of moisture. When they have just begun to push their buds is the best time to plant, and this is generally in April. Throughout the summer a good soaking of liquid manure at intervals will greatly assist them; and if all goes well, they will make strong growth and mature good crowns that will the following year produce strong grass which, the third year, will be fit to cut freely for use. The main points of culture in after years consist in preventing the tops from being damaged by high winds, and in giving liberal top-dressings of rich manure, and keeping the beds quite free from weeds.

G. DAWSON.



### THE LATE WINTER.

THERE seems some incongruity in writing on such a subject at this time, but when we see 5° of frost registered on a morning in June, as we have this morning (10th), it is rather apt to set us pondering on all we have experienced during this last winter. A winter lasting from the 19th October till the 20th of April—the dates of our first and last snowstorms—with the thermometer on several occasions during that time falling many degrees below zero, we are bound to consider a rather severe and exceptional one.

We were beginning to think we had seen the last of it, and more especially with such a continuance of extraordinarily hot dry weather as we have had lately, and had almost considered it as a thing of the

past, when all at once we have a very forcible reminder that it is not safe to whistle till we get through the wood, or rather out of it. Potatoes cut down, a fine lot of French Beans soon to be in flower rendered useless, Dahlias blackened, and most probably killed, are a few of the results. I observed some time ago an article in the 'Globe' anent the late winter, and quoting from the 'Journal of Forestry' some remarks of a correspondent of that journal, writing from Murthly Castle, giving accounts of sad havoc there—"the *Araucaria imbricata* being frosted down like a Geranium,"—the article goes on to say that, with one or two more such seasons, the "Rhododendron would become comparatively scarce with us." This I think erroneous, as I have always hitherto found the Rhododendron one of our hardiest evergreens—much more so than any of the Laurels—and would, in making new shrubberies, give a more decided preference to the Rhododendron. Here, while we have had Laurels killed down to the ground, that plant has stood quite uninjured, and at present clumps of it are in full bloom. But on the whole, has the proverbial oldest inhabitant, or any man living, any recollection of such a prolonged and severe winter? I am inclined to believe not, and that the late Mr M'Nab's theories in regard to the climatal changes in this country are likely to be borne out.

ROBERT STEVENS.

PASTON, NORTHUMBERLAND.



## ROYAL HORTICULTURAL SOCIETY.

JUNE 14TH.

NEW plants, Pyrethrum blooms, with several miscellaneous groups of Orchids and other plants, constituted the chief features of this meeting, and visitors found sufficient to interest them both in the Council-room and conservatory.

FRUIT COMMITTEE.—Harry Veitch, Esq., in the chair. Exhibits in this department were not very numerous. Mr R. Gilbert, The Gardens, Burghley, sent a Melon named Burghley Pet, a green-flesh fruit, of moderate size and well netted. It was considered by the Committee a very promising variety, and they expressed a desire to see it again. Fruits of a large Tomato named Conservative Chief from the same exhibitor were admired, and it was recommended to be tried at Chiswick. Some fine clusters of Gilbert's Criterion Tomato were also shown, said to be a seedling from Jackson's Favourite crossed with Vick's Criterion. The fruits were small but very abundant. Mr Woodbridge, The Gardens, Syon House, Brentford, was awarded a cultural commendation for a dish of well-ripened British Queen Strawberries. Mr Z. Stevens, The Gardens, Trentham, again sent examples of Trentham Early Fillbasket Tomato, and the Committee confirmed the opinion they previously expressed concerning it. Messrs T. Rivers & Son, Sawbridgeworth, sent fruits of an early Cherry named Guigne d'Annonay, which somewhat resembled Frogmore Early. The tree was said to have been grown in an unheated orchard-house. It was shown with May Duke for comparison, and a first-



class certificate was awarded for it on account of its earliness. Specimens of Early Favourite Plum were also sent by the same firm from a tree in a pot which had been placed in a house on March the 27th. A vote of thanks was accorded. Messrs J. Veitch & Sons, Chelsea, exhibited some extremely large stems of Stott's Monarch Rhubarb; and Mr J. F. Wilkinson, gardener to Viscount Gage, Lewes, sent a seedling Melon. From Chiswick fruits of Noire Précoce de Strass Cherry were sent, the variety being said to be very prolific.

FLORAL COMMITTEE.—J. M'Intosh, Esq., in the chair. Messrs J. Veitch & Sons, Chelsea, had a group of new and choice plants of considerable interest, including the following: A white form of Azalea Souvenir de Prince Albert, very free and of good habit; Liliun Krameri, a neat species with pale pink-tinted flowers; Heliconia aureo-striata, having neat ovate leaves veined with yellow; Carnation Lady Musgrave, a handsome variety, bearing large, full, deep scarlet flowers; Cypripedium selligerum majus, a remarkably fine variety with flowers of great size, the upper sepal being particularly broad; Calanthe Textori, a pretty species with white flowers, the lip blotched in the centre with orange-red; Epidendrum falcatum, a curious Orchid, with white three-lobed labellum and narrow yellowish sepals and petals; Hydrangea Mariesi, a fine form, with large globular heads of lavender-blue flowers; Pratia angulata, a hardy plant, also known as Lobelia litoralis, of prostrate habit, with diminutive leaves and abundant white flowers; Spargula pilifera aurea, a form of Spurrey with yellow leaves; several Masdevallias, including *M. coccinea* and *M. ignea*, the latter especially bright; Cattleya Wagneri, a white-flowered form, resembling *C. Mossiæ*; *C. Mossiæ alba*; and a group of Tuberous Begonias, chiefly seedlings raised from B. Davisii, very free in flowering, and including some rich shades of scarlet. *B. gigas* and *B. Mrs Gilbert* were two varieties of the ordinary type, with very large well-formed flowers—the former orange-scarlet, and the latter of a deeper colour.

A vote of thanks was accorded to Messrs H. Cannell & Son, Swanley, Kent, for eight stands of double Pyrethrums, comprising forty varieties, including many of great excellence. Some of the most noteworthy were Lizzie Macfarlane, white; Maximum plenum, bright pink; Progress, rich crimson; Mrs Dix, neat pink; Rose Marguerite, fine rose; N. Twardy, full neat flower, rosy crimson; Wilhelm, good pink; Madame Billiard, neat white; Anemoniflorum sanguineum, very bright crimson; Multiflorum, rosy crimson; Boule de Neige, pure white; and Amphitrite, bright rose. Some fine varieties of Foxglove were also shown.

Messrs John Laing & Co., Forest Hill, had a fine collection of Caladiums and Tuberous Begonias. The best of the former were candidum, similar in marking to argyrites, but much larger; Madame Lemoinier, with broad handsome lemon-red in the centre, and pale green round the edge; and Mithridate, described below. Among the Begonias Mrs Robert Whyte, scarlet, was noteworthy for the great size of the flowers; Captain Lambert, similarly large, but more brilliant in colour; and Exoniensis, a remarkably handsome variety, with extraordinarily large orange-scarlet flowers. A stand of blooms was also contributed of a great variety of colours, from pure white through yellow, buff, orange, and scarlet; some rose tints also being represented. A vote of thanks was accorded to Mr J. Croucher, gardener to J. Peacock, Esq., Sudbury House, Hammersmith, for a plant of Odontoglossum crispum variety delicatum, the flowers of good size, white faintly tinged with purple. A plant of a variety of Cattleya Mossiæ named aurosum was sent by the same exhibitor. Mr James, The Castle Nursery, Lower Norwood, sent a plant of

*Odontoglossum cordatum aureum*, differing from the type in the yellowish tint of the flowers. E. G. Loder, Esq., Floore, Weedon, Northamptonshire, exhibited a similar group of hardy Cacti to that he had at the great Show. *Echinocactus Fendleri* and *E. gonacanthus* were certificated.

Mr C. Green, gardener to Sir G. Macleay, Pendell Court, Bletchingley, exhibited flowering sprays of the two handsome climbing plants *Stigmaphyllon ciliatum* and *Bauhinia corymbosa*. The former has umbels of bright yellow flowers and cordate spiny-margined leaves; and the latter has corymbose heads of small pinkish white flowers, the stamens very bright pink, and the leaves of the characteristic two-lobed form, but very small. A vote of thanks was accorded for the *Stigmaphyllum*, and a cultural commendation for the *Bauhinia*. M. H. Voss, Esq., De Montfort House, Streatham, exhibited a plant of *Odontoglossum citrosum* Vosii, a pretty form, the petals and sepals of which are pure white, and the lip of a mauve purple tint. Large flowers of *Phalænopsis grandiflora* were also staged. Mr H. Hooper, Vine Nursery, Bath, sent a collection of *Pyrethrum* and Pansy blooms, the latter including two very striking varieties; a Fancy named Novelty, and a velvety black show named William Dean. Mr H. Coppin, Shirley, Croydon, sent several plants of Tuberous *Begonias*, representing very fine varieties. The best were Thebais, scarlet, very large; Pink Pet, pale pink, large rounded petals; Snowflake, white, of moderate size, and Cetewayo, of the Pearcei type with large orange-coloured flowers. Mr C. Kimbeley, Stoke Nursery, near Coventry, exhibited plants of a bright pink-flowered *Pelargonium* of the Christine type, named Empress of India, very free in flowering and of good habit. A neat tricolor *Pelargonium* called Empress was also represented. Mr Wilkinson, gardener to Viscount Gage, Lewes, contributed a collection of *Gloxinia* blooms, mostly of the drooping section, diversified in colours but not remarkable in size. A vote of thanks was accorded. Mr T. Dale, Orchid-grower to E. Edwards, Esq., Blackwater, sent a plant of *Cattleya gigas* with very large flowers, the lip of a very rich crimson tint.

Mr J. Croucher contributed a tasteful group of Orchids, including good examples of *Odontoglossum vexillarium*, with very richly coloured flowers; *Masdevallia Harryana sanguinea* has large deeply coloured flowers; *Brassia verrucosa*, with eighty spikes; and a central plant of *Oncidium ampliatum majus*, with a very large spreading panicle of bright yellow flowers. Other noticeable plants were *Lycaste Deppei*, with over two dozen flowers, and *Odontoglossum caudatum*. A silver Flora medal was awarded. Mr Ebbage, gardener to J. S. Buckett, Esq., The Hall, Stamford Hill, was awarded a silver gilt Flora medal for a handsome group of *Odontoglossum Alexandræ*, comprising some very fine varieties. One spike had ten flowers of unusual size, and all the plants were in fine healthy condition. Silver Banksian medals were awarded to the following: Mr James, the Castle Nursery, Norwood, for a collection of Orchids, including a fine potful of *Epidendrum vitellinum*, several *Dendrobes*, *Odontoglossums*, and *Oncidiums*; Messrs Barr & Sugden, for a pretty group of hardy flowers, Irises and *Pyrethrums* being particularly numerous and bright; and Mr Hooper of Bath for several stands of handsome *Pyrethrum*, Pansy, and *Ranunculus* blooms, including a good selection of varieties.

First-class certificates were awarded for the following plants:—

*Carnation Lady Musgrave* (Veitch).—A handsome tree variety, with very large, full, dark scarlet flowers  $3\frac{1}{2}$  inches in diameter. Very effective and free.

*Sarracenia melanorhoda* (Veitch).—A hybrid between *S. Stevensi* and *S. purpurea*, with leaves 6 to 8 inches long, of a deep reddish colour.

*Cypripedium selligerum majus* (Veitch).—A variety of this fine species with very large flowers, the upper sepal being particularly striking owing to its great breadth and rounded form.

*Hydrangea Mariesii* (Veitch).—A beautiful *Hydrangea* with globular heads of lavender-blue flowers. The colour is very delicate and pleasing, and the plant appears to be of good habit.

*Coleus Miss Simpson*.—This and the following were from that successful raiser Mr King, gardener to G. Simpson, Esq., Reigate. A very handsome variety with a large neatly formed leaf, the centre being bright crimson with a tinge of scarlet, margined with bright yellow, and neatly crenated. The brightness of this variety was remarkable, and it was greatly admired.

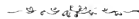
*Coleus Mrs Stiedall*.—A variety of dwarf compact habit; the leaves tapering, bright rose in the centre, deeply crenated, mottled with deep brownish maroon near the margin, and edged with green. Very distinct and attractive.

*Caladium candidum* (Laing).—A pretty variety, with neatly formed leaves 7 inches long by 4 inches broad, veined with green and white, suggestive of *C. argyrites*, but much larger than that form.

*Caladium Mithridate* (Laing).—Leaves unusually large, a foot in length and the same in breadth, deep in the centre and dark green at the edge. A very handsome variety.

*Caladium J. R. Box* (Laing). Very distinct, of a semi-transparent texture strangely veined with red and green. These are three fine and distinct *Caladiums* well worth including in collections.

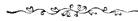
*Echinocactus gonacanthus* (Loder).—A Cactaceous plant with short globular fleshy stems studded with large white spines, and bearing bright orange nearly scarlet flowers.—*Journal of Horticulture*.



## DUNDEE HORTICULTURAL ASSOCIATION.

THE ordinary monthly meeting of this Association was held in the Templar Hall, Reform Street, on Friday evening, the 3d ult.—the president, Mr D. Doig, Rossie Priory Gardens, in the chair. Mr Thomas Milne, Linlathen Gardens, read a paper on “Hardy Border Flowers.” Having dealt with their general culture and arrangement in a former paper, he confined his remarks more directly to the special culture of a few favourite sorts. These he detailed in their order of flowering; and his remarks were illustrated by from sixty to seventy distinct varieties of these delightful hardy flowers, all distinctly and correctly named, presenting a beautiful and interesting table of varied blossoms. Amongst the most noticeable of these were *Aquilegias cærulea* and *siberica*, *Dodecatheon elegans*, *Leucojum æstivum*, *Anemone sylvestris*, *Phlox subulata*, *Asphodelus luteus*, *Primula cortusoides amœna*, *Linum alpinum*, *Myosotis cœlestina*, *Anthericum liliastrum*, and *Muscaria moschata*. Mr Milne also exhibited a stand of twenty-four varieties of hybrid *Rhododendrons*. Mr Frank Young

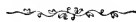
then read a most interesting and able paper on the "Physiology of Plants and Animals," tracing many of the relations that exist between the two kingdoms of nature. The general action of the animal kingdom in oxidising carbonaceous substances with formation of carbonic acid gas, and the reducing of this in the green parts of plants under the influence of sunlight, were experimentally illustrated under this head. Mr Young spoke at length on the "blue glass" question, showing that it had no scientific basis whatever; that, in fact, the work of many eminent botanists had proved the retarding effect of the blue rays on growth; and further, that the yellow rays of light were the most effective in decomposition and assimilation. The paper was illustrated by several experiments performed by Mr Frank Collyer. An interesting discussion followed on this "blue glass" question, the general conclusion of the practical gardeners present bearing out what Mr Young had demonstrated—namely, that the blue glass, so far as had come under their observation, in no way assisted or perfected the growth of plants. Hearty votes of thanks were awarded the several speakers, and the meeting terminated.



#### NOTICE OF BOOK.

A MANUAL OF THE CONIFERÆ. James Veitch & Sons, Royal Exotic Nursery, King's Road, Chelsea, London.

THIS work is quite worthy of the firm who have produced and published it. Merely to recapitulate the plan of the work will show that, if well carried out—as it certainly is—it cannot fail to be a popular and most useful work. Part 1 is a general review of the Coniferous orders. It contains a brief description of Coniferous wood, the organs of fructification and vegetation, the secretions, economic properties, diseases and accidents, the distribution of the Coniferæ over the globe, and lastly, the scientific arrangement and nomenclature as given by the most eminent botanists who have studied the order. Part 2 contains a synopsis of general species and varieties suitable for cultivation in Great Britain. Part 3 contains lists of the species and varieties suitable for the different purposes for which Coniferæ are planted, with hints as to their treatment. It is abundantly manifest in every page of the book that it has been executed with the greatest care and a minute knowledge of the subject. The information is given in a thoroughly handy form. Numerous well-executed woodcuts and illustrations add much to the interest of the volume, which should be in the hands of all interested either practically or scientifically in Coniferous trees.



## Calendar.

### FORCING DEPARTMENT.

**Pines.**—The very bright and really warm weather experienced during the latter half of May and the early part of June, caused Pines in all stages to make rapid progress, and they have well made up for the little progress they made after being shifted, owing to the coldness of the spring. Should the weather be as it generally is in July—sunny by day and warm at night—the necessity for fire-heat to keep temperatures sufficiently high for Pines will be almost entirely superseded—in some localities at least—by the more natural and invigorating heat of the sun. At the same time, if a period of dull, wet, and comparatively cold weather should occur, careful attention must be given to the atmosphere of pineries, and the pipes should be heated so as to keep the air from becoming stagnant and the heat from sinking much below the maximum temperature. Plants intended for fruiting next year will now be growing rapidly, and require to be very carefully and rather freely ventilated to prevent a weak and sappy growth. By the end of this month, Queens intended for fruiting early next year will be large plants with their pots well filled with roots, and will require careful attention in the matter of watering, so that they do not get too dry, and remain so for many days at a time, or they may get a check that may cause them to start into fruit. The soil should be kept constantly moist, and liquid manure in a weak state applied at every alternate, if not every, time they require watering. On the afternoons of fine days these and all growing plants should be syringed with a fine rose at shutting-up time, but only moistening the foliage without causing much water to accumulate and stand in the axils of the leaves, or the production of suckers—in Queens especially—may be the result, and the energies of the plants become exhausted in the wrong direction. The night temperature may range to 75°, dropping to 70° by morning. It sometimes becomes necessary, in very scorching weather, to slightly shade Pines dur-

ing the heat of the day, to prevent their becoming severely browned and wiry in growth. In doing this, let some thin material be used, such as hexagon netting or tiffany, and avoid the use of thick mats or canvas. Early started Queens will now be all cut, and the suckers they have produced should be potted into 6 and 7 inch pots, according to their size. Pot them in fresh turfy loam, with a little bone-meal mixed with it; plunge them in a gentle bottom-heat, and give them plenty of room. Shade them in the heat of the day until they have rooted and shown signs of growth, after which shade as little as possible, and air freely to produce stocky growth. Plants swelling off fruit will require to be constantly watched to see that they do not become over-dry: give them weak guano or ordinary manure water every time they need watering. Shut them up sufficiently early in the afternoons to run the temperature to 95° for a time, and load the atmosphere with moisture by damping all bare surfaces and syringing the plants overhead. Where more fruit are ripe than are required, a number of them can be removed to a cool fruit-room, where they will keep for several weeks in good condition. Avoid the too common practice of keeping the soil very dry when Pines at this season approach maturity.

**Grapes.**—The fruit will now be all cut from the early houses, and no pains should be spared to keep the foliage healthy and fresh to the last. Red-spider must be prevented by frequent vigorous syringings, and the Vines nourished by keeping the borders moist. Give abundance of air, and do not allow laterals to grow so as to crowd the main foliage and wood. Grapes intended to be kept through the winter should now be carefully examined; and if any of the bunches have not been thinned sufficiently, lose no time in completing this operation before the berries get anything like jammed. The bunches should be more severely thinned out than those

that are to be used before winter. If this month should be dry and bright, all Vines swelling off crops should be well watered two or three times; and if the borders are not mulched, they should be, with good substantial farmyard manure. Red-spider is a most formidable enemy to Vines in dry summers, and there is perhaps no better preventive of the pest than well-watered and well-nourished borders. Next to no fire-heat will now be required to keep vineries warm enough; still, in dull damp weather, put a little heat into the pipes so as to keep the air buoyant and in motion, and do not let Muscats fall much below 70° at night. And, except for an hour or so after vineries are shut up and damped after a hot day, never close the ventilators by night or day, but always leave them open to the extent of 3 or 4 inches at the front of the house. Remove all young lateral growths as they appear; and if red-spider appears give it no quarter, but attack it at once with sponges and clean water, and if pure water can be had, even syringe the foliage freely for a few days in succession. Young Vines not yet in bearing, but intended to bear next year, should be stopped when they reach to the top of the house, and their lateral growth to a couple of leaves at each joint—one of which should be removed when the wood begins to turn brown and harden. Young Vines planted this spring will now be making rapid growth. Attend carefully to them two or three times weekly, and tie them to the wires, removing all tendrils and growth except what is sufficient to cover the roof without crowding the foliage. It is not yet too late to plant young Vines if borders and everything can be got ready by the middle of the month. A season will be gained in planting young healthy Vines now instead of next spring, for there is plenty of time to have fine strong canes by the end of October. If pot-Vines have been forwarded as directed in former Calendars, they will now be strong canes with plump buds, and the bottom part of them changing to a brownish hue. Give them plenty of air. Never let them suffer for want of water, and do not let them make much lateral growth, but take every precaution to keep their leaves healthy

to the last; for unless they ripen thoroughly, without damaged foliage, they cannot be in good condition for early forcing next season.

**Peaches.**—Give ripening fruit abundance of air night and day. Water the borders of those swelling off crops, and if they are old trees in full crop, give liberal supplies of manure-water. Syringe freely and frequently all trees, except, of course, those on which the fruit is ripe and ripening. But as soon as the fruit is all gathered resume the use of the syringe, so as to keep the foliage clean and healthy. If red-spider has put in an appearance, mix a handful of sulphur with the water every time they are syringed. Keep the house cool and well aired, and examine each tree, and if there are more shoots than are necessary for next year's crop, cut them out at once, so that light and air may play freely about every part. Attend to the tying of the growths of young growing trees—tying them in their proper place—and avoid crowding. See that no tree in any stage is allowed to suffer for want of water.

**Figs.**—Where fruit are ripening cease the use of the syringe, and give a free circulation of air. When the first crop is all gathered, and the second coming on, see that the trees are well nourished with manure-water, and syringe them freely every day at shutting-up time. Trees in pots or tubs must be very carefully attended to with water, and never be allowed to get over-dry. Any old mulchings of manure applied to these early in the season should be removed down to the roots, and a fresh dressing of rich manure put in its place, so that the second crop of fruit may be well sustained, and the trees in every way kept in good order.

**Melons.**—Melon plants now swelling off crops will take much more water at the root than earlier in the season, and they must never be allowed to get a check for want of a proper supply. At the same time give good soakings when required, so that the soil be kept properly moist without frequent dribblets. Keep the surface of the soil covered with such as horse-droppings to nourish the crop

and prevent more frequent waterings. A final watering should be given before the fruit begins to colour, so that the soil does not become over dry before the fruits are all cut. Remove all superfluous growth, and syringe the foliage every fine afternoon up to the time the fruit begins to ripen, after which keep it dry, and expose the fruit as much as possible to the sun. Attend to the impregnation of succession crops, and plant and sow for late crops.

**Cucumbers.**—Water those in full bearing with manure-water. Look over them twice a-week, and remove all superfluous growths, and keep young growths constantly stopped. Syringe freely on fine afternoons. Do not allow the plants to bear too many Cucumbers at one time, or the plants

will suffer. Impregnate some of the most handsome-looking young fruits for producing seed.

**Strawberries in Pots.**—Plants intended for early forcing should be in their fruiting-pots the first week of this month. For the earliest lot 5-inch pots are large enough, but for the general stock of plants 6-inch pots are the best and most convenient size. The soil used should be a rather strong loam, with a third of such as old mushroom-bed manure mixed with it. Pot the plants firmly. Place them in a sunny exposure, and on some material that will prevent worms from getting into the pots. Water freely, and keep them free from runners. Syringe the foliage about five o'clock in the afternoon when the weather is warm and dry.

#### KITCHEN - GARDEN.

The weather during the latter part of May being very warm and dry, gave many crops in vegetable gardens an appearance of distress. Slight showers have fallen at the end of the month and refreshed various things; but with us no roots eight inches in the soil have had rain since the first week of March, and the ground now turns up hard and dry at the middle of June. Though water and hydrants are at hand, we have not had time to use moisture sufficient to give a thorough soaking. We always advise leaving it alone if it cannot be done effectually. We know of much damage done already by the inexperienced, by dribbling surfaces frequently, while the feeders were almost roasted. Potatoes are well up and looking well. Onions, Parsnips, and Beet, among roots, are fair. Turnips and Radishes, among Potatoes and other crops, are not amiss. Spinach, between Potatoes, is extra good. On very heavy land, the seed covered with rich and fine soil and afterwards dusted with fine ashes, has been well protected. Lettuce between Pea rows 10 feet apart, and the ground extra rich, have been unusually fine. Carrots are very shabby, and many blanks among them. Cauliflowers have been difficult to deal with. Celery has been troublesome. Mulching with grass-mowings and soakings of water are telling well on the plants.

No time need be lost in planting out Broccoli, Kale, Brussels Sprouts, Savoys, and all the Brassica in the seed-list. If the ground has to be cleared of Potato crops, &c., it is well to have the plants safe on any spare ground, so that they may lift easily and be transplanted firmly in their permanent quarters. Cabbage may be sown in late northern quarters—from the middle to the end of the month is early enough; further south, a good plantation for autumn may be planted out any time during the month. The Rosette Colewort is always a favourite, and very hardy. Celery for early crops should be well earthed up and have liberal soakings of water. Manure-water will give crisp and tender produce. Prick out latest successions on firmly-beaten and well-rotted manure, with two or three inches of soil over the surface. Shade the seedlings from strong sun: red kinds are generally the most hardy, and the flavour is considered by many to be the best. Carrots of the "Horn" class may be sown for drawing young. Endive and Lettuce may now be sown for main crops. Plenty of Batavian Endive is of much service. Sow every fortnight in breadths equal to the demand. These require deep, rich, and well-broken soil to have them fine. Sow Lettuce which are known to be favourites: some prefer Cabbage

kinds to Cos, but it is well to plant a few of each to meet all tastes. Mustard and Cress of sorts must be sown often on well-moistened ground; if in the shade, so much the better. Peas may be sown in early sheltered positions. Early kinds are most suitable, but seldom in cold districts are Peas to be had sown later than June. Dwarf kinds, to be covered by frames and protectors, may be sown on early borders during the month. Dwarf French Beans may also be treated in this way, but in warm southern districts we have seen them come in useful after being sown in August. Plant Leeks in rich, deeply dug soil. Sow Parsley for winter; thin earlier lots and plant the thinnings. Turnips, such as White Stone, Strap Leaf, and American Red Stone, may be sown in larger breadths—after Potatoes is suitable. Spinach may be sown twice during the month in larger breadths. Prickly Spinach may be sown for early winter supply at the end of the month. Cleanliness, mulching, watering, hoeing, and pronging, are matters of great moment at this season. Gherkins, Ridge Cucumbers, and Vegetable Marrows need training, thinning, and watering often. Crowding is ruinous to them all. Tomatoes require frequent attention to thinning off lateral growths, and keeping the fruit thinned. M. T.

### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

A CORRESPONDENT writing from Chester, whose signature we cannot read.—Your trees are no doubt affected with mildew. Dust the white spots with flowers of sulphur, and keep your house well aired. Both a want and an excess of water at the root are favourable to mildew. So keep the soil moist but not sodden, and see that the drainage is good.

AMATEUR.—Both soot and wood-ashes, if applied before they get wet or damp, are excellent for dressing your Vine-border. The former supplies ammonia, and the wood-ashes potash. Use the soot first, and in a week or two the ashes, forking them into the surface of the border.

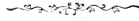
P. F.—Stop your Vines when they get to the top of the house, and let the laterals grow till they cover the roof without becoming crowded. The cause of the leaves on the main stem or growth going off as you describe, is the rapid swelling of the cane or growth, which ruptures the base of the leaf-stalk at its union with the cane, and it then ceases to get sap enough, and consequently cannot stand the sun. It is not a disease, but purely a mechanical occurrence.

D. M'C.—Your Celosias are affected with an insect—a small spider: syringe regularly with water in which about the size of an egg of soft-soap is dissolved in 4 gallons.



T H E  
G A R D E N E R.

AUGUST 1881.



FEEDING VINES, &c.



ANY years ago the practice of mixing considerable proportions of manure in the form of animal excrement, and in some cases animals themselves, into Vine-borders, was very common, and recommended as the right thing to do ; but it proved, especially when carried to anything like excess, most unsatisfactory in its results. By such liberal proportions of rank manure no doubt a strong growth was attained ; but it was of such a plethoric kind, that the agents necessary for perfecting and consolidating it could not be commanded, and disappointment in the character of the Grapes followed as a necessary consequence. The Vines were certainly not starved, but were, for a time at least, overfed.

It is not now considered right or necessary to mix in such manures with the soil used for making up Vine-borders ; and though this change must be considered sounder both in theory and practice, there is a danger that Vines may suffer from the opposite extreme of being ultimately starved. It is because we are satisfied that many Vines are suffering from want of feeding that we refer to the matter. In the fresh organic matter common to turf from old pastures, of which Vine-borders are generally composed, there are for several years all the elements of nutrition needed to produce strong enough Vines and good Grapes. But notwithstanding the mixing in of the orthodox proportion of bones and sometimes horn-shavings, in the course of years, and especially after the border is completed in width and when the Vines are in bearing from bottom to top, something additional and very substantial is required, in the case of such borders, to enable the Vines year after year to bear the strain of heavy crops of good Grapes, and at the same time not decline

in vigour of wood and foliage. With a well-drained border composed of loam and a proportion of crushed bones, we consider this question of proper and sufficient feeding to be one of the cardinal points of successful Grape-growing. It is only necessary to look at the spread of foliage and the weight of luscious fruit on the roof of a vinery, where the Vines are in good order, to suggest to the merest tyro in horticulture that plenty of raw material must be supplied before such a crop can be produced year after year without breaking down the plants.

There are, of course, several ways of supplying the necessary food to Vine-roots in such borders. Where the sap which oozes or flows from farmyard manure can be had, it can be supplied with very good effect in a liquid form ; but it is not desirable, in feeding Vines, to hold constantly to the application of one sort of manure. The system we practise is, to fork in a good dressing of fine bone-meal as near to the roots as possible without injuring them, and then to cover the border with 4 inches of the richest manure we can get, and which generally consists of horse, cow, and pig droppings in a fresh condition. This forking in of bone-meal, and this covering of manure, are generally applied in November : the manure is allowed to remain undisturbed until about the time the Grapes are just thinned, and it is removed without interfering with the surface of the border, or taking away any of the bone-meal, and a similar fresh coating of the same sort of manure is again put in—thus making two such dressings in the twelve months. If the weather be dry when the summer dressing is applied, a thorough soaking of water is given. Besides this, a sprinkling of guano is sometimes applied in time of heavy rain; so that the nature of the food supplied is somewhat varied. Sometimes we have given a dressing of dry fresh soot once in the season; and we think this latter an excellent manure for imparting colour and texture to the foliage.

This may perhaps be considered excessive feeding, but there was no manure except crushed bones put into the borders when made. Besides the actual nourishment such top-dressings afford to the Vines, another most desirable and beneficial result is that the roots are enticed to the surface of the borders, and kept active there.

There are a few cardinal points in Grape-growing which, if attended to, all others are of minor importance. First, never to mix much manure with the border, but to dress liberally on the top as above described; to have the most perfect drainage, and give plenty of water in dry seasons and localities; never to have the rods closer together than  $3\frac{1}{2}$  feet, nor the spurs closer than 18 or 20 inches; to avoid an over-moist atmosphere, and to give plenty of air night and day; and last, but not least, to avoid high night-temperatures, especially in the early part of the season. If these points are carefully attended to, there is no more grateful fruit-bearing plant than

the Vine ; and it is astonishing what heavy crops it will produce for years, always provided the nourishment is good, and the foliage kept in health. In our practice we have never been able to corroborate the teaching of those who advocate a low temperature as being best for setting such varieties as Muscat of Alexandria, and others of a similar habit, for we have invariably found these set best with a brisk, indeed a high, temperature ; and we have seen Muscats that have been worked low at the blooming period which were not set at all—stoneless or seedless, in fact. Hence they swelled more evenly than when partially set—as it is called ; and when bunches have all their berries stoneless, it is wonderful to what a size they swell.



## GREENHOUSE PLANTS.

### NO. VI.—THE BORONIA.

ALL the species of this genus in cultivation are evergreen shrubs of dwarf growth. Their time of flowering in this country extends from the beginning of March until the end of June. The majority of them are of a slender habit of growth, and to form them into neat compact specimens a certain amount of staking and training is necessary. When properly managed, Boronias are beautiful and interesting plants at all seasons of the year, and when in bloom they are effective for the decoration of the greenhouse or conservatory. *B. pinnata*, *B. Drummondii*, and *B. serrulata*, are splendid subjects when large enough for exhibition purposes, as they will stand a considerable amount of rough usage, without injury to the flowers at the time, or to the health of the plants afterwards.

All the species commence flowering when the plants are comparatively small, hence, of whatever size they are, they reward the cultivator with a crop of flowers proportioned thereto. Small plants, when in flower, are suitable for taking part in floral decorations in the dwelling-house, and they will suffer as little injury from being exposed to the dry atmosphere that necessarily prevails in rooms of the dwelling-house, as any hard-wooded plants with which I am acquainted ; and this alone should secure for them the attention of those whose duty it is to provide a supply of varied and choice flowering plants for the purpose named. Boronias are increased by cuttings, but, like a few genera of which I have treated in former papers, it requires a few years before they get to a size to be of much service as decorative subjects. It is therefore the better way to procure a stock of small plants from a nurseryman ; remembering to stipulate when giving the order, that the plants are to be free from scale and mealy-bug—as it is not an unfrequent occurrence for some nurserymen to supply gratis, along with certain species of the vegetable kingdom, a host of representa-

tives of some families belonging to the animal kingdom,—the latter, as a rule, being in a highly satisfactory condition as regards their health and power of reproducing their kind, whatever may be the condition of the former. *Boronias* should have an airy position as near to the glass as possible at all times of the year. When bright sunshine occurs during the summer months they should be slightly shaded, but continued shade at any season is not beneficial to them.

As soon as the flowering season is over, the necessary pruning or cutting-back of the plants should take place. Those species of a habit of growth similar to that of *B. Drummondii* should be cut well back annually. By so doing the plants are kept well furnished with shoots, thereby giving to them a bushy and well-formed appearance. In the case of *B. serrulata*, it is sufficient to pinch out the points of the shoots annually, after the flowering season is over. This species does not make as long shoots annually as most of the others; hence it is only necessary to nip out the points of its shoots until such time as the plants are of the desired size—then of course it should be treated similarly to the others in the matter of pruning or cutting back of its annual growths. After the plants have been pruned they should be placed on their side, and well washed by means of a syringe. If at the time the cultivator entertains any suspicion that there is scale or mealy-bug lurking about them, he should use at first paraffin and water, in the proportion of two wine-glassfuls of the former to one gallon of the latter, heated to a temperature of 95°, and kept thoroughly mixed together during the time of application. Let the mixture remain for a few minutes on the plants, and then give them a thorough syringing with pure water. This will clear them of the paraffin and the greater number of insects, supposing any of the latter were present on them previous to the application. After undergoing cleaning in the way just referred to, the plants should be placed near to the glass in a cold pit or frame, and duly attended to in the matter of admitting air and supplying them with water at the roots. In this position they will soon commence to push forth fresh growth; and whenever this is observed they should, if in the cultivator's opinion they require it, be re-potted. When doing this much care ought to be taken, as, like all hard-wooded plants, *Boronias* will not thrive satisfactorily unless the soil about their roots is maintained in a thoroughly sweet condition; hence it is highly important to supply an adequate amount of efficient drainage at first. After the plants are repotted, they should be again placed in a cold frame or pit, and the latter kept rather close and shaded for a week or two, until the roots have laid hold of the fresh soil. They should remain in this position up to the end of September, and during the time air should be admitted freely to them both day and night. By the first week of October they should be placed in their winter quarters, and, as before indicated, in a position as near to the glass as

circumstances will permit. Large plants of *Boronias* will remain healthy for several years without repotting, provided the drainage keep in good working order, and they are properly attended to in other ways. Good peat, such as a Heath-grower would select for his favourites, and coarse river-sand, in the proportion of one-third in bulk of the latter to two-thirds of the former, make a good mixture for applying to the roots of *Boronias*; and on all occasions when they are repotted, the compost should be made as firm as possible about the roots. In the matter of applying water to the roots, the cultivator should exercise much care at all seasons, as an excess is very prejudicial to their health; and on the other hand, the soil must not be allowed at any time to become what might be termed dry. Another matter to be attended to in their culture is to keep them clear of mildew. Some species, particularly *B. serrulata*, are subject to attacks of mildew, and a strict watch should be kept for its appearance. If at any time it is discovered on the plants, they should be laid on their sides and dusted with flower of sulphur, which will have the effect of arresting the further progress of the enemy. In addition to the three species already named, *B. crenulata* and *B. megastigma* are deserving of being cultivated by all lovers of choice greenhouse plants. The latter, when in good health, is an elegant and graceful plant when not in flower; and when in bloom it is surpassed by few in the quiet beauty of its flowers.

J. HAMMOND.



#### THE ROSE-HOUSE AND POT-ROSES.

MANY are apt to overlook and neglect both Roses in pots and those that are planted permanently in the Rose-house during the season when they can be gathered in abundance outside. I have seen Roses in pots that have done duty and bloomed, much neglected even when the thought that outside Roses would be an uncertainty, or a fear entertained by the majority that outsiders would be severely injured, if not killed outright. Even when this state of things has been uppermost in the minds of those most interested, Rose plants after blooming have been carelessly treated and cast aside—either forgotten or left to chance until wanted for forcing again, and have then proved almost if not quite a failure. One would naturally think, when the outside supply is likely to be somewhat limited, that greater care would have been bestowed upon those in pots, which, if properly treated, would have made a supply certain. There are those who have Rose-houses and require them for early work, but keep them slowly moving for the few flowers they produce; and then, instead of treating them properly, to force upon them a good rest, are what they call partially pruned back and allowed to go on again. These, as I have before stated, soon become a prey to mildew, and look unsightly. This system will not

grow Roses long, and in the end (to say nothing of the annoyance it causes those who cultivate them) will prove not only more laborious than wise and judicious treatment, but will also lessen the chances of producing creditable blooms. The Rose-house that has to produce Roses from the New Year onwards must now be in the autumn of its growth, to be followed shortly with as complete a rest as it is possible to force upon Tea kinds grown under glass. They have a great inclination to continue to grow, whatever system may be followed to bring them completely to rest. This can only be accomplished by giving full ventilation day and night, with the doors standing wide open. The atmosphere should be kept dry, as well as the soil about their roots; but not overdone, or injury to the roots will be the result, as Roses should not suffer for want of water during any season of their growth. The cold nights towards the end of September, when full air is left on, act wonderfully in bringing them completely to rest—an essential point in their cultivation. The flower-buds in the Rose-house should be removed as soon as they appear after the beginning or middle of July. By allowing blooms to grow and develop until pruning-time, the plants are considerably injured for the following season. Opinions appear to differ on this point, and some contend that the production of blooms does not exhaust or impede growth. I am, however, convinced that it does, and more especially with such varieties as are suitable for the bed in the Rose-house proper, being continuous bloomers, and differing much in this respect from such kinds as *Gloire de Dijon*, that flower profusely in the early season, and then devote the remainder of the season to growth and recruiting themselves; and during the growing period only produce, comparatively speaking, a few solitary blooms. The mistake that often arises in gathering blooms from the Rose-house until a late date is a lack of forethought, when the outside supply is growing scarce. A good number should be grown in pots for an autumn supply. *La France* for this purpose is really a gem, and, like many Tea kinds, continues to bloom as long as required. I have some plants at the present time that have been flowering over six months, and would doubtless, if allowed, go on for three or four months longer. Some of the varieties of Bennett's Hybrid Teas will, from my experience, prove valuable for pot-culture, although I do not think any of them can compare for usefulness in every respect to that beautiful variety just referred to. A box of blooms in the exhibition tent scarcely appears complete without a bloom of *La France*, which is always conspicuous. It is questionable if ever Bennett's varieties become so popular in this respect, and will by many be condemned as useless. Cultivators generally are very liable to rush to hasty conclusions at the non-appearance of kinds in the exhibition tent, and upon these grounds exclude them as poor and worthless. Their merits as exhibition blooms are not sufficient to indicate their usefulness. What would

exhibitors of Rose-blooms say to Safrano, Isabella Sprunt, or the old China Roses? yet they are all lovely in the bud, and their adaptability for flowering profusely in the winter secures for them a foremost place. On the same standard should the Hybrid Teas be judged, and amongst them Nancy Lee should hold a prominent position. It grows well on its own roots, strikes as freely as the La France, and blooms when quite small, continuing to do so for a long time. Vicomtesse Falmouth is also useful, flowering well in a small state, and is well adapted for decoration in 5-inch pots: it grows strong enough for this purpose on its own roots. Hon. Geo. Bancroft is useful for the same purpose. Beauty of Stapleford is a stronger grower than the preceding two, and a most abundant bloomer. Duchess of Connaught and Pearl are also very good and useful. The two first named, so far, have distinguished themselves best with me.

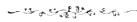
To return to the Rose-house, in which, at this season of the year, we allow the growths to ramble at will for the sake of looking tidy and neat, growers generally tie them closely to the trellis. This should not be done in the latter stages of growth, as by so doing the shoots that have been previously made are induced to break again and form wood which will neither be of service nor ripen, thus prolonging the growing season of the plants. Our plants are tied down for the sake of appearance, while the family is here for a short time in July, which is not sufficiently long to cause them to break; the ties are then cut and the shoots set at liberty. By allowing them an upright growth soft wood is prevented in autumn, and light and air play more freely amongst the shoots. By the end of the present month, or early in September, if growth shows signs of ceasing, we remove all the soft-growing ends, which further induces them to rest. Care must be exercised in this direction, and the grower must be perfectly satisfied that they will not again break into growth. This year our bed of Roses has grown remarkably strong and bloomed abundantly. Through the severe weather in winter they did not fail to give us a good supply of buds, especially from Safrano and Isabella Sprunt. The scarlet variety of the former is very free, and will no doubt prove invaluable, but we cannot yet say how it will stand mid-winter forcing. Our Rose-bed will be pruned early in October; and in doing this operation a good many weak shoots are removed and the strong ones well shortened back. Hitherto they have been pruned rather hard back, and the result has been very satisfactory. After pruning, the house should be thoroughly cleaned, and a small portion of the top soil of the bed removed, replacing it with good rich loam, a quantity of small bones, and wood-ashes.

Roses in pots for the autumn supply should now be growing freely, plunged outside. They should be liberally supplied with manure-water to keep them growing, removing the buds as they appear until the end of the month. After this they can be allowed to form, and

should be taken indoors before being checked with the cold. They should occupy a position not far from the glass, where a temperature of 50° to 55° at night can be maintained. If properly managed, these plants will produce a good quantity of bloom from the end of October until Christmas. The China Roses can be placed for a time either in cold frames or in a house, and introduced into heat a little later in the season.

Hybrid Perpetuals in pots will also require attention at once. If properly treated after flowering by hardening off and plunging outside, well watered, and the foliage kept clean by means of syringing up to this date, the earliest batch will be ready for potting—in fact, all but the latest batches can be gone through. As a rule, we turn all out to see if the drainage is right; and if potting is not needed, they are top-dressed with some rich compost. The majority require potting either into larger pots, or by considerably reducing the old bulb with as little injury to the roots as possible, placing them again in pots of the same size, with a good quantity of new compost. When potting is done early, while the foliage is fresh and good, large quantities of roots are afterwards formed, and the plants become well established again before pruning-time arrives—the roots frequently abounding in quantity round the sides of the pots when attended to in due time.

WM. BARDNEY.



#### WINTER SALADS.

IN most gardens, large and small, there is abundance of salad material during the summer and autumn months, which is much valued by the owners; but the same cannot be said about quantity in all gardens throughout the winter and spring months. Then, in many instances, all kinds of both choice and common salad plants are very scarce, and often not obtainable. I do not mean to say this is always the grower's fault, as we do not belong to that unreasonable class who expect gardeners to keep up a constant supply of everything whether they have the means or appliances or not; but by a little forethought, probably, more might be done in winter salads than we often see. There are many salad plants easily enough grown, others much more difficult, and only suited for those with the very best of accommodation; but what with one thing and another, nearly every garden might have a variety of salading in the winter time; and although many might think productions of the kind are most valuable during the hot weather in summer, they will generally be found as acceptable in the short days as at any other time. Cucumbers may be regarded as the worst to obtain of all winter salads, and they are about the most valued. Their winter culture does not differ much, if any, from that necessary to grow them well in summer; but the want of sufficient



heat in winter is the one great obstacle to their general culture at that season. Unless one can find a place for them where the bottom-heat will never be lower than 80°, and the atmospheric temperature 65° or 70°, their culture need not be attempted, as an unsatisfactory crop or complete failure will be the result. With less heat than that above stated we have managed to keep them on until Christmas, but never for a whole winter. Where convenient means exist for their growth, the present is a good time to consider the matter. Next to having plenty of heat, strong plants well-established before winter sets in is the most important. These may be raised from seed sown in August, or plants may be had from cuttings. Of the two we prefer the latter; but in either case the young plants should be ready for their permanent quarters early in September. In summer, Cucumbers will grow in almost any kind of compost, but for winter, it must be rather light and open. The more fibre in it the better, and in putting it down it should be made into well-elevated mounds. If planted early in September, growth will not be so rapid as at mid-summer, but by the middle of October they will be strong plants, showing fruit; and if the foliage is kept clean, the roots consistently watered, and only a very few fruit allowed to swell at once, Cucumbers all winter may be depended on. For this, Telegraph is a variety we have never seen equalled.

Coming to more common and easier-grown things from the kitchen-garden, much salading may be had far into the winter, and sometimes right through it. Amongst these, Lettuce and Endive are always important. The two may be grown fairly well on almost any piece of soil. In summer, rich ground adds to their quality; but for autumn and winter, I think rather poor soil is best. In very rich soil they make much soft growth which cold and wet would soon cause to decay, but when grown more hardy, this does not so readily occur. Our winter Lettuce and Endive are generally planted on our south and other borders, after Potatoes, Cauliflowers, Carrots, Turnips, &c., and before sowing or planting we never put any additional manure after these crops. Neither do we dig or fork the ground, as firm ground is not so likely to cause watery growth. A hoe and rake over is all the preparation the ground gets. Of all positions we prefer a south border with a sharp incline for winter Lettuce. Here they always grow hardy and robust, and are not so liable to injury from the weather as in shaded corners. The seed of autumn and winter Lettuce should be sown at once, and another sowing in mild parts may take place a few weeks hence. Sutton's Champion Brown, Hardy Brown Cos, and the green Hammersmith are the best winter Lettuce, and the Batavian and green curled are excellent Endives. The seed may be sown in lines a foot or more apart, and when the plants are large enough to transplant, a crop may be left in the seed-rows and the others replanted elsewhere. In frames, and under other kinds of pro-

tectors, are good places to put the plants which are drawn out. In such positions they may be planted without being protected from the first; but here they will be convenient when severe weather does come.

Along the bottom of walls are also good places for Lettuce, as they can easily be protected there. As a rule, Lettuce and Endive seed germinates very freely, and the young plants are frequently much injured through becoming too close in the rows before being thinned out or transplanted. This is a bad beginning for any Lettuce crop, but it is most felt by the winter ones, as they hardly ever quite recover from such a check. Sowing thin, and thinning in time, are two good ways of working. The after-culture consists chiefly in keeping the ground clean and open with the hoe, blanching and protecting in severe weather. When Lettuce are backward in folding in and blanching, they can soon be made to do this by tying up the leaves; and Endive must always be treated in this way. They should only be tied when quite dry, otherwise they soon decay. Protecting may be done in various ways. The safest is to lift the plants and place them in some dry, cool, dark shed. A month's supply or more may sometimes be treated like this, and others may be lifted and packed close together in frames where lights will keep them from wet, and where they can be opened up on fine days. Full-grown plants, if lifted in this way and so treated, will prove most satisfactory; and it is astonishing the time they remain good when kept from frost and wet. Nailing two deal boards together in the shape of a V, and turning this over the rows, also affords good protection, and so does turning a flower-pot upside down over each plant; but about mid-winter, or in long spells of severe weather, they are most secure in frames or houses.

Radishes are another useful addition to our winter salads. They are very easily grown, and may often be had when other things have failed; and as they are generally eaten by themselves, they are very valuable for filling up gaps. The Chinese Rose is the best of all Radish for winter culture. The first sowing of it should be made early in September and again in October. The first may be in the open, the second in a frame under glass. The soil for both should be moderately rich, and not too heavy, and the position well exposed to the sun and light. Ours are always sown thinly broadcast, protected from severe frost, and fair gatherings are had from them all winter.

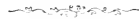
Beetroot is another excellent salad root, and it is so easily kept in winter that nothing need be said about that here. Celery, too, comes under this heading, and is equally well known. Mustard and Cress are others requiring winter culture. Heat and moisture will produce them anywhere or at any time. Small quantities may be grown in plates or saucers, more in cutting or seed boxes, and any quantity in beds in early vineries or suchlike. In November, when our first Asparagus roots are put in for forcing, we sow Mustard and Cress all

over the surface, and it does well here without interfering with the crop, as the heads push up through it. Odd corners are the positions for Mustard and Cress.

Autumn-sown Onions are another good addition to our winter salads. As sown for the following year's culture, they are often too late to use in winter; but if a good bed of Giant Rocco is sown early in August, the produce will become a nice size for drawing throughout the whole winter.

Witloef, about which there has been much said in favour of its winter salad qualities, does not differ materially with us from the common Chicory. Those who grow the one need not have the other; but one or the other should be grown by all who have salad to provide in winter, as they are most useful for this purpose. As I stated some little time ago in the 'Gardener,' Chicory-seed should have been sown before now; but if put in at once, small roots would soon be produced that would give much useful salading in winter. The natural leaves die away in severe weather, and the roots may then be lifted and potted in clusters if placed in boxes, and set in any warm corner in mushroom-house, cellar, or other structure, when beautiful tender Lettuce-like leaves will sprout out and prove excellent for any kind of salad. Generally speaking, it will be found more satisfactory to have a succession of different things coming in in small quantities throughout the whole of the winter, than to have a large quantity of anything or everything in at one time, and nothing for long afterwards. In winter, everything should be drawn together as much as possible, and very small quantities of anything thoroughly well grown are more pleasing than an expensive quantity grown extensively and of an inferior description.

J. MUIR.



#### THE FLOWER-GARDEN.

*Geraniums*.—No time is better for putting in Geranium cuttings to strike root than from the first up to the third week of the present month. It is not always convenient to get them in just at this period, but it is worth a little extra trouble trying to do so. Cuttings put in now strike root quickly, and are well rooted long before the winter sets in—one of the greatest helps in wintering these plants cheaply and successfully. In order to save the bloom in the beds as far as possible, it is best to cut always above an open flower-truss; and as Geraniums strike better for being cut under a leaf-joint, this is also done at the time the cuttings are taken. In seasons like those we have lately experienced, it will be found advantageous to allow them to lie in a cool shed, that the extra sap may be dispelled somewhat before planting them into boxes. Twenty-four hours is long enough to let them lie thus. Then as to their size, I confess I like big ones. I have seen several lots of plants this season which were not so large,

after having been a few weeks in their flowering quarters, as our cuttings were last autumn when taken off the parent plants. I know there is want of room pleaded in such cases, but one large plant will go as far, and be much more effective than four small ones, as it takes the latter several weeks before they attain to a flowering size; whereas large plants, on the other hand, are effective at once. Another point worth paying attention to in taking cuttings from the plants in beds is this: in removing the points of shoots in a haphazard manner from the plants, you not only saddle yourself with a lot of small plants which are difficult to winter, and which take a long time to grow to a decorative size after being planted, but you also to a certain extent damage the plants materially, if you look for a continued and late bloom. By selecting large cuttings, and in the process giving your plants a judicious thinning, you allow the plants room for the development of a thin crop of shoots, which will carry the blooming season on as late as the state of the weather will allow. Geraniums are, in the colours in which we have them, by far the most effective dwarf-growing plants for massing purposes; and the time they continue in bloom under ordinarily good treatment is so long continued, that any slight trouble is always worth taking in their case. I do not know that the large-trussing varieties are as good bedders, especially late in the season, as are older sorts with smaller flower-trusses. Any sorts I have tried have shown a tendency to damp off in the centre of the truss long before the outer pips were past, giving either an appearance of dirtiness to the whole, or causing the loss of a good deal of bloom if all such trusses are removed. Vesuvius, taking all points into consideration, is about the best bedding Geranium of the day. Its comparative hardiness is also greatly in its favour. Last season, when other sorts had been greatly damaged by frost, this variety kept on blooming for a long time. Unfortunately the sports which have been obtained of late years from Vesuvius have been of no value in any respect. Should a clear or bright pink or rose sport turn up, we would doubtless obtain an acquisition.

*Dahlias*.—In order to obtain a fine late bloom of these, the shoots must be kept well thinned out. This does not apply to bedding sorts so much as to the show and fancy varieties, which make splendid decorative plants till late into the autumn. The plants also require to be securely staked to withstand September gales; and during this month, should it prove very dry, one soaking of water ought to carry the plants through an ordinary term of drought. Of course this applies in greatest force to deep, well-cultivated soils. Though our soil is an open one, it very rarely happens that water is required for these. Deep trenching in winter saves the summer use of the water-pot.

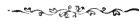
*Gladiolus*.—Under the same circumstances, these will require a good watering this month,—in the first place to finish the spikes, which are well advanced during this month, and also to plump up the corms for

another season's planting. I like to grow these also on deeply trenched, rich soil, and though the corms are not planted till towards the end of April, they make rapid progress so treated. Indeed, a florist who saw them in the beginning of June, remarked that they must have been well forward in pots before being planted out! Gladioli are much like potatoes: they like the soil and the general temperature warm before being planted, dryish warm weather till the corms begin to plump up, then a good soaking and a fine warm air to finish them off with.

*Violas, Pansies, and Sweet Peas.*—These are one and all greatly benefited at this time by having all seed capsules and pods removed. Very few of the *Violas* bloom later than September. The only one which we have this year given a prominent position to is Downie & Laird's *Duchess of Sutherland*. It is like the old *Golden Perpetual*, in that, like it, it would flower continuously, summer and winter, did weather permit. The great fault with most *Violas* is their habit in this dry climate of thus ceasing to flower early in autumn. The practice of removing the seed-vessels twice throughout the summer is the best means of getting them to continue in a floriferous state.

*Herbaceous plants.*—Summer-flowering subjects, such as *Pyrethrums*, *Lupinus polyphyllus* in variety, *Delphiniums*, early-flowering *Phloxes*, and others, if cleared of old flower-stems when these are getting over, will in most seasons throw up a second crop of flowers in autumn. Where these borders are regularly attended to throughout the summer—the borders being stirred with the hoe, plants tied up as they require it, and seed-vessels never allowed to form,—it is wonderful what a difference it makes in the enjoyability of these plants. Well-kept and well-managed herbaceous borders are a good feature in any garden, but under opposite conditions they are a perpetual eyesore. The great thing at present is to secure the late flowering of all plants possible.

R. P. BROTHERSTON.



## FRUIT-CULTURE.

### THE APPLE.

*Dwarf Trees.*—Dwarf Apple-trees are “garden toys,” and they do not pay. For ourselves, we never would plant them, unless in pots to be grown in an orchard-house. If our ground were so limited that we had no room for Apple-trees, we would certainly plant Gooseberry-bushes, Currants, or Rasp, or other “small” fruit; and if we had room for only *one* Apple-tree, it would be one that would some day or other come to something. We—that is, everybody—want Apples by the bushel; dwarfs only produce them by the dozen. When ground is so limited that Apples, to be grown at all, must be borne by little bushes, we think it a waste of ground to plant them, and a waste of time to

pinch, root-prune, and train them. To this rule there is only one exception; and that is, when there is a greater extent of walls, 5 or 6 feet high, than is wanted for growing Gooseberries and Currants. In that case we think a few dwarf trees might be planted profitably, just because there is little profit, and less beauty, in having bare walls.

Still, many villa-owners have such trees in their possession, and derive a great deal of pleasant occupation pinching, tying, and petting their little trees. The thousands of villa gardens are not cultivated for the sake of profit, but for pleasure; and there is as much pleasure to be derived from cultivating small Apple-trees and gathering in their fruits, as there is in growing Fuchsias, or Pelargoniums, or Chrysanthemums, or other plants which require staking, tying, petting. Having said that such trees do not pay, we have performed one duty: to those who wish to know how best to cultivate them we hasten to perform another.

Apple-trees which, from the first, are intended to be grown as dwarfs, are, or should be, grafted on some of the dwarfer forms of the Paradise. Even this is not enough to prevent Apple "trees" attempting to grow into *trees*, more especially if they are planted in rich soils. On poor soils they do not grow into large trees sometimes, unless carefully top-dressed and manure-watered. We have only had such trees to deal with twice. In one of the cases they were in a good deep soil, were lifted and sparingly root-pruned every year, and liberally mulched. They were then 6 or 7 feet high, and about 4 in diameter; were well furnished with fruit-spurs; were handsome pyramidal trees, and bore really good fruit freely. In the other case, the trees had had similar treatment, so far as we could ascertain, but the result was very different. The trees *were* dwarfs—were hide-bound, stunted, and fruitless. The reason seemed to be that, in the one case, the soil was deep and fertile; in the other, thin, gravelly, sterile, and burnt up. It is also quite possible that the trees were on an inferior kind of Paradise, for some of the varieties are truly "starving" stocks.

A great deal depends on the intelligence brought to bear on the trees. When trees grow lustily and outrun their space, careful lifting and root-pruning is just what will correct this tendency. Then, when a heavy crop of fruit ensues, which may be so great as to stop their growth, heavy mulchings and manurings are absolutely necessary to enable the trees to stand the strain. To mulch and manure-water trees which are growing well, inevitably causes the trees to grow too strongly; and to do this first, and then be obliged to lift and root-prune in order to correct it, is wrong. Often enough, however, the opposite mistake is made. Trees growing very moderately, and producing some fruit, and an abundant promise of more in the shape of blossom-buds, are often lifted and root-pruned, simply because the satisfactory state

they are in has been brought about by that process. The consequence is, that the trees are checked just at the very moment when they ought to be strengthened, in view of the prospective crop so liberally promised by the abundant fruit-buds. Beginners ought to learn to distinguish between fruit-buds and buds which will only produce leaves; for when plenty of flower-buds are formed, with only a moderate amount of young shoots, lifting and root-pruning is the greatest mistake that could be made;—well, no—not the greatest mistake; for lifting trees which are covered with flower-buds and nothing else is a greater one, and we have seen even that mistake committed. When this is the case, a heavy mulching should be given the moment it is seen that growths are not to be formed, and the flower-buds which form at the points of the leading shoots should be picked out, so that the wood-buds at their base may have a chance of breaking into growth,—if they are allowed to develop into Apples, farewell to growth. The fruit should also be thinned, and plenty of liquid manure given during summer. Such treatment will generally enable the trees to make a fair growth. As we have said, the opposite treatment is to be corrected by root-pruning, and this operation may require to be performed annually. Small trees are much more easily managed at the root than large or even medium-sized ones. In good soil, where root-pruning is annually performed, the ball becomes such a mass of roots that lifting may be done so as to cause no perceptible check at all. Such trees generally prove very satisfactory, and scarcely need lifting so long as they continue to bear; but sometimes spring frosts kill the blossoms, and the removal of the natural check to an over-production of wood—a crop of fruit—being removed, away go the trees into basket wood. When this is the case, the roots require checking, in order to induce a return to fruitfulness. To “hit the happy medium” in all cases, requires a good deal of intelligent forethought, based upon observation and experience, and this can only be acquired among the trees.

In the matters of pruning, pinching, and training, we should say that the directions given for medium trees apply to dwarfs in everything but one, and that one is, that when the dwarfs begin to come near the size at which it is intended to keep them, the annual growth should be cut back nearly their whole length. When they have arrived at this stage, it is a good thing to be occasionally removing old branches as opportunity occurs, and allowing their places to be filled with younger wood. This also applies to medium-sized trees, and indeed to all trees whatever. When any tree ceases to make a certain amount of annual growth, it begins to decline, and sometimes the decline is precipitate. When trees have grown as large as is considered desirable, the annual growth may very often take the form of young branches replacing old ones, with advantage. Old branches often get covered with spurs, which cluster too closely, and so mutually weaken each other. A careful pruner will be always shortening back his spurs as well as his

young shoots, and so keeping them thin and close to the main rods. When they do get long, thinning out and shortening back should be done gradually and intelligently.

*Trees on Walls.*—We would make the same subdivision here as among trees which are to be grown in orchards, in quarters by themselves, or in rows in the kitchen-garden. For villa or cottage gardens, we think that medium-sized trees on walls as well as in the open are most suitable. However, we, in all cases, are guided by circumstances, and it frequently happens that there are walls in even small gardens which require the largest-growing kinds; in other cases only the very smallest are suitable. We remember being shown by a villa-owner the most fruitful Jargonelle Pear we ever saw. It was planted against, and wholly covered, the gable of a two-storey warehouse. It had a great depth of soil to revel in, although a macadamised road lay right over its root. The training and pruning had been of the most free-and-easy kind, and would have disgusted a gardener with trim-training ideas; but the result was a very large healthy tree, bearing an enormous quantity of splendid fruit. Hundreds, thousands of gables and other high walls are covered with fruit-trees which are highly ornamental, and profitable into the bargain, and better ornaments need not be wished.

*Large Trees on High Walls.*—Wherever there are walls over 12 feet high, trees grafted on the free stock should be chosen, for they will prove most satisfactory in the end. The best kind of trees to plant in such situations are those that have been partially trained for walls. Such trees are to be had at most nurseries. Failing these, young ones should be selected. They will require cutting back in spring, to induce as many shoots to push as will lay a proper foundation for the tree. Endeavours should be made to fill the lower part of the wall properly with healthy growth. Pruning, pinching, and training must be done on the very same principle as we have laid down for the trees in the open quarters. In shortening back leading shoots in winter, care should be taken that the cuts are made above buds pointing in the direction where the shoots are desired to be. Shoots which grow straight out from the wall should always be pinched or pruned back, and only those which grow from the sides of the branches encouraged to form the permanent branches. In laying in shoots, take care that they point straight outwards from the stem. It is also always best to lay in supplementary shoots (when such are necessary) from the *upper* sides of the main branches, for then a regular placing of the branches is more easy and the ultimate appearance better. Branches should always be laid in so that, no matter how far they may be carried, they may never cross. Not only is a regularly trained tree more pleasing to the eye, but when the training is not regular, the branches are sometimes close together and sometimes widely apart; so some parts of the tree are overcrowded, and some parts of the wall are bare.



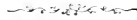
We think that, all things considered, fan-trained trees are best for everybody, but particularly so for amateurs. For dwarfs against low walls, trees vertically or obliquely trained may be better, but for medium or large sized ones fan-trained trees are best. For high walls, where the soil is deep and good, and healthily growing trees are chosen, horizontally trained trees are very good, and when the training is well done are very handsome. In training horizontal trees the leader must be cut back annually, so that their shoots may start—one for a fresh leader, and two for nailing straight outwards. It is well at first to allow the lower branches to rise towards their points at an angle of  $45^\circ$  for a time. If laid out horizontally they will grow very slowly, and ultimately fail to grow at all, for the upper half of the trees will naturally draw off the sap. This is one of the advantages of fan-training. However, if the lower branches are allowed to rise in the manner we have recommended, they will make a fair growth, and when they are grown enough to fill the space they are required to fill, they may be then depressed. It is a good rule to allow the lower branches to *leave* the main stem at an upward angle, although the side branches are to be finally fixed horizontally. This angle should approach nearer and nearer a right angle, until the upper tier of branches strike straight out at right angles from the stem. This will do much to prevent the upper branches appropriating the lion's share of the sap, to the impoverishment of the lower ones.

In very favourable soils such trees, especially if they are ultimately to attain a large size, may be planted and the roots never disturbed more. In by far the greater number of cases it will be more satisfactory if the roots are looked after. One of the modern improvements in gardening is the looking after tree-roots as well as the tops; and, as a plain matter of fact, it is more important. Nice training, skilful pruning, and other above-ground operations, are well enough, but are only half the battle. Roots do mischief, and that continually, if they get away into bad soil. Where no bad soil is, they may be safely let alone; when it is all bad except a thin upper crust, measures must be taken to keep the roots out of it. The old plan was to concrete, pave, or cement the bottoms of the fruit-tree borders, but it cost a great deal of money and labour. Neither is it quite necessary, although certainly a good plan—let us give our forefathers justice; for the modern plan of lifting down-going roots and laying them near the surface is as good if not a better plan. We have advised the doing of this before, and need not repeat it; only, it is necessary to insure first-rate success, so we again draw attention to it. A fairly vigorous growth must be kept up from first to last, by letting alone,—by careful lifting and raising of roots,—and by mulchings of manure and manure-water, if need be. Lifting and root-pruning—shortening back long *naked* roots—has one great thing to recommend it besides keeping the trees healthy, by only allowing the roots to

eat healthy food,—and that is, it keeps the roots “near home,” when one knows where they are and when to apply the food when they need it. The space thus occupied should never be dug for cropping purposes, for digging destroys the best roots, and they resist it by going deep down where they will not be disturbed, but where cold unfruitful sap will be sucked up. Where the roots are allowed to wander everywhere, cropping over their roots becomes necessary, for whole roods of ground can seldom be spared in any garden, far less small ones, for the roots of the wall-trees alone.

Large growing trees should be planted about 18 feet apart in a wall 12 feet high, and closer on walls that are higher, and wider on lower walls. If the soil is at all good, each tree should ultimately cover 240 square feet or thereabout, and something like this should be allowed for their development. For the sake of covering the walls from the first, riders (wall-trained standards on six feet stems) should be planted alternately with the others, and grubbed out when the others need the space.

A. H. H.



## HINTS FOR AMATEURS.

### HARDY FRUITS.

A GENERAL overhauling of the whole stock may now be made. Many are the systems adopted with pruning and trimming in the autumn, which come to much the same thing in the end. Some enthusiastic friends go over all their pyramids and bush-fruits, breaking over their outer shoots to stop growth. The broken twigs, dangling and hanging among the healthy leaves, are certainly not pretty. Others go over all and nip off the tops according to length of shoots, and towards leaf-falling cut all to their proper length. A third system, and one we think good, is to go over the trees, cutting moderately in, say, the upper portion; in two or three weeks cut back the middle portion; and, lastly, after a week or two, cut in the lower portion, according as the shape of tree and its vigour may dictate. The checking of growth by partly lifting, so that the tree gets ready for next year's work, is a practice we consider safe; and we hope, before this appears in print, to have served some scores in this manner. We dislike extremes in every form when working on fruit-trees. Wall-trees should now be in good trim: the fruit well exposed, and all wood for next season close in its proper quarters, so that sun and air may reach every part. Notwithstanding what we say about the success of some who leave Nature to take its own course, to slash out or twist a shoot into space, as circumstances may suggest, is all that some attempt. These would certainly be none the worse if they used a little skill in training and making their walls (gables of houses, sheds, outhouses, &c., as often are the only walls of amateurs, look more creditable.

Having lately been called to visit large market-grounds (one garden from 70 to 100 acres), we found the difference of results obtained within a range of only a few score of yards to be most striking. We noticed large breadths of Plum-trees, many of them the "fruit of the district," Pershore eggs, and not a fruit on them—the cause not being far to seek, and well known to the manager and his able assistants. Skill has been expended here, and success has been achieved too, in days gone by; but this year failure is complete. A neighbour who leaves his trees to the tender care of the elements has heavy crops of "Pershore eggs," he does not know why—but those who have made the matter a study know the cause; and by way of contrast, the Strawberry crop in the skilfully managed garden is magnificent, while the proprietor rich in Plums has none. The cause of this, too, is seen at a glance—worn-out old plants and absence of manure. The fruitful lot are on well-trenched land enriched with plenty of farm-yard manure. Wall-trees, up to time of fruit ripening, may have frequent drenchings with hose (where such is in use). Cleanliness is a very important item in wall-tree management. Where fruit is abundant, they can be turned to good account by thinning before they begin to ripen. While Plums are hard, they can be bottled on the French system, and stored for winter use. We have seen (by a Frenchman) extraordinary results from this practice: Green Gages bottled quite hard and sour, and the following winter and spring, or later, turned out for use, with the "Gage" flavour unmistakably distinct. The green-fruit preserving is by no means general; we, however, know more of the results of the manner of preserving. Strawberries should be planted without delay: ground well enriched and properly dug is the chief secret of success in raising this very desirable fruit.

The work of propagation must now have due attention; much of the success of next year will depend on the work being efficiently carried out this season. Tender kinds should be put in hand first. Clean pots, pans, or boxes, should be ready; also crocks and plenty of clean loam; sand, with a little peat or leaf-mould; sandy loam, with some clean sand over the top, and the whole deeply drained, will answer most purposes. Such plants as *Alternantheras*, *Iresines*, and *Coleus* should be taken first; then may follow *Verbenas*, *Petunias*, *Ageratums*, and similar kinds. *Pelargoniums* of all kinds do well in boxes, pans, or pots, placed in the full sun; or a border well broken, and the cuttings planted thickly in it, answers well when they are to be potted. The more delicate *Tricolors* and smaller-growing golden kinds may have first attention. They might be placed singly in the centres of small pots; and these pots, placed in the full sun, plunged in old tan, leaf-mould, or cocoa-nut fibre. Rare or valued kinds may be lifted, potted, and placed in frames or pits to get them to good size for increasing stock—an extra number should always be in hand to meet casualties. The system of cramming structures with all kinds of plants brings

many to grief, and often injures the whole stock: practical men are often obliged to do much of this, because of meeting demands for which they have inadequate means. The most successful amateurs we are acquainted with grow their specialities, and do not attempt to work beyond their means.

Among the beds and borders a quantity of decaying leaves may be seen when the cuttings are taken off. A general cleaning over should take place, and the necessary picking, trimming, and regulating must be persevered in wherever high keeping is desired—and a flower-garden without such is simply ridiculous. Each colour should be quite distinct from its fellow, and each form kept to what was intended. On the contrary, with herbaceous plants, like shrubs and trees, they form outlines of their own, and should not be trimmed into formality like bedding-plants. All borders of mixed plants must be kept free of decaying flowers and leaves. Stake those which require it. Hoeing and keeping weeds down are matters always requiring attention.

Hollyhocks, Dahlias, &c., require strong stakes and ties, which will stand the force of winds: exposed positions require this in particular. In the Rose-garden budding may be persevered with. A border for the stocks may be in a part not much frequented, where the work of budding will not be considered a nuisance, from the litter of tying, &c., which attends the operation. Standard Roses we never cared much for (except in pots for forcing), and this season we have seen so much destruction from last season's frosts that our objection to planting them is increased. Trim off decaying flowers. Look after suckers from stocks, and top-heavy shoots which are taking all the growth from the others. Rose hedges (beautiful objects) should be thinned and trimmed with the knife—no clipping should be tolerated. Always cut close to a bud, and then dead and dying wood will be in a measure avoided. Roses trained on walls or trellises should be cut within bounds, to prevent matting. Many kinds of the Hybrid Perpetuals and Bourbons do well as moderate climbers, and are very manageable. Gloire de Dijon, Souvenir de Malmaison, Mrs Bosanquet, Climbing Devoniensis, Maréchal Niel, and some others of this class, do well for climbing from 12 to 20 feet. But for growing wild and covering large spaces, one has to look for such kinds as Fortuneii, Dundee Rambler, and suchlike.

#### PLANT-STRUCTURES.

Summer and autumn flowering-plants will now be abundant, and great care must be exercised, so that show-houses of any pretension may not form a part of the "bedding system." To have a mass of plants closely packed together (the one killing the other, and the whole struggling for the mastery), is simply an outrage on good taste; something like distinctness and gracefulness should be attempted. They should be kept thin, turned round frequently, well treated with water, and kept clean (both plants and pots). Fuchsias (especially standards), Pelargoniums, Petunias, Achimenes, Gloxinias, Coleus, Gladioli in pots, Lantanas, Campanula pyramidalis, Cockscombs, Begonias, Balsams, &c., mixed with well-grown specimens of Tree-Ferns, Cordalines, Araucaria excelsa, variegated Phormiums, Dracænas, half-hardy Palms, and suchlike, would at any time command admiration in a show-house in any position. In our district we know of some half-dozen mechanics who have neat little glass-structures placed by their cots (mostly

erected by their own hands), and as they have to buy their plants, their stock is small; but it is of much advantage in another form—they have to give extra care to cultivation and arrangement. By this means they have their plants thin and select, and they take the form of compact specimens. Stove-plants, or any with delicate foliage, must not be subjected to cold draughts. Ferns, and similar shade-loving plants, should be kept where sun and cold air have not full power over them. During this month the days are often very warm and the nights chilly; rather than run risk of injury, it is better to shut the ventilators. This applies as much to the small frame and window-box as the large house. Careful watering, and abundance of it, is still requisite for free-growing plants, such as Fuchsias, Balsams, &c. The training of climbers, and judicious thinning of them, requires careful attention. A strong stem with all the flowering branches hanging down is a very pleasing sight; but the whole twisted and tied into ropes, bunches, or coils, as sometimes seen, is very offensive to the eye. Examine borders and beds with plants growing in them, and let good soakings of water (rain if it can be had) be given. Camellias, Oranges, and large evergreen plants, will require a quantity of water. Smaller plants in pots are different, and when they are watered they should be in want of it; but in no case should they be allowed to become dust-dry. New Holland plants may be removed to safe quarters by end of month. Those in small pots often suffer when left out late to heavy autumn rains, should they prevail. A general cleaning of houses and pits may be made when they can be spared. Lights not in use should be washed, and if painting is necessary it should have due attention. Put in cuttings of Pelargoniums of all kinds, especially of the Zonal kinds. Cut down those show kinds which have flowered, and when broke and growing they may have the soil shaken from them, the roots reduced, and be repotted into smaller-sized pots. They are better under protection of glass-lights after this. Cinerarias, Primulas, Calceolarias, Chrysanthemums, shift to larger pots as may be required: starving at roots now means stunted growth and poor foliage. Chrysanthemums left in the open ground require less attention with water than those in pots, but they must not be left to themselves.

It may be well to look to the stock of winter-flowering hardy plants. Azaleas and Camellias which have set their buds may have plenty of air and light, but should not stand in the glaring sun. Be careful in taking plants from shade to exposure. The stock of Deutzias, Wiegelias, Rhododendrons, Lilacs, &c., should be kept in the sun and not over-moist, so that they may be ready for early work at the proper time. Roses should be forward for autumn and winter blooming: Teas and China kinds come readily into flower. Roman Hyacinths should be bought and potted—three to six or a dozen in pots and pans. Autumn Gracilis Heaths and others for early flowering should be ready to do their part towards display. The stock of bulbs should be considered in due time: early potting means early flowering with little forcing. Stake and train all plants which require attention in this way. Among the better class of specimens in stoves free growth may have been made, and they should have more air and exposure, as much as they can bear. Shade as little as may be necessary; give the requisite amount of pot-room for the roots; put plenty of moisture on the paths and stages; syringe less, and be careful not to drench flowers. The winter stock of flowering-plants must now have due attention to prevent stunting them, and keep them clean. M. T.

## BOTANICAL GARDENS, SYDNEY, N.S.W.

THOSE who visit Sydney's infant turrets, and the new-born glories of the "southern seas," should not pass by the beauties of these Gardens. If they do not impress one with hoary wisdom and the dim associations of the past, which are so inseparable from the name of Kew, they, on the other hand, go very far to demonstrate that our colonies are not wholly given up to "gold-getting," but are intensely anxious that botanical science should flourish among them. For this purpose these Gardens were established, and likewise to furnish a home for those floral beauties which her sons may bring from far. The extent of the Gardens is about 40 acres, and they are bounded on the north by part of the famous harbour, which is designated as one of the most picturesque in the world. From this point the sea-view is very fine; ships ride at anchor within a few yards of a low sea-wall, and give to the whole scene a grand nobility which canvas only could express. We were told that the Gardens were naturally of a rocky, barren nature, so that in many places large quantities of rock had to be quarried away, and vegetation assisted by the introduction of soil. This has been judiciously done; the natural irregularities of surface having been interfered with as little as possible. The grounds are divided into two divisions, and known as the *upper* and the *lower* garden. The upper division is the older, and gives a fair notion of early efforts at landscape-work. Then they had no time to trouble with curves—straight lines and plenty of them being considered the two things necessary. However, we should not like to hear of it being modernised, as it could not undergo such a change without slaughtering some of the finest exogens we have yet seen. Amongst the number may be mentioned three fine specimens of *Araucaria excelsa*. They are said to have been planted in 1818; and from measurements recently made we quote the following: No. 1, 112 feet high, and 13 feet in circumference 3 feet from the ground; No. 2, 111 feet, with a circumference of 11 feet a like distance from the ground; No. 3, 94 feet, and 14 feet in circumference 3 feet from the ground. No. 1 is a magnificent tree, and may justly be considered one of the finest in cultivation. In this division there are also some remarkably fine examples of Palm-culture, *Kentia Forsteriana*, the noble thatch-Palm *Cocos plumosa*, the Cocoa-Palm of Brazil, which rears its feathery head fully 100 feet above the lesser forms of vegetation at its base. The Date-Palm is also a striking object, more especially the reclining variety *Phœnix reclinata*; as seen in fruit it reminds one of the fabled productiveness of this class of plants. We are now close to the glass department, consisting of Fern-house, Croton-house, and orchard-house. In the Fern-house is a good collection, with many fine *Aspleniums* lately added from Fiji. The Croton-house had also received many additions from this sunny isle of the south, which is so prolific

in rarities of vegetation. Around this department several varieties of the Stag's-horn Ferns were flourishing exceedingly well. They were attached to branches and stumps of trees; many of them had been worked into specimen form, several feet in circumference. Here are located the valuable additions of museum and library. The first of these places was undergoing repairs, and we therefore saw it to disadvantage; yet, from what we saw, we would infer that it must be of valuable service to botanical students, and of general interest to the public.

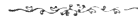
We now come to the lower garden, which is the more modern division. Here, stretched on every side, is a magnificent carpet of green turf, which has retained its spring-like freshness throughout an exceptionally dry season. A closer inspection made us aware that it was largely composed of "buffalo grass" (*Stenotaphrum glabrum*), and that, owing to its long, fibrous-rooted character, it is expressly adapted to withstand long drought. As a lawn-grass for dry soils or hot climates it cannot be equalled. An artificial lake, with its miniature islands, is the next attractive feature. The islands are richly covered with semi-aquatic vegetation, while the lake is occupied with representatives of the *Nymphaea* family, many of which were in bloom. Advantage has been taken here and there, where space permitted, of grouping together plants having the same general character or properties. If this plan were to some extent carried out in private gardens, it would in many cases heighten effect, and give to the whole a special interest. In one instance we noticed a group furnished from the "bush" district, among which the Silky Oak, *Grevillea robusta*, and the famous Moreton Bay Pine, *Araucaria Cunninghamii*, formed conspicuous objects. In close proximity is another group of Proteaceous trees, principally natives—such as *Stenocarpus*, *Helicia*, *Hakea*, and *Banksias*. Dotted here and there were many fine specimens, of which we could only afford to take a passing notice—such as *Erythrina*s, in many varieties, gaily covered with their coral-like flowers; *Dracæna draco*, a specimen 12 feet in circumference and 10 feet high, which seemed to draw attention even from the most careless observers; *Salisburia adiantifolia*, the Maiden-hair tree of Japan, most striking in appearance, and so like an *Adiantum* that from a distance false impressions might be made; *Tecoma velutina*, a very free-flowering shrub, much like an *Allamanda* from its pale, trumpet-like flowers. *Jubea spectabilis* for symmetry of form can hold its own under any condition, more especially when it reaches a height of 15 or 20 feet. This plant was presented to the Gardens by Sir W. Macarthur, and does credit to the donor. *Banksia serrata* is likewise worthy of notice from the rusticity of its bark, which makes it a special object of interest. The *Coniferæ* family is not so well represented as might have been expected, and comes very far behind New Zealand in this respect. No doubt one cause may be the greater dryness of climate. Near to

where we stand is a small monument, erected to the memory of one of Australia's great explorers. In 1836 he received the appointment of Government botanist, but resigned two years afterwards, with the intention of returning home, but death frustrated his purpose. Such is the short history of Allan Cunningham, whose life-object seems to have been the good of others rather than the promotion of self-interest.

The outside culture of tropical fruits has, to a great extent, proved a failure. The Custard-Apple, Bread-fruit, Alligator Pear, and Mangosteen, with many others, have been repeatedly tried and as often failed. This is rather surprising when such fruit as the Pomegranate blooms and fruits with great profusion. As to the floral department we cannot say much; our visit being towards the end of autumn, the great display of the season was over. The system of bedding is chiefly carpet-work, and fine-foliaged soft woods are much used for the purpose.

In bidding farewell to these Gardens, one felt in full sympathy with the words of Anthony Trollope, when he says of Sydney, it is one of those places which a man cannot leave without a pang and a tear. That such gardens have a refining and educative influence, is clearly seen by the almost entire absence of prohibitory notices. It is said a Frenchman can easily pass a vineyard without partaking of the fruit, which to an Englishman is a very difficult task. Our colonial cousins, however, have proved that even Englishmen can protect that which is held for the public good, without the proverbial legal cautions.

WM. FORBES.



#### VINE-GROWING IN THE OPEN AIR.

As my friends and neighbours around me are now busily employed in shearing off the summer growth of Vines, it occurs to me that the present would be a fitting opportunity of saying a few words of general import upon the subject.

That the cultivation of the Grape-Vine might be made profitable in the south of England, if not in many other parts of the kingdom, there can hardly be a doubt. But if it is intended to go to the root of the question, and to instruct those who are most in want of information, the true position of affairs cannot be too plainly stated. There is no need of writing speculatively upon the subject; Grapes have been grown and Grapes can be grown under a proper system of cultivation. It would be a wonder if the Vine yielded much fruit under conditions infinitely worse than is enjoyed by the commonest wall-creeper, and under a system of treatment which cannot possibly be more at variance with the natural habit and requirements of the plant.

I happen to reside for the time being in a district where I am surrounded upon all sides by Vines, and I do not hesitate to say that there



are few plants (certainly not fruit-trees) that would exist for half the time many of these Vines have lived under the same treatment. Before the Vine becomes a fruitful plant out of doors, its natural habit and requirements must be better understood by the masses. It is by nature a creeping plant, and those who cultivate it as a wall-creeper might just as well have the pleasure of enjoying a little fruit, if they only knew the way to obtain it. The majority of cottagers regard it as a troublesome, refractory plant in summer, and they frequently ascribe its barrenness to old age. They are not aware that its roots travel long distances in search of food, or that the disease that attacks it in summer (mildew) is the result of starvation at the root. Neither do they know that what they in their simple way call summer-pruning destroys the last chance of anything like a crop of fruit, because the fruit-bearing wood is cut away, and a stock of green unripe laterals takes its place, only to be cut down by the winter's frost. If, therefore, we are to inculcate a spirit of thrift and emulation among those who have opportunities of cultivating the Vine upon the walls of their houses or gardens, we must, in order to consummate the scheme, endeavour to give some tangible proof of our faith in its practicability. And I see no possibility of accomplishing this end better than by the proprietors of large estates leading the way. With a very trifling outlay the walls of cottages could be furnished with a fresh set of Vines, and an intelligent man should be deputed to direct their management for the first couple of years, until the occupiers themselves took sufficient interest in looking after them.

The ordinary labourer is no believer in new ideas or new doctrines. He is too deeply imbued with the views of his class to give up old habits and customs; reason or logic has no charm for his ear; but once prove to him by results that your scheme is not only feasible but profitable, and your trouble is at an end.

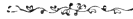
Nearly all the Vines that have come under my notice in this district are in a state of semi-starvation, having little else to live upon than a small portion of impoverished earth, trodden so hard that no moisture can penetrate to the roots to nourish them. In many cases the roots have travelled underneath the cottages, where no artificial assistance can be rendered to them, even if it were so desired. In order, therefore, to make a promising start, it would be necessary in most cases to have a thorough clearance out, and to make new borders and plant new Vines.

When it is considered that a Vine can be purchased at from 3s. 6d. to 5s., that will cover the walls of a cottage in two or three years, and that the border need not be an expensive one, there are certainly not many obstacles standing in the way of initiating an improved system of open-air Vine-culture. The use of very rich soil would be a mistake, as it would also be expensive to many who could not well afford it. In any case it is not an absolute necessity; in most cases it

might prove injurious, because of its tendency to promote spongy, sappy growth, which in our climate in most seasons would stand a bad chance of getting properly ripened. It would be better at the beginning to make only a narrow border, in order the better to establish moderate growth and early fertility. No variety is better adapted, generally speaking, for outdoor culture than Royal Muscadine, the Chasselas de Fontainebleau of the French, which is not fastidious as to climate.

But it is no use living in a fool's Paradise. Until some better idea of the summer management of Vines is inculcated into the minds of the lower classes, much improvement need not be expected. The young wood that is ruthlessly cut away at this season is the fruit-bearing wood of next year; and until cottagers and others learn to appreciate this, and only thin out to admit air and light among their Vines, nothing more than a crop of half-famished leaves will result from their labours.

W. HINDS.



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

### NO. VIII.

AT the commencement of these papers I took occasion to point out how, in many instances, the wall-borders are far too narrow to rightly admit of being cropped with vegetables, as the preparation for these much interferes with the roots of the fruit-trees. Where, however, a liberal quantity of manure is given, and the digging performed once only during the year—say either late in the autumn or early in the spring—not so much harm results; indeed it is very probable the fruit-trees derive more nourishment from this and the supplies of liquid manure administered to some crops, than they would receive were they the only occupants of the borders. This may appear somewhat contradictory, but it is not so in reality. What I mean to say is this: the majority of wall-borders are inadequately manured, are dug and cropped without any regard being paid to the lawful and really most valuable occupants—viz., the fruit-trees trained to the walls. If more attention was paid to the roots of these, we should see fewer walls furnished, or rather partially furnished, with inferior trees. For an illustration of my argument, I have only to step into the garden now under my charge. I here find splendid walls, which are now almost in as good condition as when built a century since; good, deep, well-drained soil, and plenty of available moisture. Unfortunately the borders are narrow, and these appear to have long been heavily cropped, in common with the remainder of the garden. In one instance the borders near a west wall have for many years been filled with herbs, few of which were ever replanted or manured. As a consequence of all this, the trees, with the exception of the Pears and three large Apricots,

are now in a very poor plight, the old ones gradually dying, and those planted of late years making little progress, mildew being prevalent on all the Peaches and Nectarines ; all this resulting, I firmly believe, from the dry impoverished state of the borders. It may be said I am forming rather too hasty an opinion on the subject. If after more liberal treatment I find this to be the case, I will retract : I mention it at the present time, simply because I intend writing in this number upon what *should not* be grown on wall-borders, and refer to this not because it is a solitary instance of mismanagement, but rather because it will not injuriously affect those responsible.

In a great many gardens the herbs are grown on wall-borders, and, as at this place, are almost undisturbed for many years. In our case, in addition to the herbs, we found a row of Violets and Chrysanthemums where possible to plant them, at the base of this and all the walls. Consequently the border, from the wall to the edge and to its full depth, was robbed of all fertility *all the year round*. No wonder the Apricots were dry and poor, and the Pear-trees (cordons) never perfected their fruit. Those who have Violets or herbs, including well-established Parsley on wall-borders, will do well to examine the soil under them. The result of the investigation, unless I am much mistaken, will be a decision to form fresh Violet and herb quarters. I am aware the herbs are very conveniently situated when near the walks ; but if they cannot be shifted to the opposite side of the walks, owing to more fruit-trees being in possession, what is to hinder planting a few lines on the inside of the fruit-trees ? As I have endeavoured to point out in these papers, the wall-borders can be cropped more profitably with temporary crops, as opposed to the most injurious permanent crops (with which I ought to include Strawberries, should these be retained beyond one or at the most two seasons) ; and it is quite certain that new beds of herbs are not only easily formed, but they are also very much improved by the process. Of course if the Violets, Strawberries, and herbs were annually replanted, the ground on these occasions receiving heavy dressings of manure, not much harm would result ; but it is a curious fact how little attention is paid to the herb quarters especially, seeing how regular is the demand for some of them. How many there are who fail to maintain a supply of Parsley ! and even Mint, Tarragon, and Sage are very scarce at times when they ought to be available, and that, too, with but little trouble. In conclusion, a few further remarks on herb-culture may not be out of place.

Here it has been the practice to sow Parsley on a south border for winter use ; but although the object in view has been attained, the practice will not be imitated by me, owing to the incessant trappings in all weathers when the Parsley is picked, rendering the ground solid and poor, and not easily recovered to a workable condition. The Parsley is this season sown in quantity in lines near to, and between, the commoner fruit-trees in the open, where it will be quite as access-

ible, and less injurious. Some of the hardiest Parsley I have yet seen was grown entirely in the open. The seedlings should always be thinned out freely, as it improves the quality and robustness of the growth.

With the majority of herbs annual propagation is not necessary; but as a rule, young plants of all will be found most profitable, as well as less unsightly. Old plants again, of Tarragon and Sage especially, frequently fail, if picked closely or from frost; whereas a few two-year-old plants will yield endless pickings. The former should, during the spring months, be divided and replanted on good fresh soil; and of Sage young plants may be obtained, either by pulling off, during April, small branches, and firmly dibbling in these on a north border,—by cuttings, made in June or July, of the current year's growth, dibbling these in hand-lights in a cool position,—or by seed sown on a warm border in April. The young plants should not be allowed to flower, and they will soon spread. Mint is much improved by being occasionally divided and replanted, and does not require a warm sheltered position. A fresh stock of Fennel can easily be had by sowing seed in March and April. The common and pot Marjorams can be divided and transplanted in the spring months; and the winter Sweet Marjoram is annually sown in April or early in May. Penny-royal can be divided and replanted at almost any season of the year. Good-sized branches of Rosemary, if pulled off during March or April, and dibbled in a shady border, will root freely, and form nice plants for moving in the following spring. The different varieties of Thyme can easily be propagated by division, and soon grow to a good size. Summer Savory is obtained by sowing seed in a warm position during April; and the winter Savory is usually increased by division of the old roots, either in March or April. Sorrel is often seen in undisturbed possession of a warm border, when in reality it would succeed better in a cooler position. Probably in the majority of gardens it is unnecessarily grown, and the ground it occupies might well be devoted to other purposes. To have large succulent leaves, the roots should be divided and replanted every two or three years. It should be cut over when inclined to run to seed. Chives should also be replanted occasionally: they are very useful for salads. Both Sweet and Common Basil are raised from seed. There may be other kinds than the above; but according to my experience, cooks now do not use but few varieties of herbs, although it is perhaps advisable to grow them in case they should be asked for.

W. IGGULDEN.



#### NOTES FROM THE PAPERS.

THE Marquis of Huntly's experiments in Turnip-storing on his Scotch estates, as recorded in the horticultural papers, are suggestive to gardeners as well as farmers in regard to the winter storage of root-crops.

“On the 29th of November last,” he says, “we carried out the following experiments: First of all 600 Turnips were left in the land as they grew, without any protection. I need not say that when these were taken up on the 26th of March this spring they were all rotten. Secondly, a row of 600 Turnips was furrowed up with the plough in the usual Aberdeenshire fashion, and when taken up about 83 per cent of these were rotten, or about five rotten to one whole Turnip. Thirdly, we tried what I might call the Forfarshire system, by opening a furrow with a single-boarded plough; two drills of Turnips pulled, without anything cut from them, were laid against the perpendicular side of the furrow and the soil turned back over them with the plough. Of these, about 28 per cent were destroyed or rotten, but of the good Turnips many were wet and dirty. Fourthly, we opened a deep furrow with a double-boarded plough; the Turnips were shorn of leaves with the scythe, harrowed out, and eight drills put into the furrow. They were partly covered by one round of the single-boarded plough, and the remaining uncovered portion covered with earth by spade. Out of these 600 Turnips about 16 per cent were destroyed, but they did not come up quite so clean as they should have done, or as those in the next experiments we tried, and which I may call the English way, which was putting the Turnips into pits. I had three different pits or heaps, about 6 feet square. Into No. 1, 600 Turnips, as they were pulled, without anything cut off, were thrown. This is the ordinary way I have seen it done in Huntingdonshire since I was a boy. In the next, the 600 Turnips had the leaves cut off; and in the third pit, they had the leaves and the roots cut off. The pits were 3 to 4 feet high, and each contained about  $1\frac{1}{2}$  cartload of Turnips, and were covered with 4 inches of earth. In No. 1, there were 552 healthy Turnips out of the 600, and 48 destroyed, or 8 per cent; in No. 2 there were 550, and 50 destroyed, or 8 per cent; and in No. 3 there were 570, and 35 destroyed, or 6 per cent; and the great advantage was that the bulbs were healthy, clean, and dry.”

‘Land and Water’ gives an interesting account of the manufacture of a new manure named “Azotine,” which is said to equal the best guano, and likely to supersede it to some extent.

“Man is, by the laws of society, obliged to clothe himself in garments made from vegetable or animal fibre, and in due time these garments decay and are consigned to the rag-bag. In this age of utility nothing is permitted to be wasted, hence these rags are divided into three categories. First, they are washed and purified, then after being unravelled they are made up into inferior cloth, and sold at a cheap rate. The remainder is carefully examined and all animal matter removed; it is then packed in bales and despatched to the papermakers, who give a good price for it. The rags of the third class are, or rather have been, considered almost valueless, as they cannot be used for cloth or paper. Hitherto they have been utilised for manure in a rough manner, by tearing them into pieces and burying them at a trifling depth below the earth, scattering them over the surface; but as this process is tedious, and the substance takes a long time to decompose and produce any effect upon vegetation, it scarcely repays the manual labour, so that cultivators do not care to employ it. The plan was then tried of destroying the wool with caustic alkali, and throwing the blackened mass into the river, or of attacking the cotton with a strong acid, and reducing it to powder, whilst the wool was made up again. Thus the utilisation of one fibre occasioned the destruction of the other. This

loss is prevented in the manufacture of azotine. The preparation of this new substance is founded upon the fact that all animal fibres, when submitted for some hours to the action of steam at a high temperature, and to a strong pressure, by which means a great modification takes place, a species of decomposition analogous to the action of caustic alkali, the material is transformed into a brown mass resembling caramel, which can be dissolved even in cold water. The operation is very simple, as fully described by M. A. Landureau, in an article contributed by him to the 'Journal d'Agriculture Progressive.' He states: We have tried this new manure this year upon one of our experimental fields of Beetroot, and find it quite equal to the best guano. The most important circumstance from an industrial point of view is that this new fabrication being produced from refuse, the expense of making it is covered, and the azotine yields a net profit to the maker. We believe that this discovery is of a nature to render great service to agriculture by the utilisation of refuse hitherto of no use."

The 'Field' gives what it calls Dr Lindley's recipe for a Vine-border, and thinks it explains a good deal in Vine-culture.

"With regard to the composition of the soil of Vine-borders, no cultivator who has written on Vine-growing has, so far as I am aware, quoted the late Dr Lindley on the subject; but although he was a theorist more than anything else, it is admitted by cultivators that his conclusions were wonderfully near the mark, and not a few of them have been completely verified in practice. Speaking of the Hampton Court Vine, which has preserved its health and fertility for such a length of time—being in that respect a marvellous contrast to Vines under modern culture, which in so many cases die or become enfeebled whilst still in their infancy—he observes that it is growing in a finely divided alluvial soil, resting on gravel, the subsoil being dry and compact. It matters little what the material consists of, for a clay bottom may be equally good with a gravel one, if drained naturally, by fissures or other causes. In such situations the Vine finds all the elements it requires for its growth. The fertilising particles of matter are equally distributed through the soil. There is no disposition in any portion of such soils to run together, or to become sour; every facility is afforded the roots to permeate the borders, while the finely divided state of the various ingredients composing them (and their perfect admixture) favours the production of those minute fibrous roots which are so essential an element of Grape-growing. Here, then, is all the Vine requires to produce good and abundant crops, and to form for itself a constitution enabling it to supply generations with its generous produce. This, which may be called a recipe for a Vine-border, was published by Lindley nearly thirty years ago, and before so much had been written on the subject by modern authorities on Grape-culture; and it may be doubted if a more correct and generally applicable one was ever offered, or one which so suggestively explained how it is that the Vine succeeds in soils of such diverse character, and in soils that were never purposely prepared for it."

We have read a good many favourable notices lately of the new greenhouse Rhododendron, Lady Alice Fitzwilliam, and have also had the opportunity of seeing it at its best in two or three gardens. It is perhaps one of the grandest, if not the finest, variety of its kind yet

raised—a hybrid, with pure white flowers of large size, possessing a strong but delicious perfume that fills the house. The flowers are larger than those of any existing variety we know, being more like moderately-sized *Lilium auratum*s than anything else, and are produced in great profusion, and from two to four on a truss. The plant has received the usual certificates, we believe, from the Royal Horticultural and Botanical Societies.

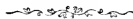
“Ben’s Boiler” is the latest addition of its kind to horticultural appliances. Who “Ben” himself is we have not the least idea, but he has lately written sensibly on the subject of heating, and now we have his boiler, which may be described as a Jones’s “terminal end” turned outside in. Externally it is a simple arch of the proper portions, and the wings and auxiliary flues are all inside. Whether these flues are required or no may be a matter of opinion, but the form is the best conception of its kind we have yet seen.

It cannot but have struck the frequenters of our summer flower shows during the past two or three years, that there has been an appreciable falling off in the quality of the fruit exhibited—particularly Grapes, which have not been up to the mark. During the present season there has not been one show, so far as we have seen or read, of which it could be said the display of fruit was high class or even excellent. Pines, of course, have been few and poor, which is not surprising, because the St Michael’s Pines and other causes have contributed to drive the English grower out of the running to a large extent [and yet to have a really full-flavoured Pine we must have an English one—Ed.], and greatly reduced the interest in Pine-culture in our gardens. It is not so with Grapes, however, and unless we are to attribute the inferiority of the examples that have been shown to the recent bad and untoward seasons we have experienced, it is difficult to assign a cause. It is not at all improbable that the cold and dull seasons following one another in succession for a number of years, as has been the case, may have impaired the constitution of Vines under glass. The agricultural papers say that the effect of the continued cold and sunless seasons has been to deteriorate the quality of the hay crops, and almost to destroy much of the finer and better herbage, whose place has been usurped by the coarser grasses; and it requires no stretch of the imagination to believe that permanently planted indoor subjects may have suffered in some degree also. The complaint of the fruiterers this season is that Grapes are unusually ill-coloured.

Currency has been given to the report that in the reductions very generally taking place in gardens, owing to the depression of trade, cheaper and inferior men are being substituted for good ones as head-gardeners; but those whose business brings them in contact with pro-

prietors and gardeners most, declare there is not a word of truth in the statement. Changes do take place, as usual, and no doubt reductions of a nature have had to be made in numbers of gardens that rendered it desirable to gardeners interested in their business to resign their charge; but, as a rule, employers are too much alive to their own interests, and, to do them justice, generally too considerate, to part with good servants for the sake of a few pounds' difference in their salary, knowing as well as other people that economy is not effected by such measures.

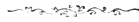
So much abuse has been heaped upon gardeners and farmers for their hostility to certain species of birds—which they believe destroy or greatly injure their crops—by those who have taken the “balance of life” in hand, and who maintain that the birds are really the cultivator's friends, that it will interest those concerned in such matters, to learn what has come of an attempt on the part of certain naturalists to establish an equilibrium in that way in New Zealand. In that country, cultivators of the soil were not so badly situated, on the whole, as regards insect-pests, only nature had provided insects that did do some little damage to crops, and had forgotten to supply the counterpoise in the shape of birds to prey upon them. This little omission the Acclimatisation Society kindly undertook to supply, and imported greenfinches, which have taken kindly to the soil and multiplied prodigiously. It is not quite clear what damage they have done to the particular scourges they were expected to destroy; but according to the New Zealand papers, the Acclimatisation Society have lately been asked to supply poison to destroy the finches; and one poser addressed to the Society is a request “to state what it proposes to do to remove these birds from the country!” In the meantime, the protection of the law, which the finches have enjoyed hitherto, has been removed, and a war of extermination against them is likely to commence. The finches have increased so much these few years back in New Zealand, that it is feared “they will soon eat the produce of every farmer in the country.” Where they abound, turnips can hardly be raised, owing to their ravages, and wheat and oat fields are so stripped as not to be worth cutting. In the attempts, to poison the birds by means of poisoned seeds, many other valuable birds that it is desirable to protect have been destroyed; and altogether the balancing experiment has produced such disastrous results that the Acclimatisation Society, which no doubt acted on the advice of “scientific” naturalists, has had to confess to having made some serious mistakes.





## ROSES TO BE SEEN TO BEST ADVANTAGE.

A SOUTH border well trenched and manured is probably the best position for Roses, and if it has a good slope to the front so much the better. Plant vigorous kinds, beginning at the back with crimsons and darks of any kind, next row to be pinks or light reds, third row scarlets of shades, and front row flesh-coloured and whites, or the whole of these in proportionate numbers, mixed plant for plant. Let them be planted, say, 4 feet apart, placing a quantity of good turfy loam about the roots of each as the work goes on. Mulch well with rotten cow-manure; and just before the buds begin to open give a soaking of manure-water, and a display of Roses may be had equal to any show of flowers which one can conceive. As to pruning, thin out the weakly shoots, cut the strong ones moderately back. The front of the bed, by pegging, may be 1 or 2 feet high, the second row 3 feet, the next 4 feet, and rising a foot or two as taste and position may dictate. Such a bank as we have in view, treated thus, shows Roses to the best advantage. Standard Roses, we are glad to find, have lost much favour during the last three years. Frost, we believe, has had something to do with this change of taste. Boss.



## NOTES ON DECORATIVE GREENHOUSE PLANTS.

## DAPHNE INDICA.

THE Daphnes are among the most deliciously fragrant of our greenhouse plants. They are generally pretty strong growers, and when fairly established succeed best if planted out along with Camellias and suchlike; but they also make very good pot-plants, provided due care is taken in the way of pinching and training them into form when young; otherwise, if left to themselves, they grow rather bare and straggly. They come into flower naturally in the winter season, which gives them an additional claim to our attention. Though some of the varieties are all but hardy, and all of them thrive well in an ordinary greenhouse temperature, yet while they are in a young state they are the better of being grown in a somewhat higher temperature than that of the greenhouse, say from 55° to 60°. They are not of very rapid growth when young; but by keeping them somewhat warm, they will of course grow into plants of a useful size so much the sooner. They are always much prized on account of their sweet perfume, a small plant when in flower being sufficient to fill a room with its sweet fragrance.

Daphnes can be raised from seed, but as the seed requires about two years to vegetate, this plan is not often adopted; the more

general mode being to graft the finer varieties on stocks of the common Spurge-Laurel (*Daphne laureola*). The soil best suited to their requirements consists of equal parts of good turfy loam and fibry peat, with a good sprinkling of silver sand. The soil should be used in as rough a state as may be consistent with the size of pot used, and the pots should be very carefully drained, as, though the plants require a large supply of water when in full growth, they are very impatient of water lodging about the roots, and will soon fall into bad health should the soil become in any way soured. When the plants have completed their year's growth they should be turned out into a drier atmosphere, to ripen off, and set their flower-buds. After a time they may be set out of doors, in a nice sheltered position facing south; care should be taken, however, that worms do not find their way into the pots—they should therefore be set on an inverted pot, or on a deep bed of fresh ashes. Should early flowers be wanted, a few plants may be put into a gentle heat in November, and they will come into flower about Christmas. *Daphnes* are somewhat susceptible to the attacks of red-spider, so that during the growing season the syringe should be freely used among them. The greenhouse varieties are mostly natives of China and Japan; and though the genus consists of a great many varieties, the cream of them is comprised in *D. hybrida*, *D. indica*, *D. indica rubra*, *D. odora*, and *D. odora rubra*.

#### THE PIMELEA.

The above genus contains some of the most beautiful of our flowering greenhouse plants. They are generally easily grown, and are very free bloomers, as well as being very sweet-scented. They are admirable for cutting from, and also for house-decoration, and are among the best of exhibition plants—indeed they formerly used to be considered indispensable on the exhibition-table, but, like many other kindred subjects, have for some years been all but unrepresented at our exhibitions. We hope, however, to see them again reinstated in their wonted place. They are all natives of New Holland, and therefore do not require a high temperature to grow them—a winter temperature of between 40° and 50° being amply sufficient for them. They are propagated from seed and by cuttings; the latter being the mode more generally adopted.

Cuttings of the young shoots should be taken off in spring, and put in under a bell-glass, in a properly prepared pot, such as has been often described before, and the pot plunged in a mild hotbed. They must be potted off singly into small pots as soon as they are sufficiently rooted, and the pots replunged in the bed until they get a fresh start. The soil should consist of good fibry peat, two-thirds, and one-third of turfy loam, with a sufficient quantity of silver sand to keep it open. Of course for the small plants the soil must be sifted, but for all suc-

ceeding shifts the soil should be in a rougher state, the pots carefully drained, and the soil rammed rather firmly in the pots. They must be watered carefully, particularly after potting, and at this time they should be kept for a while pretty close and warm. A 3-inch pot will be quite large enough for them the first season, and in the following March or April they may be shifted into larger pots, and the points pinched out, which operation should be repeated a few times, so as to secure a good foundation for the future specimen.

It requires a number of years to get up a large specimen, but plants in 5- or 6-inch pots make most useful subjects for general decorative work. The time of their flowering is from May to July, according to the variety. The genus comprises several varieties, and all of them are worth growing; but a selection of half-a-dozen varieties will generally be found sufficient. *P. decussata*, *P. elegans*, *P. Hendersonii*, *P. spectabilis*, *P. diosmæfolia*, and *P. Neippergeana* will be found to give general satisfaction.

#### LESCHENAUTLIA.

The *Leschenaultia* is a genus of greenhouse plants which are also natives of New Holland, and though unsurpassed either as decorative plants or as specimens for exhibitions, they are very rarely seen in either capacity. They have generally been considered somewhat difficult to cultivate, and no doubt it does require a good deal of care to keep them in health; still they are not a bit more difficult to grow than many plants which are more generally cultivated. They are liable to suffer from a close damp atmosphere, or from over-watering, and should therefore be grown in a well-ventilated structure, and pretty near the glass, and good drainage secured to them. A winter temperature of between 40° and 45° will suit them, and they should be aired on all possible occasions. A slight shading may be found necessary during the hottest summer months.

They are propagated by cuttings taken from the points of the young shoots, and treated in the way usually done with plants of this class—viz., under a bell-glass in a slight bottom-heat, and potted off, as soon as struck, into thumb-pots. They should be grown in pure peat with plenty of fibre in it, a good admixture of silver sand being added; potted moderately firm, and pinched a few times when young. They can be grown to a good size quicker than many kinds of plants, and therefore can do with somewhat larger shifts than are usually accorded to hard-wooded plants; but this just means that more care must be taken in the watering of them.

There are two varieties, at least, which are worthy of a place in the most select collection of plants—viz., *L. biloba*, the flowers of which are a beautiful dark blue, and *L. formosa*, with bright scarlet flowers.

J. G., W.

## PINCHING—WHEN AND HOW TO DO IT.

PERHAPS the subject upon which I am about to treat would have been better discussed at an earlier date ; but its importance to juniors in the horticultural profession, as well as to others who look for counsel and advice from the columns of the horticultural press, may in all probability render it a welcome subject even at this advanced period of the season.

Many people engaged in horticultural pursuits have but a vague idea of the object of pinching and summer pruning generally. For what purpose do we pinch ? and how shall we illustrate the practice ? Pinching is performed for two or more purposes. One is to cause a plant consisting of one or more shoots to develop into, say, a bush of twenty or thirty shoots ; the second—and not the least important—is to concentrate the growth and vigour of a plant into one or more stems or shoots, in order thereby to produce a greater degree of perfection in the size and shape of the flowers. Let me give a simple practical illustration : I will take the Chrysanthemum as the most suitable subject. We will suppose a plant having three shoots : these shoots are pinched, and presently the plant develops nine shoots, and so on *ad libitum*, until the little plant of three shoots has grown into a specimen of three feet.

It was asserted early in the present year by a cultivator that the finest Chrysanthemum blooms are invariably produced upon the “terminal bud ;” and this expression of opinion was endorsed by the editor of a contemporary, whose eulogy of flowers produced upon lateral growths created not a little consternation in Chrysanthemum circles, and brought the writer of this article at least half-a-dozen letters inquiring if I knew exactly what ballast such authorities could safely carry without foundering. “Flowers produced upon laterals being as handsome as could be desired !” As well might we compare a bunch of Grapes produced from a lateral, with one borne upon the leader of a Grape-Vine. But I have undertaken the task of elucidating the practice of pinching, and the time at which the operation should be performed. You pinch a plant, and you then watch the effect produced by the operation. The cultivator who pinches at random says : pinch as often as you like up to a certain date, and the result will be the extension of the plant, and a proportionate increase in the quantity of flowers. It is true the plant will increase in size, and the flowers in number, but what of quality ? The finest flowers, says a learned authority, are produced upon the terminal bud. Now it would be wisdom on the part of those who think so to remain silent for at least five years upon this subject, and meanwhile to apply themselves more strictly and observantly to the practical details of superior cultivation, and after that time I venture to think they will have altered their opinions, much to their own advantage and that of others. As a matter

of fact, the best flowers are “not produced upon the terminal bud,” and such random conjecture is very misleading, if not mischievous to many.

But some one may say, Where is your proof? Anticipating a challenge upon the point, I will again revert to the plant having three shoots, each of which is pinched, and which in a short time produces three shoots each, or nine shoots in all. If these shoots are not further stopped, a bud will form itself upon the point of each shoot during the month of July. No notice should be taken of this bud, and in a short time three more shoots will radiate from the base of this bud, two of which should be removed by pressing them in a slanting direction with the forefinger of the right hand, or what is better, by using a small wooden peg, something of the size and form of a lead pencil, made soft at the point by squeezing it between the teeth. By this simple process the vigour that would naturally be equally divided into three shoots is retained in one, and the flower produced upon such a shoot will be perfect in form (globe-like), having fine broad petals, rich in colour, and of fine substance. The plant grows on with increased vigour until the early part of the month of August, when another bud will appear upon the point of each shoot, and these are the buds that produce the fine flowers—not the “terminal buds” of the writer before referred to, whose flowers were so handsome last winter, and who had a crop of lateral flowers into the bargain!

A common error with cultivators is to pinch back into the hard wood, instead of merely “rubbing off the point of the shoot,” which is the proper way to do in all cases of pinching. Again, in the case of Vines or other fruit-trees, pinching is a very important operation. Let us look at the result pinching produces upon the Vine. Plant two Vines, and grow both upon the single-rod system until the canes have reached the length of from 9 to 12 feet; then stop one and let the other grow on, and note the result. No. 2 extends in length, while No. 1 increases in thickness; in other words, the result of pinching in this case is to localise or concentrate vigour. I suppose it is hardly necessary to remark that, when a Vine is pinched the extremity of the shoot only should be removed, and the lateral growth should be pinched out from the side of the first bud next to where the Vine has been stopped. In the case of Peach-trees, pinching should be done when the shoot has grown 2 or 3 inches in length. A shoot may be pinched because it is too strong, or because additional shoots are required to fill up vacant spaces in the tree; but in any case the operation must be performed shortly after the tree has started into growth, or the result will be immature wood and scanty crops.

I have seen Peach-trees converted from their natural habit of growth into myriads of fruiting spurs, by judicious pinching and

restriction at the root, until in the winter many people mistook them for Plum-trees. Pinching enables the cultivator to turn a plant or fruit-tree into any form or shape, if he only knows how and when to do it. You do not achieve results by pinching because Dick, Tom, or Harry did the same, at the same time the year before, but because you are capable of judging, from the condition of the plant or tree before you, that the operation will produce beneficial results.

W. HINDS.

#### PLUMBAGO ROSEA COCCINEA.

AMONGST useful stove-flowering plants this Plumbago should be extensively grown for decorative purposes. There are objections urged against it as useless for cutting, for which purpose it is not suitable, unless flowers are required only for one evening, for such as dinner-table purposes, &c. Nevertheless this one drawback, great though it may appear to some, is not sufficient reason for discarding it entirely. Its value for decoration alone, justifies us in recommending it to be largely grown by those who have flowers to produce in quantity during the dreary days of winter. In few private places are all the flowers that have to be grown used for cutting purposes. Greenhouses, conservatories, &c., have to be kept gay in the majority of cases, besides those employed for other purposes. For effectiveness in stoves, the Plumbago is invaluable. The flowers individually do not last long, but they are produced in such succession as to maintain the plant gay over its entire blooming season, which is not of short duration. Few plants are better adapted for arranging amongst Crotons, Dracenas, and others of a stiff and formal growth, the stiffness and formality of which the Plumbago relieves. It is of easy cultivation, and requires but little skill to grow it to perfection with but moderate convenience. Young plants annually produced in spring by means of cuttings do the best. The month of April is a good time to insert the cuttings, for if taken earlier the young shoots frequently produce flowers, and in consequence do not make such rapid progress afterwards. The side shoots, when about 1 inch in length, should be taken for cuttings, which root as readily as Verbenas if placed in 5-inch pots in sandy soil, and placed in a close frame. When rooted, and before the roots become matted together, they should be placed singly in 3-inch pots, and placed in the shade for a short time until fresh growth commences. No better place can be selected for them than under the shade of Cucumbers and Melons during their early stages. When afforded a warm moist temperature they grow rapidly, and soon require to be pinched well back. It is useless to merely remove the point, as they invariably only break one growth; but when pinched well back into the harder wood, more shoots are produced.

When the pots are full of roots they should be transferred into 5 and 6 inch pots, which are large enough for all decorative purposes; and in these sizes plants can be produced carrying from six to ten shoots. The soil should consist of good loam and a seventh of thoroughly decomposed manure, with sufficient sand to render the whole porous. In potting, the soil should be pressed firmly into the pots. After potting they should remain in the shade for a time, and then be grown closer to the glass, where more light and air can be given them to harden and ripen the growth as it is produced, as upon this depends to a large extent whether the plants flower well or not. If well grown they will produce panicles of flowers from 18 inches to 2 feet in length. The shoots should not be stopped later than the middle of the present month, or they will not flower satisfactorily. When pinching the last time a number of the tops of the shoots should be inserted in 3 or 4 inch pots, say from five to seven cuttings in each. These when well managed make very handsome little plants to stand near the edge of the stage, and well repay any little trouble they may entail. They should not be stopped after being rooted or grown in strong heat, but treated similarly in every respect to those in larger pots. Plumbagos will do well in cold frames for a time during the hottest month of the year, but must not be allowed to remain in them when the nights turn cold. The plants soon show signs of being starved by the short-jointed wood they commence to make. This being perceptible, they must at once be removed to warmer quarters, where the temperature will not fall below 55°, which will suit them until they come into flower.

During the growing season the plants require a good supply of water both at the roots and upon the foliage, with frequent applications of liquid manure when they have filled their flowering-pots with roots. Thrip and red-spider frequently attack them if allowed to suffer for want of water at any time; but if they do not get a check, and the syringe is freely used, the spider can be kept down.

The old *P. rosea*, in addition to this variety, although not so striking in colour, is really worth growing.

WM. BARDNEY.



### A PLEA FOR HARDY FLORIST'S FLOWERS.

THE term florist's flowers has a somewhat wide range of meaning. For instance, we have florists who would allow only a few species within the circle to which they would give this name—as the Auricula, the Polyanthus, the Carnation, the Tulip, and a few others, which were long held as the very *élite* among common flowers. We have others again who attach a wider meaning to the term, and include recognised flowers of much shorter standing in their list; but even amongst those who have done the greatest service in bringing such flowers as the Phlox, Pentstemon, and Pansy to their present per-

fection, we see a dislike to any improvements taken in hand at a later time ; and as for going back to single forms of double flowers, as in the case of the *Pyrethrum* and the *Dahlia*, it is a thing they cannot tolerate. This spirit of setting up a standard of excellence, and working for and up to it, is a good one. Through this spirit all the improvements we have to-day in flowers have been attained. Even amongst those who sneer at the florists and their doings, the same spirit is noticeable. Though they do not condescend to notice flowers which the florist has set his stamp upon, except in a more or less depreciatory way, we yet have them praising others which show an improvement in size, form, or colour, or all three.

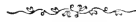
In bringing the merits of hardy florist's flowers before the numerous readers of the 'Gardener,' I do not think it at all advisable to stick to any hard and fast line as to what constitutes such flowers. They are yearly increasing in numbers. A lover of flowers here, and another somewhere else, make a favourite of a plant, seed it—find that it breaks into various colours, and that its habit of growth is improved—until by-and-by another flower has been added to the ranks of the florist's types. The common bedding *Viola*, for instance, has not as yet attained to the standard of what may be called a florist's flower, but there is just a possibility of its doing so. The number of really effective bedders capable of flowering till *Geraniums* give in, may be counted on five fingers ; the great majority, therefore, are grown for some peculiarity of colour, or habit, or time of blooming in early spring. But the other day a gentleman who has been in the front rank as a hybridiser of *Violas*, showed me blooms which had all the points of good florist's flowers, though the individual size was not larger than a shilling. Another instance of a flower which has been made to yield a great variety in form, habit, and colour, of late years : *Aubrietia græca* is generally well known as a lilac-flowered species. A gentleman took to it, and has now all shades of colour up to rich crimson, with larger flowers and great variety in habit. Of course these do not constitute *Aubrietia græca* a florist's flower, but it yields an instance of how plants may be brought on to rank as such.

To the great majority of gardeners florist's flowers must be tested by their suitability as decorative plants and the simplicity of their culture. Not one gardener out of a hundred can or ought to trouble himself as to the nice points which exercise the mind of the florist proper. His employer does not want him to know, and on his own part there is no necessity that the knowledge should be attained. The gentleman whose gardener gives him unlimited numbers of *Pansies*, or *Phloxes*, or *Gladioli*, in the greatest number of varieties possible, and cultivated in the best manner, has something to be thankful for, no doubt. But we would prefer the garden where a great number of flowers of this type were grown, and where a dozen or two



dozen of the best sorts of each were substituted for collections of varieties—and so, we have no doubt, would most owners of gardens. Many people are now anxious to get together a collection of hardy flowering border plants. The wish is a good one. Small gardens especially should be rich in these, and gardens of a larger size should most certainly have selections added to their floral stores. But it is well to bear in mind that the number of really fine hardy herbaceous plants is limited to a small percentage of the whole; and to remember that although a border may be filled with a great number of species, out of that number a large quantity may not add anything to the beauty of the whole. I would therefore enter a plea for the extended cultivation of hardy florist's flowers. There are really very few species which can compete in effectiveness and usefulness with the varieties of these. If you plant in a border representative collections of Phloxes, Hollyhocks, Pentstemons, Antirrhinums, Pyrethrums double and single, Auriculas of the alpine section, Pinks, Carnations, Picotees, Delphiniums, Gladioli, Tulips, Sweet-williams, Anemones, Irises, Ranunculus, Potentillas, Roses, and other hardy flowers which the florist has improved, you have at once the certainty of obtaining a fine display of flowers. In those instances where there is not much space for hardy flowers, I would give these the preference to any other flowers, as they are sure to give the best return for space and labour. At the same time, where labour cannot be spared to cultivate these as they ought to be cultivated in order to do them bare justice, it would be quite as well to stick in anything that comes ready to hand into your borders, and allow them to struggle amongst themselves for the mastery; but such a state of things is hardly gardening. Everything is improved by intelligent attention and good cultivation. With florist's flowers these are necessary to their enjoyment.

R. P. B.



### ORCHARD - HOUSES.

THE disappointments of past years enhance the value of glass protection for hardy fruits; and the value of walls, unprotected by glass, is lessened to a great extent. Our experience is that walls are very expensive items in the first place, and seldom give good interest for the outlay. Taking all things into consideration, we think walls, in the ordinary sense, should be things of the past. Well-managed orchard-houses give good value every year: they take up little space, are very pleasant objects in gardens, and are of much value for protection to other produce than that of fruits. Most people know this; but I think it an undecided question whether trained trees or those grown in pots are the most productive and give least labour. I would fall in with the trained trees—believing that most fruit can be had from such—arched over about 3 or 4 feet under the glass, and

dwarf espaliers along the sides of the structure. If there is a back wall, it of course would be well covered with trees in the usual manner. Some would prefer the pots and small bushes, for the sake of having a great variety; but that wish can be met by the use of cordons—single, double, or triple. A cordon tree, laden with Peaches, Plums, or Pears, is no mean object; and it does not require much root-cutting or other manipulation to attain this. A firm bed of stones, in which the roots may be partially confined, will keep them free from rank growth, and manure-water can be given *ad lib.* Wherever I have seen this system of dwarfing trees carried out systematically, abundance of fruit, fine foliage, and very short stiff growths have followed. I have always preferred trees planted out to those in pots. They require less labour, are not so susceptible of injury by root-starving or *vice versâ*, and the expense of pots is saved. Some think that they cannot be kept to size when out of pots, and would not be kept uniform all round. But when they are prepared to remain dwarfs, they can be kept so a great length of time. I managed some trees with the best results that had for a time been in pots, and afterwards planted out in hard ground, ramming the soil firmly all round the roots, like potting a Heath. They became such a nest of healthy roots that they could be lifted and turned round, to prevent one-sidedness, as easily as if they had been in pots. The weight, size, and colour of the fruit were such as I never saw by any other means of culture.

Boss.

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#### DUNDEE HORTICULTURAL ASSOCIATION.

A MEETING of the members of this Association was held in the Templar Hall, Reform Street, on Friday evening, the 1st ult.—the President, Mr David Doig, Rossie Priory Gardens, in the chair. There was the usual full attendance. Mr Robert Wilkie, Duncarse Gardens, read a paper on “The Cultivation of the Peach under Glass.” In opening his subject, Mr Wilkie explained that the Peach was supposed to be a native of Persia. It was known to, and cultivated successfully by, the Egyptians about two thousand years ago, but appears only to have found its way into this country some time in the sixteenth century. The Peach, notwithstanding its three hundred years’ sojourn in our climate, had not materially changed its character; it still retained its habit of early flowering, and this habit, combined with the early spring frosts—unfortunately too familiar to most of us—has rendered the cultivation of this excellent fruit a subject of considerable difficulty and anxiety. Mr Wilkie then treated of the various devices used for protecting the early bloom. These in earlier times were many and various; but since the reduction in the price of glass, almost all had been superseded by the erection of “Peach-houses” of more or less pretensions. The most approved style of Peach-houses, and the mode of preparing the border, heating, &c., were then explained; after which Mr Wilkie, in an able, interesting, and remarkably lucid manner, treated in detail the whole system of Peach-culture. On some points he differed con-

siderably from many Peach-growers. At no time did he approve of letting the temperature of the Peach-house fall below the freezing-point. During frosty weather he applied fire-heat just sufficient to keep out the frost, and in dull cold days he found it better to heat the pipes and open the ventilators, rather than to have the house shut close to keep up the temperature. Fumigating with tobacco required some care; too dense a cloud would sometimes cause the tree to cast both fruit and leaves. It was much better to fumigate slightly two or three nights in succession; or by taking advantage of a dull day, to keep the house in a smoky condition for six or eight hours. A smoke which can be dimly seen through, if maintained for that time, will destroy every living aphid in the house, and do no injury to the most tender flowers or foliage. He never practised evening syringing on Peaches, or on plants of any kind whose foliage is exposed to the full blaze of the sun through undimmed glass, being of opinion that the leaves were thereby made tender and less able to bear the heat of the following day. In dry sunny weather he usually syringed copiously in the early morning, and with such treatment he succeeded in retaining fine healthy foliage, free from insect-pests of all sorts. A considerable discussion followed the reading of this paper—some points being closely criticised. Mr Wilkie showed, however, by a splendid specimen of the fruit grown under his care, that his treatment, however different from other successful growers, could well afford to stand upon its own merits.

Mr William Alison, Seaview Gardens, Monifieth, then read a paper on "Exotic Ferns." "These plants," he said, "might be considered as remnants of the vegetation of a past era in the history of the earth,—geology having shown that they existed in great numbers and variety at a date long prior to the present era. But a very few years ago, Ferns found only scant favour amongst cultivated exotic plants. In this, however, as in many other matters, public taste had improved much: and now it was not enough that our gardens were gay with masses of colour—grace also was appreciably demanded. When this improved taste began to displace the taste for mere gaudiness which too long held sway among the refined, as it did amongst the unrefined still, Ferns were sought for, cultivated, and used as decorative plants. It was no wonder that this was so. In no other class of plants did they find the same inimitable grace or exquisite lacing in form, enough of themselves to charm and to cheer any one with a true love for the beautiful in plants. Ferns enhanced an hundred-fold the beauty of the choicest gems of cut-flowers, when judiciously arranged with them. So much were they now appreciated, that no plant-house or dwelling-house, from the drawing or dining room to the lady's boudoir, was considered complete without them, either as plants or cut fronds. To lovers of the beautiful in nature, no other plant could rival the Fern in cheering the homes of those who were confined to the smoky city."

Mr Alison then spoke at some length on the cultivation of Ferns in the fernery or greenhouse. The great points in the successful cultivation of Ferns, was to see that they never suffered for want of water, and that they had a suitable moist atmosphere, with light, heat, and air, according to their various constitutions. He did not approve of syringing the plants overhead, unless in exceptional cases; and such varieties as *Todeas*, *Hymenophyllums*, &c., *Gymnogrammas*, *Notholaenas*, &c., were sure to suffer both in health and appearance by having their fronds syringed or wetted in any way. Except for the purely peat-loving varieties of Ferns, he did not approve of using peat, preferring instead a good rich loam, well mixed with sharp sand, horse-

droppings, and charcoal; with the addition of a little flaky leaf-mould, if the loam was of a tenacious nature. The dung should be thoroughly dried, and broken into small pieces before being used. In this mixture he found such sorts as *Adiantums*, *Gymnogrammus*, *Lygodiums*, *Aspleniums*, *Pterises*, *Lomarias*, and the different species of Tree-Ferns, &c., thrive remarkably well, making a fine strong growth of firm texture. Bone-dust and cow-urine he found very beneficial in stimulating growth; but the latter should be used only in the case of pot-bound plants, and much diluted with pure water. In potting Ferns he used a much larger proportion of crocks than for any other class of plants, Orchids excepted. When insect-pests make an appearance, the plants should be sponged or syringed with a solution of soft-soap and warm water, using clear water to finish with. This he considered the best and cheapest insecticide extant, prepared in a proportion of about 2 to 3 oz. of soap to a gallon of water. Syringing such plants as *Crotons*, *Dracenas*, *Gardenias*, *Azaleas*, and *Pelargoniums*, &c., once a fortnight with this mixture, gives the foliage of the plants a fine healthy tone, and keeps insects in check. In speaking of the various means of propagating Ferns, Mr Alison said he had been very successful in raising young plants of many different species in a small propagating-case in the plant-stove. There, over a heated chamber, the spores were sown on a bed of cocoa-nut fibre about 4 inches in depth. Germination quickly took place, and the young plants grew rapidly, seeming to luxuriate in the additional warmth at their roots. Several exhibits in the way of cut-flowers were also before the meeting—notable among which was a splendid flowering stem of *Lilium giganteum*, from Rossie Priory Gardens. After the usual votes of thanks the meeting separated.



## Calendar.

### FORCING DEPARTMENT.

**Pines.**—The cold and sunless weather which has so generally been experienced all-through June and the early part of July has prevented Pines in all stages from making such progress as they generally do; and in consequence, stock intended for fruiting early next year should now have all the encouragement possible, so that they may well fill their pots with roots, and make well-matured plants before autumn. Let the night temperature for these range from 70° to 75°, according to the state of the weather. Keep the air moist, in proportion as the weather is bright and warm. Shut the pits up early in the afternoon, so that the heat ranges from 85° to 90° for a time. Put air on in the morning before the heat touches 80°, and gradually increase it till noon. Watering must be carefully attended to, never allowing the soil to become very dry. Colour the water

with guano every time of watering. It is a good practice to water alternately with guano and sheep-manure water. Plants intended to make a growth in spring before starting—and which invariably produce the best fruit—should not be pushed on quite so rapidly, but have a temperature a few degrees lower. Smooth Cayennes and other late sorts now out of bloom and swelling freely, must be encouraged with liquid manure and a moist atmosphere. Shut them up as early as it is safe to do so, in order to run the heat up to about 95° for a time, and so reduce the necessity for fire-heat for the night to a minimum. Give air freely to fruit that are ripening, and do not dry them off at the root, as is sometimes mistakenly done. Pines starved at ripening-time at this season are never so fine and juicy. If they are aired freely, they will not lack in point

of flavour. Any portion of the stock that are well-rooted in 8-inch pots, should now be shifted into 10- and 11-inch pots, according to their strength, and be encouraged to grow freely for the next three months. Pot suckers from plants that have ripened or are ripening their fruit. Put strong-growing varieties into 7- and 8-inch, and Queens into 6-inch pots: drain the pots well, and use a rather light loam. Plunge in a bottom-heat of 90°; shade for a few days, and keep the air close and moist until they root and begin to grow, when they must be aired freely to keep them stocky.

**Vines.**—If early vineries in which the wood is thoroughly ripened require painting or repairing, or any alterations in the way of heating, now is a good time to attend to such matters. Should the weather be dry, late Grapes that are swelling off and just beginning to colour should have their borders well watered with manure-water, and mulching of some sort, if it has not been already applied. Put a little extra heat into the pipes should the weather be dull and damp; and never neglect having a circulation of fresh air about them night and day. Remember that nearly all black sorts colour best in a dense shade, and do not pinch the lateral growth too rigidly. Muscats and other white sorts, on the other hand, colour best with a free play of light about them. Keep ripe Grapes as cool as possible, and protect them from wasps and flies, by fixing hexagon netting over the ventilation openings. Keep a vigilant eye on Vines in all stages, and see that red-spider is never allowed to damage the foliage. No doubt some localities are more favourable to this pest than others; but the chief encouragers of spider are too dry borders and too much fire-heat. We have a Black Hamburg house that ripens its crop in August, on the cool and airy system of treatment; and for seven years it has never been syringed once, nor has there ever been a red-spider in it to our knowledge. Syringing Vines and the surrounding of them with a damp close atmosphere, we regard as one of the most fertile causes of unsatisfactory results in Vine-growing. And, unless to check red-spider, we would never practise syringing. It then becomes the lesser of two evils. Should

any of the Vines from which the fruit is now all cut have their roots down deep, and are in consequence not maturing satisfactory crops, now is a good time to take out a trench in front of the borders. Lift the roots 4 or 5 feet back, and lay them in good soil, at the same time taking all inert soil off the surface of the border down to the roots, and laying about 8 inches of fresh loam, horse-droppings, and crushed bones over them. It is astonishing how Vine-roots can be attracted to and multiplied near the surface by fresh loam and manure. Pot-Vines intended to fruit early next year, should by this time have their wood brown and well ripened. Expose them to as much sun and as free a circulation of air as possible, and never let them get too dry at the root. Remove all young lateral growth that they may attempt to produce after the first of this month, but preserve the main leaves in health to the last: avoid the practice of placing them outdoors, in positions where high winds may destroy their foliage prematurely.

**Peaches.**—Look carefully over all trees from which the crop has been gathered; and if there are more shoots than are necessary for properly furnishing the trees for another year's crop, remove them, so that all the air and light possible may get at every leaf and shoot. See that these do not suffer from dryness at the root if the weather be droughty; and if the foliage is infested with red-spider, syringe or engine them freely—putting a handful of sulphur in the water—till the enemy disappears. It is of the utmost importance that the foliage be kept healthy to the last, or the buds will not be matured as they should be. Let sun and air play freely about ripening crops. If any of the fruits be shaded with leaves, fix them aside. Examine the fruits every day, and gather them before they drop. Fruit to be sent direct to table for dessert, should not be gathered until a very gentle pressure removes it from the tree; but when to be sent to a distance—especially if to market—they should be gathered earlier, or the chances are that they do not travel well. Late crops in cool houses should have liberal waterings, until they begin to ripen.

**Figs.**—Early trees, on which a second

crop is now swelling, should be liberally supplied with manure-water until they begin to ripen, when less will be necessary. When ripening, keep the air dry, and give abundance of it. Early pit-trees, from which their second crop may be gathered by the end of this month, should be kept as cool as possible; give them an occasional syringing to keep the foliage clean, and see that they are never allowed to suffer for want of water at the root. Any shoots not considered necessary should be removed at once.

**Melons.**—Attend to the impregnation of late crops, and do not let the shoots and foliage become crowded. Expose ripening fruits to all the sun possible, and do not let the soil become very dry before they are quite ripe. See that crops swelling off are well supplied with water in bright weather. An occasional good soaking is preferable to more frequent light waterings. It is a good practice to cover the surface of the soil with manure as soon as the crop is set.

**Cucumbers.**—Those that have been bearing all summer may now be partially cut back, removing all fruit, and leaving the young growth, and be top-dressed with some rich manure. If kept at 75° at night and moist, they

will soon grow freely, and begin to bear, and give a supply of autumn Cucumbers. Look over those in frames, and remove all superfluous growths and leaves, and give them a dewing overhead on fine bright afternoons. About the middle of this month sow seeds of Telegraph or some approved sort for winter-bearing, or they may be produced from healthy cuttings at the end of the month. Either way they should be early enough to be well established while the days are comparatively long, and not much fire-heat is required.

**Strawberries in Pots.**—If these were shifted into their fruiting-pots last month as we recommended, they will now be making rapid growth. If the weather be warm and dry they will take liberal supplies of water, and as the pots get well filled with roots, give occasional waterings of manure-water. See that they are not allowed to become crowded, but give them room enough to keep the foliage well apart. They should be standing in an open situation, and on a porous dry bottom, into which the roots must not be allowed to penetrate. On fine evenings sprinkle them overhead with clean water, and keep them free from weeds and runners.

#### KITCHEN - GARDEN.

If this month should be warm, gardens, like fields, will reap advantage from such agreeable weather. The great advantage of having all things well forward before the short and colder days come round, are reasons which make fine weather specially desirable during the next two months. The "push" of labour will be well over—though seldom is there a scarcity of work in a well-managed garden. Thorough cleaning and surface-stirring should take place during this month, so that nothing in the way of weeds may escape detection. Allowing them to seed gives a store of extra labour for the next season. Where order cannot be maintained, extent of ground should be circumscribed, and all unnecessary ornate portions should be dispensed with: order and neatness should be specialities at the present time. No ground should be vacant an hour longer than is necessary to prepare it for crops.

Scarcity of labour-power is observable in most gardens at the present time; many which were conspicuous for order and good keeping are now notable for weeds and all that is objectionable. This being in the power of proprietors alone to avert, cultivators of such gardens can only complain or protest and struggle on—too often sharing the discredit while they are unblamable. The highly cultivated and fine crop-producing market-gardens stand out in many cases prominently as examples to be imitated, simply because it does not pay to attempt what cannot be well done. A field clean, orderly, and thoroughly cropped, is far more creditable than the walk divided, and prim-bordered kitchen-gardens in many cases clothed as much by weeds as good esculents,—thus making a burlesque of what was intended to afford pleasure, as well as to give good returns for labour expended.

Arrears in planting must now have

attention. Where winter crops have been well pricked out, preparatory to transplanting, ground where Potatoes, early Onions, Peas, and Beans are removed, may be put in order at once for some of the Brassica class—Turnips, Spinach, or Lettuce—as demand may dictate. Draw drills for all things planted out; thoroughly water at first; draw some dry surface-soil over the newly watered portion, and—except in rare cases—no further watering is necessary; dribbling instead of a soaking means entire defeat of the object in view. When small seeds are to be sown, give the space a watering the night previous, and set to work sowing the following morning. The clearance of crops should not be left till the last portions are gathered; a littery appearance and delay are caused by such false economy. Market-men cannot be easily imitated by private growers in clearing off the crop—selling it, and manuring and cropping the ground the same day; still the opposite extreme may be avoided as far as possible. Artichokes should not be left on the plants to flower; better to cut them and put what are not required in the manure-heap than allow the plants to suffer. Asparagus in full growth should not be allowed to become crowded: the plants to be forced are all the better for their purpose when they are kept thin. Broccoli may be planted from the store-beds or borders; but one must consider to what extent they are justified in planting this precarious crop, which has been so generally destroyed during the past three seasons. Stiff slowly grown plants are most likely to stand severe weather—and when planted on ground which has not been broken up for some time, they have a hardier constitution; but this, or laying them down in autumn, did not save many last year; and except those which came from the Channel Islands and Cornwall, the market supply was at a minimum for quantity or quality.

Cabbage may be planted in quantity for autumn supplies. Where those which had the heads cut from them are to stand for autumn and winter supplies, the plantation of successions are of less importance; but a brake of nice Coleworts or healthy young Cabbage in autumn has a fine appearance in a garden, and is very service-

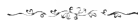
able. Sow for next season's supply from middle to end of month. In southern localities a sowing in September is valuable. Cauliflower may be sown towards the end of month for early supplies. They are, when fit to handle, transplanted on firm ground, to be afterwards covered by a frame or other protection; but glass should not be used till the state of the weather makes it absolutely necessary. "Coddling" is often a greater destructive agent than absence of protection when plants have been prepared for it; shelter on a west or south border suits well in some localities. Celery should be earthed-up for early supplies. Give a soaking of manure-water, then follow it with a drenching of clean water overhead. Keep the hearts clean when earthing is going on, and the stems should be upright. Mulch lately planted lots; short grass answers when no better material is at hand. More may be planted: though it may not grow to large size, it will be firm and sweet, and very servicable. Lettuce and Endive sow twice during the month. Thin and plant former sowings. A stock of Batavian Endive will be found a useful addition to the salads when good Lettuce is not easily had. The nutty flavour of Batavian Endive is generally appreciated, and the plants are very hardy. Onions may be sown from middle to end of month, according to locality. Some sow as late as September, but it is not safe to risk late sowings in late localities. The Onion crop is often ready to lift during this month, but seldom is it quite ready before September. Bulbs fully developed may be helped in the maturing process by twisting the necks—and we have known some to tread down the tops to prevent late sappy growth: by such aids to maturation the keeping of the crop is materially enhanced. Peas for growing under glass may be sown—dwarf kinds, of course. A quantity may be sown on an early border, and when well forward they can be protected with frames. In pits the same practice may be carried out, and the lights left off till the crop requires their aid. The same answers well with French Beans—only they are tender and require an amount of warmth later in the season. Osborn's, Williams', and

Newington Wonder are very suitable kinds for this purpose.

Spinach may now be sown in large breadths for winter and spring use. Prickly Spinach is the sort generally used for this purpose, but round Spinach is often found to stand well and be of much service. Sow both on deeply trenched well-manured ground. A quantity of old road-parings, turf, or other loose material, turned into the surface a spade deep, acts as drainage; and when all gets consolidated in spring, the Spinach makes immense leaves of fine quality. Coal-ash siftings mixed with a little soot scattered over the newly sown surface acts as a preventive to vermin taking up their quarters. Spinach transplanted in September in well-prepared ground does well and is hardy. Potatoes may be lifted as soon as they are fit, and those wanted for seed may lie in the sun to become green. Get the ground speedily prepared for winter crops,—not a yard should be vacant at this season, except where ground is superabundant—then it may remain vacant.

It is no use cropping to waste the produce; and as to selling it, few would advise such a course. The requirements to carry on successful marketing are numerous, and only where ground can be treated on market principles can it give proper remuneration. Sow plenty of early stove Turnips and Carrots for drawing young. Make Mushroom-beds outside on spare ground. Thin and transplant Parsley. Remove coarse leaves so that a young stiff growth may be formed for winter. We never had better Parsley than during the past spring, and that was from crops severely trimmed last autumn. The Fern-leaved is exceedingly pretty and hardy. We always find it safe to save a quantity of seed from selected plants. Forced vegetables will now have to be considered, and a proper arrangement made with pits, &c., to keep up successions of French Beans, Potatoes, young Carrots, small salads, Radishes, &c. Protect at night any tender crop if frost should show itself.

M. T.



## Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

J. W. B.—1. Clematis, Mrs Bateman; 2. Clerodendron fallax; 3. Tydaea, but cannot say which, there being so many varieties; 4. Rivinia humilis; 5. Davalia hemiptera; Adiantum caudatum.

M. L. B.—We suspect that in your dry hot climate your Vines are being starved: see a short article in our present issue on feeding Vines. Give plenty of water, as well as manure, provided your drainage is thoroughly efficient.

P. M.—Certainly, if you can spare time, and provided you do not want to save any seed, it will be better removed from your Rhododendrons.



T H E  
G A R D E N E R.

SEPTEMBER 1881.



HOW TO MAKE THE MOST OF WALL-BORDERS IN  
KITCHEN-GARDENS.

NO. IX.—REMARKS ON FRUIT-TREES.



HAVING written at some length upon the subject of cropping the various borders with vegetables, I propose, in conclusion, to offer a few remarks on the most suitable fruit-trees for the different aspects. In doing so, I shall not rely entirely upon my own experience, preferring rather to write upon what I have seen practised in good gardens by more experienced men.

*The Apricot.*—Owing to the great diversity of climate and soils in this country, it is beyond my power to give advice applicable to gardens generally, as there are some species and varieties of fruits which thrive admirably in one locality and yet fail completely in another, the treatment being similar in each case. The Apricot, perhaps, is the most fickle of the species. Not merely does it vary in different counties; but I have known instances where it has proved profitable, while in other gardens in the same parish, under ordinary treatment, it cannot be induced to grow to a serviceable size. It would appear to be most “at home” in the Midlands, notably Leicestershire and some parts of Derbyshire. There it may be seen growing on the cottagers’ houses as freely as do Plums and Grape-vines in more southern localities; and as Apricots are very delicious, they are, as a matter of course, of a greater marketable value than either Plums or open-air Grapes.

It is useless to attempt growing Apricots on a strong clayey loam, and in gardens where this naturally abounds, it is absolutely necessary to excavate the border to a depth of 3 or 4 feet, to drain well, and refill with a much lighter compost, employing as much turf cut from a light soil as possible. This was performed here many years ago, and the Apricots have well repaid the outlay. In a large garden near here, where this has not been carried out, the trees in a short time invariably fail. Where the soil is naturally sandy and open, but little preparation is needed, though it is advisable to drain and to trench the ground. But little manure should be employed for the young trees, as a too free use of this induces an objectionable coarseness of growth. When in full bearing, or if the trees appear impoverished, freely fork in manure in the autumn or early winter, and mulch heavily in the spring. No particular site is necessary, at least in the more southern counties. Competent authorities recommend a south aspect for the Apricot in the more northern parts of Great Britain, and somewhat cooler sites in the more southern districts. Here, for instance, there are strong fruitful trees growing against walls of west, south-east, and south aspects; those in the last situation being most profitable, simply because the trees have the benefit of protection by glass copings and curtains. (These copings are of great service, and soon repay for original outlay. Sharp span-roofed houses, on Dr Newington's model, would, if water was abundant, be always preferred, however, not only for Apricots, but also for Peaches, Nectarines, Plums, and Cherries.) A hot and dry position is really unfavourable to the production of extra-good fruit, as they are liable to ripen prematurely and unevenly, the quality being inferior accordingly. Where this is found to be the case, the roots should be heavily mulched with manure in May; receive copious waterings during the prevalence of dry weather; and if a fish-net doubled, or blinds of canvas, frigidom, or other shading material, be hung over the trees when bright sunshine prevails at ripening time, it will equalise the ripening of the fruit—that is to say, it will be less likely to mellow on the side most exposed to the sun while yet hard on that next the wall. Some of the most luscious fruit I have yet tasted were ripened under Russian mats, which were hung over, but at a good distance from, the trees, to retard ripening.

During September and early in October the planting of Apricots is best performed, and before they have shed their foliage, as they will then form fresh rootlets, and to a certain extent be recovered for a good start in the following spring. The varieties recommended for the country generally are Early Moorpark, Large Early, Hemskirk, and Moorpark. Apricots, more especially the Moorpark, after active growth has commenced, are liable to suddenly lose large branches, to the extent, frequently, of fully one-quarter of the tree. This is very discouraging, the more so seeing how superior, according to my experi-

ence, the fruit of the Moorpark are to other varieties. According to one of our highest pomological authorities, this arises "from injuries received by frost either in spring or early summer, or in winter after a wet autumn, when the wood has not properly ripened." As I understand it, neither solution is scarcely correct. We have lost a large main branch of a tree of Moorpark, and it certainly was not injured by frost in the spring, as the tree was well protected, and the sound part perfected a crop of excellent fruit. It was the old wood evidently that first collapsed, and this we would suppose to be but little affected by a wet autumn; and I fail to see how the latter theory stands good, unless, indeed, the branch was imperfectly ripened when laid in about eight years since. The disease, to my thinking, is still a mystery.

*Figs.*—These are given a pretty good trial in gardens in various districts, but as yet I have not seen many good fruit ripened, save only along the south coast of England. Some parts of Sussex especially seems to suit the Fig, as there I have gathered large quantities of fine fruit from standard trees, as well as wall-trained specimens. As a rule, garden soil is much too strong for the Fig, this inducing luxuriant growth, which ripens badly, and is easily injured by frost. Here, for instance, a south-west wall is given up to them, and yet, in spite of protection in the shape of good Spruce Fir branches, the whole of the young growth and much of the old wood was killed by the frost last winter; and for years previous but few fruit were secured. The grandest and most fruitful Fig-trees I have yet seen, either under glass or in the open, were trained up a steep concrete railway embankment at the base of one of the cliffs near Dover. They were owned by a fisherman, and were planted in very chalky soil brought in baskets from the cliffs. This chalky soil induced the formation of remarkably sturdy, short-jointed growth, that annually yielded much valuable fruit, which was sent to London as well as Dover. High tides sometimes washed the soil from the roots, and an unusually high tide completely ruined them. Pears failed under the same culture. The conditions, then, most favourable to the profitable outdoor culture of the Fig are a hot sunny position, none being better than where they are often found—viz., in the angles or curves formed by the junction of south and west walls; and a limited border, well drained, composed of somewhat light and poor soil, with which has been incorporated a liberal quantity of chalk or old mortar-rubbish and broken bricks. If thinly trained, the growth formed under these conditions would be very fruitful and nearly hardy,—all the protection needed in the majority of winters being either Fir branches or Russian mats fixed over the growths after these have been collected somewhat. The Brown Turkey is the most profitable variety to grow; and if a green variety, the small White Marseilles should have the preference. The Negro Largo is a very prolific dark

variety, and probably would succeed in the open, in favourable localities. I intend to give it a trial here. Figs may be planted any time before active growth commences.

W. IGGULDEN.



### STOVE VINCAS.

THESE old inhabitants of our stoves are neglected plants in many gardens, and in the majority entirely discarded. It is to be regretted that such good and useful plants are cast aside to make room for others of perhaps less beauty and use. Few plants are easier grown, or attain a good size quicker, if subjected to liberal treatment. All the stove varieties make capital plants for exhibition purposes, and look magnificent amongst a collection of flowering-plants, when well grown and neatly trained. They are even more striking in a collection of plants, especially *V. alba* and *V. oculata*, than many other plants grown for the purpose and exhibited. Not only are they useful for exhibition, but admirably adapted for home decoration during the whole or greater portion of the year. They come quickly into bloom, and can be flowered early in the year; and with judicious care, and a number of plants, a succession of bloom can be maintained through the whole summer and winter months. It is during the autumn and winter that they are of the greatest value: a few plants of *V. alba*, with its snow-white flowers, are very striking, and harmonise well with the brilliant flowers and bracts of Poinsettias, Euphorbias, and Plumbagos. Many winter-flowering stove-plants have their flowers other than white; and any useful plant that will produce white flowers at that season of the year should be grown in quantity. The *Vinca* is useful for cutting, though few perhaps give it credit as being serviceable for this purpose, as their flowers individually last only a short time—but, being produced in quick succession, they are admirably fitted for cutting. The shoots remain fresh in water for several weeks, and continue to develop their blooms.

Vincas are readily propagated by cuttings at any season of the year. The young shoots are preferable, and root quickly when placed in heat: it is not necessary to place them under bell-glasses or in propagating-frames to obtain a successful strike. Most of the cuttings will root if shaded from direct sunshine, and strike with such certainty that they should be placed singly in small 2-inch pots. When placed thickly together in pots, they are frequently left to grow together until their roots become matted, and when potted singly they are severely checked. Quick-rooting subjects are therefore best placed at first in small pots. When well rooted, the points of the young plants should be taken out to induce them to branch; and when signs of growth are again visible, they should be placed in 4-inch pots. The drainage should be liberal, and the soil only pressed moderately

firm into the pots. Potting must be done from time to time when the plants are ready; and if specimen plants are required, those selected for that purpose should be placed in 7-inch and then in 10-inch pots, which will be large enough the first season. When small decorative plants only are required, 6-inch pots are large enough, and the shoots should be kept well pinched until placed in that size. They should then be allowed to come into flower, and will continue for a long time; and should be thrown away after flowering, to be succeeded by a later batch of young plants. When growing for decoration during any season of the year, young plants grown on to the desired size are preferable to retaining old plants after blooming. When pinching the shoots, a few of the toppings should be rooted, in order to maintain a continuous supply. If they are to be grown into specimens, some little discretion must be exercised in stopping and regulating the shoots as they progress; but if neglected in this respect, and allowed to grow unstopped, much time is wasted in laying the foundation of creditable plants. The shoots must be brought down to the rim of the pots, tying them to a few small stakes to keep them in their place, which will be all the staking required the first season. A good round bush will be produced by the end of the growing season if propagated early; or better still, if rooted now, then a vigorous start can be made early next year, and much larger plants produced than if spring propagation is depended upon. Water should be liberally supplied to Vincas; in fact they should never be allowed to suffer from the want of it at any time while growing, or the wood soon becomes hardened, and growth is severely checked. Vincas are much improved, and continue to flower over a greater space of time, if manure-water is freely given them after the pots are full of roots. During the winter the plants do not require nearly so much water, especially those that have done flowering, and require to be kept through the winter to be grown on again the second year. While resting, they should have a temperature of 55°, and be kept moderately dry at the root—only sufficient water being given to keep the wood from shrivelling and the foliage from falling prematurely. They will stand being well cut back in the spring—an operation which must be practised when they have attained a suitable size, or they soon become unmanageable. Hard cutting back is not necessary the first season, and little pruning will be required if attention is paid to stopping the shoots as they grow; nor should they be kept quite so dry at the root during their first season of rest, as is beneficial when the plants have attained a good large size, and have abundance of well-ripened wood. The one-year-old plants should, if they do well, have a liberal shift early the second season, when they will grow to a large size. If only partially rested through the first season, the roots should not be much disturbed when potting them. But when they have attained a suitable size, and have been well cut back, and have commenced again to

break into growth, they may be well reduced at potting-time, and replaced again in the same size of pot. The second season's treatment is much the same as the first, only the plants can be allowed to flower towards the end of summer, or early autumn of their growth. The shoots should be stopped as they grow, and the growths supported with a few stakes as they require it. When grown for exhibition, more stakes will be required in training the plants than are necessary "when grown entirely for home decoration," and the plants should be well filled with young wood. The same shape should be adopted that is common with Heaths when grown for exhibition.

The compost most suitable is rich loam, manure, and leaf-mould, with plenty of coarse sand and a quantity of charcoal mixed with it, to keep the whole porous. *Vinca alba* and its red-eyed variety *V. oculata* are the two most worthy of being grown. *V. rosea* is not so serviceable, and its flowers are not very brilliant in colour. WM. BARDNEY.



#### WINTER VEGETABLES.

ALL kinds of vegetables are very nice and highly valued when they become ready for use for the first time in spring and the early part of the season; but I do not think there is any time when a variety of choice vegetables are more prized than throughout the winter. The period to which I refer begins about the November term, and ends about All-Fools'-Day. Maybe about the first-named date vegetables may in many cases be plentiful; but as the year wanes, especially with an accompaniment of severe weather, supplies as a rule become suddenly less, until many things are eaten with a relish which would be quickly consigned to the dunghill at midsummer. Very often this is not the gardener's fault, as none of us can set Jack Frost at defiance with everything that we grow. Still with many things there is a possibility of doing much in the way of storing and protecting, but first and foremost it is important that we have plenty to treat in these ways. Empty quarters in the vegetable-garden are never creditable, especially in autumn; and although many may say vegetables are not wanted in winter and spring, good crops of winter stuff are hardly ever out of place. It is late now to try to make up for lost time in the way of sowing, but on sheltered south borders Spinach, Late Turnips, and Horn Carrots may still be sown, with a fair chance of their becoming useful. Coleworts, too, may still be planted, to supply little heads about the New Year and afterwards. The prickly-seeded winter Spinach is one of the best crops any one can have from November until March. It is very hardy, and very useful in the kitchen, and one good patch of it gives a surprising quantity of leaves. We sow it two or three times during both August and September, in rows 15

inches apart. Any good ordinary soil grows it well. As a late autumn or Christmas crop, few things do better with us than a good patch of July-planted Cabbage. Their heads in December are almost as nice as they are from the autumn plants in April. Speaking of Cabbage reminds me to say that where the demand for vegetables is large, few things are more valuable than a constant supply of Cabbage—but how seldom do we see this kept up! As a rule, after the first spring lot is cut, what follows is very inferior. Our spring Cabbage are planted by themselves in a large patch in the autumn; then the mid-season ones grow between the Potato rows, and the autumn ones are planted after the Potatoes have been cleared off. Where, however, ground is scarce, and all these lots cannot be put in, those plants put out in the autumn and cut at various times in spring will, if properly treated, form a most useful lot for a supply of greens almost the round of the season; because, as each head is cut, if those left are not much injured, from six to a dozen sprouts will be emitted from each, and these growths make as good Cabbage when cooked as the main heads, and sometimes they will produce a third crop after the second has been cut. Kidney Beans are very pleasing in winter, but fresh ones from the plants cannot often be had on the shortest day. Many cooks salt them up in jars about this time, and those not in the secret cannot tell them from fresh ones when they are put on the table weeks or months afterwards. The Runner Beans are the best for salting, and they must not be too old. Onions are a thorough all-the-year-round vegetable, and the demand for them in winter is great, but they are one of the easiest things to keep—only it is important that they be well dried before taking them in, and September is the month to do this. Any kind will keep throughout the winter, but for late spring and early summer James's Keeping should be grown. Carrots, Parsnips, Beetroot, and Turnips are the other chief roots for winter, and Salsafy is also most useful.

Beetroot will not bear frost. Carrots are not benefited by it, and the more tender kinds of Turnips are often destroyed by it, and care should be taken that all of these are lifted from the ground and safely stored before the frost has ever touched them. We are all rather liable to think when it comes one frosty night that it will not last long, and that our vegetables will take no harm; but very often it lasts, and lasts until much damage is done. Hence the reason for making sure of at least part of the crop. Parsnips and Salsafy are much hardier, and severe frost does them little injury; but sometimes after much hard weather they are not easily got at, and it is generally most convenient to dig up and store away part of them also. The place where all roots are stored should be cool and dry, but not too dry, or many of the roots may shrivel. If covered over with sand, ashes, leaf-soil, or old mushroom-bed dung, they will retain their qualities for many months. But, important as good root crops are, green vegetables are equally or more so

with many, but they are not so easily kept, especially during a winter like last. Forcing gives a supply in some places, but not in the great majority, and it is those we have in mind just now. With them the chief thing to do is to select as hardy kinds as possible to grow from the first, and then to keep them as well as they can.

Brussels Sprouts are among the hardiest of our winter greens; then come Savoys, Curly Greens or Scotch Kale, and Broccoli. And there is yet another I wish to name, and that is variegated Kale. In many gardens last winter these were the hardiest of all greens, remaining fresh to the very end of the season, or until they ran to flower; and when cooked they are as well-flavoured and tender as any other green. In winter it is a great matter to keep all kinds of greens free from dead and decaying leaves, as rot is one of the chief things to be warded off. Many kinds of odds and ends of protectors may be used to cover up the best of the heads at certain times; but protection should never be given unless when it is actually wanted, and it should always be regulated by the weather. With a little labour, good quantities can be stored away in sheds; and when this is done they should only be taken into such places on dry days, when they are perfectly dry, and they ought to be turned occasionally, to expose them to fresh air. Broccoli should always be covered up as soon as they begin to form. Vegetable Marrows, although plentiful now, are scarce enough in winter; but they need not be so if they are gathered now and kept in a dry place. They keep for months hung up in a piece of net in a dry room, and when boiled they are almost as good as when green. They should be cut before they are too old. Leeks are another grand winter vegetable. Weather has no effect on them; but they should be pretty well grown before the end of October, and the further they are earthed up the better. We have some fine ones this season in a position we never saw them in before, and they are doing well in it. Our Celery trenches are thrown out about 1 foot deep, and when the Celery plants were put into them, a Leek was dibbled in between the plants every yard or so. As they do not make bushy top-growth, they injure nothing, and as they get earthed up with the Celery they will have fine stems. We are much pleased with the plan, and think others would like it if tried.

Parsley comes in amongst the vegetables, and a great thing it is when it can be gathered 365 days together. Often it does well in winter with the protection of a wall-bottom; but besides this, two or three frame-fulls should be in reserve; and a number of pots and boxes filled with it and placed in a glass house can always be depended upon.

J. MUIR.

MARGAM.





## NOTES ON DECORATIVE GREENHOUSE PLANTS.

## THE APHLEXIS.

THE Aphlexis may with truth be called one of "our neglected greenhouse plants," and yet as an ornamental, and more especially as an exhibition plant, it has few equals. The flowers are among what are generally termed *everlasting*, and are therefore the more valuable seeing they are so persistent, and keep fresh-looking for such a long time, whether on the plant or even after they are cut. The plants are worthy of more extended and more general cultivation than usually falls to their lot. They should be grown in pure peat, or at least the greater proportion of the soil should consist of good fibry peat; a little turfy loam may be added, and a liberal allowance of sharp sand mixed with it, to keep all open and porous; a little crushed charcoal may also be added with advantage, as it tends to prevent the soil from becoming sour through repeated watering; the treatment given them should be something similar to what is generally given to Heaths and Epacris, &c. The Aphlexis is increased by cuttings taken off either in spring or early summer, the small half-ripened side shoots being best. These should be put in a properly prepared pot or pan, the cuttings inserted in silver sand and covered with a bell-glass, and treated in the way which has been repeatedly described for similar kinds of plants. When they are fairly rooted they should be carefully potted off singly in small pots, and set for a time in a close pit, until they make fresh roots, when air should be given them, in moderate quantities at first, afterwards increasing the quantity. They should be frequently pinched when small plants, so as to secure plenty of breaks, otherwise they have a tendency to grow straggly. The after-treatment will consist in shifting them into larger pots when they require it, keeping them carefully attended to in the way of water, and giving them what training they may require.

## PHENOCOMA PROLIFERA.

The above plant is closely allied to the Aphlexis, and in many respects requires the same kind of treatment; it also bears everlasting flowers, which last a long time in perfection. It makes a very handsome and attractive plant whether in or out of flower, and is also one of the very best of exhibition plants. Young plants when of the proper size are capital for table work and for house decoration. It is astonishing how seldom one meets with a specimen of this plant, and yet it is one which is worthy of a place in the most select collection of greenhouse plants. It is a native of the Cape of Good Hope; the soil best suited to its needs is sandy peat, with a little leaf-mould added to it. It is increased by cuttings, taken from among the side shoots just as they are getting firm at the base. These should be put in in the usual way under a bell-glass, in a pot or pan prepared as for cuttings

of Heaths or suchlike. The pot should be set in a cool house or pit, near the glass, and indeed in all stages of their growth they should be kept as near the glass as may be convenient. When the cuttings have made roots, pot them off singly and set them in a cool pit, where they can be kept moderately close for a time, until they make fresh roots, when they should be allowed a moderate quantity of air. If kept too close for a lengthened period, they are liable to damp off, or to be attacked by mildew, which destroys the small foliage and mars the beauty of the plant.

In repotting they should not get too big shifts, and the soil should be rammed hard about them. The roots are very small and threadlike, so it is best to give small shifts and often, thus getting the whole ball permeated with roots. If large shifts are given the roots find their way to the sides of the pot, and run about it, leaving the centre of the ball almost destitute of roots, and then with repeated waterings the plant is liable to get soured, and suffers in consequence. The plants should be often pinched when young, thus inducing a bushy habit, and they will require fewer stakes to keep them in shape. With proper management they should almost do without stakes altogether, which are always less or more objectionable, and should be used as sparingly as may be. Their time of flowering is the end of summer and autumn, and the ordinary winter treatment should be such as is usually given to Heaths and suchlike plants.

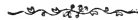
#### GENETYLLIS TULIPIFERA.

This plant is not nearly so much grown, or even so well known, as it deserves to be. As an exhibition plant, when well grown and flowered, it has few equals. Though the individual flowers are not very showy, yet when closely examined they are very beautiful, and as they are borne in the greatest profusion, a well-flowered specimen is a grand object; the flowers are also very persistent, lasting in good condition for months. It will thus be seen that this plant deserves a place in the smallest collection of greenhouse plants. It is also very useful for house-work when of moderate size, but is not suitable for cutting from, the flowers being too stiff for this purpose.

They are generally considered somewhat difficult plants to manage, and no doubt they require a good deal of care, else large portions of them will die off in the most unaccountable manner, and this more particularly should anything go wrong with the drainage. In potting, therefore, this should receive particular attention. Good drainage does not so much consist in the quantity of crocks as in the manner they are put in: they should be put in carefully, and not merely thrown in any way, under the idea that if plenty are put in the drainage must be all right. Further, the crocks should be washed clean before using, and then what particles of soil may be washed down during the process of watering will be less likely to find a lodg-

ment among them. Great care should also be taken to prevent worms from finding their way into the pots, as these soon choke up the drainage. Should any find their way in, however, the best way to get rid of them will be to fill up the hole in the bottom with clay, and then fill the pot up with clear lime-water. This can be easily made by putting a few hot shells in a tub of water, and letting it stand for twenty-four hours or so before using. The clear water only should be used, and this will soon cause the worms to come to the surface, when they can be picked off. The pot may be allowed to stand for a few hours, when the clay should be removed and the water allowed to drain off. It will not harm the plant, but is certain death to the worms. The Genetyllis is a native of the Swan River. The soil best suited to its requirements consists of good peat and turfy loam, two-thirds of the former to one-third of the latter, and sufficient sand to keep all open. They are increased by cuttings of the half-ripened shoots, put in silver sand in the ordinary way under a bell-glass. Pot them off singly when rooted; pinch them when young to get them into shape, and the after-treatment will consist of shifting them when they require it, training them into the shape desired, and general watchfulness that they do not suffer for want of water, nor be afflicted by getting too much of it.

J. G., W.



## FRUIT-CULTURE.

### THE APPLE.

*Medium Trees on Medium Walls.*—For walls which are only 8 or 10 feet high, we think what we have already called medium trees are most suitable. Trees on free stocks, especially where the soil is good and deep, are apt to produce too much wood to be fruitful when unduly restricted in growth, unless this restriction is caused by systematic root-pruning and root-lifting. It is better to attain the desired conditions of restricted growth by having the trees on Paradise stocks. The Paradise requires much less root-pruning to induce the roots to become fibry and keep near the surface than the seedling Apple or even the Crab, and hence its desirability for medium-sized trees.

Either fan or horizontal training may be followed, as in the case of large trees—but we certainly prefer fan-training. In either case the treatment required is just the same as with large trees. Pinching, pruning, and root-pruning should also be done on the very *same principle* and in the same way as we advised for trees in the open. If the directions given for medium trees in the open quarters are studied, along with the directions for training and otherwise treating large trees on walls, no need will be required to particularise the details of cultivating these smaller trees on walls.

*Dwarf Trees on Low Walls.*—As we have before said, we do not recommend pigmy trees, except for covering low walls, which might otherwise not be utilised at all. We have often seen long walls round spade-cultivated land which were quite bare. When the walls are low and limited in extent, we certainly advise cottagers and villa owners or occupiers to plant the necessary quantity of Red and Black Currants and Gooseberry-bushes against them; but where there is a greater extent of low wall than is required for these fruits, we would not hesitate a moment to advise the planting of them with dwarf Apple-trees. If good bearing kinds are planted, abundant crops may be expected from what would otherwise be wasted space.

Such trees should be planted 4, 5, or 6 feet apart, on walls from 5 to 7 feet high, and they are, we think, best trained perpendicularly. In forming them, the centre shoot of a maiden tree should be cut quite close down, and two shoots allowed to spring. These are to be laid in horizontally, and cut back so as to make them push shoots, which are to be trained perpendicularly, at about 9 to 12 inches apart. Cutting back at the winter pruning, and pinching in summer, must be practised in the same way and for the same reason as dwarfs in the open border are so treated. Root-pruning and root-feeding must also be attended to in the same way.

Five or six branches should be led up from trees on walls 4 feet high and under, but four branches will be sufficient for trees on walls 7 feet high. In both cases the number of square feet allowed to each will be almost the same, although the trees will require to be closer together on the higher walls.

*Cordon Trees.*—Of late years cordon trees have become fashionable, and by their use a wall may be rapidly clothed with bearing wood. They may either be single or double, or indeed triple or quadruple for that part of it; but they are more commonly single or double. On high walls they are generally trained straight up; on low walls, they are generally trained obliquely. A low wall may thus be made as suitable for a cordon tree as a high one. We need not give special directions for their cultivation; the *principles* laid down before apply here, and only require some modification.

*Espalier Trees* are trained and treated in exactly the same way as wall-trees, and are fastened to wire or wood espaliers instead of walls. We may add that common wire painted is considered better than galvanised wire—many cultivators alleging that electricity plays on the galvanised wire, and destroys the shoots which are tied to it.

*Replacing bad Kinds.*—It too often happens that when trees begin to bear they are found to be untrue to name, and it is seldom that the misnamed kind is a better one than what was ordered. Sometimes, often indeed, utterly worthless kinds are sent instead. Sometimes kinds which either won't bear at all, or bear fruit that does not ripen, are sent. This causes much disappointment, and often such trees are

regretfully dug out and replaced with young ones. A better plan, if the trees are healthy, is to graft them with suitable kinds. Not only is the risk of again planting misnamed sorts avoided, but especially, in the case of wall-trees, the space will be much sooner filled up.

The operation is in itself simple. In order to insure success, the necessary shoots which are to be engrafted on to the tree—young ones—should be removed from the trees while they are still dormant, and put into the soil like cuttings, in a shady place, and there left till needed. The trees to be grafted should be allowed to swell their buds before being operated upon. In the case of wall-trees, each branch should be cut back to within 4 inches from where it starts, and there grafted. Branches not thicker than one's finger should be whip-grafted, but if much thicker, crown-grafting is more suitable. In putting on whip-grafts, the inside bark of the stock and scion should correspond along one side, and at the end at least, for there the junction takes place. When the operation is complete, the scion should be carefully bound in its place with soft matting, and then covered over with half an inch of good clay (well worked and mixed with one-third of horse-droppings or chopped hay to make it hold on, as plaster does when mixed with hair). To insure its sticking, rub a quarter of an inch over the matting, and when that adheres, put on another quarter, and finish the whole with hands dipped in water, which will enable the operator to put on a smooth surface. When carefully done, the clay very seldom falls off. Grafting mixtures, to be used instead of clay, are sold, and these have the advantage of being cleaner. Directions for use accompany each box.

Those who wish may raise their own trees. The simplest way of doing this is to sow the seeds of hardy kinds early in spring, and to nurse the trees until they are the thickness of one's fore-finger, when they may be grafted by whip-grafting. The seeds from fine kinds are not so good for stocks as the hardy kinds, and seeds from American Apples are of no use at all, for nine out of every ten will prove too tender. If Crab seeds are to be had, they should be treated similarly. When the seedlings are one year old, they require planting into nursery-beds 6 inches apart in the row, and 2 feet between the rows. In transplanting, always cut off the point of the tap-root, to induce the formation of fibry roots. Paradise and Doucin stocks are propagated by cuttings of the ripe wood, put in on a shady border in sandy soil any time during winter. These stocks may be had, from those nurserymen who deal in them, very cheaply by the 100 or 1000. Bits of roots from established trees may be used on an emergency, when no other stocks are at hand, and valuable grafts in the possession of the grower. The more fibres there are on the roots, the better will be the chance of success. Care should be taken not to allow the roots to get dry while they are out of the ground.

*Moss and Lichens on Apple-trees.*—Old trees often get covered over

with lichens and moss, which exert an evil influence on the trees' health. They should be cleaned from these, by scraping them with some blunt iron instrument, and then dusting the branches over, while they are damp, with newly-slaked lime. Lime, when applied hot, is death to lichens and mosses; but, when trees are badly affected, it is quite necessary to scrape them before applying the lime—otherwise it will have no chance of properly doing its work.

*American Blight.*—Sometimes this pest attacks Apple-trees in this country. If left to itself it does a deal of mischief. When it makes its appearance the most economical plan is to attack it at once, for if it is allowed to spread, its destruction will prove a serious matter. It is easiest got at in winter, and just damping the places where it lodges on the branches with paraffin-oil is the most effectual way of destroying it. This means a great deal of careful anointing in the case of old, badly infested trees, but it is easily got rid of in the case of young ones.

*Canker.*—Some varieties of trees are much more liable to this disease than others. Indeed some sorts are never attacked, even on unfavourable soils; while in the best of soils, and under the very best system of cultivation, others cannot be kept free of it. For instance, Hawthornden (which, if it could be kept free of canker, would be the best Apple in cultivation for the million) generally dies outright when the tree gets to be over a score of years old, especially when its roots are allowed to penetrate into a cold or otherwise unfavourable subsoil. The only prevention, and that but a partial one, comparatively speaking, is to keep the roots well in hand near the surface, and in healthy well-drained soil. When it is determined to grow some favourite sort, which is yet liable to canker, it is well to have young trees nursing on somewhere, to take the place of those which may die or become unsightly from canker. In our selection of varieties we have named only those which we have found to grow healthily on a variety of soils. We make an exception in the case of Hawthornden. The fact is, it is a favourite of ours. It never, in ordinary circumstances, makes a full-grown orchard tree, and for medium trees it should be grafted on a free stock, for it bears so freely from the very first, that there is no difficulty in keeping it dwarf—the difficulty lies the other way. We once saw half-a-dozen of this kind on the Doucin, and they could not be got to grow at all; so even for the dwarfest trees nothing more dwarfing than the Paradise (English) should be used for this variety.

*Gathering and storing the Fruit.*—Little requires to be said under this head. Each kind should be gathered as it becomes ripe, and in gathering care should be taken not to bruise the fruit. In storing it, it should be spread carefully and thinly in a dry airy room, and care should be taken to keep frost away.

*List of Varieties suitable for a Small Garden: Kitchen Apples.*—We have placed these first because, as before stated, the home-growers can

never compete with the Americans with dessert varieties. Moreover, our surest croppers are mostly Kitchen Apples, and if Apple-growing is to pay, large crops must be uniformly produced, and not at intervals of years only. \* Lord Suffield.—This is a very large, handsomely-shaped codlin; a free bearer, good grower, and at home anywhere in Great Britain or Ireland (October to November). Keswick Codlin.—Although not so handsome as the last, it is a sure cropper and a good Kitchen Apple. Stirling Castle.—A very free-bearing, handsome Apple; the growth is healthy, but it is apt to bear too freely, and so fail to grow. Nourishment, and the removal of terminal flower-buds from the young shoots, coupled with the judicious thinning of the fruit, will correct this tendency (October). \* Cellini.—One of the very best in every respect, and is also a handsome Apple (November to December). Ecklinville Seedling.—Another of the very best. Grows to a large size, and is an immense bearer. \* Tower of Glamis.—Another Apple worth cultivating in the smallest garden. It is a first-rate keeper.

*Dessert Apples.*—Early Margaret.—A very free-bearing early variety (August to September). \* Irish Peach (wall).—Another first-rate early kind. Emperor Alexander.—A very beautiful fruit (wall, October). \* Cox's Orange Pippin.—This, on a wall, is a very valuable Apple for winter use. Ribston Pippin.—This cankers, but is a universal favourite; it keeps well, bears well, and is by no means particular to climate. We are sorely tempted to add to this list, but we really think it is too long for the class for which this is written. The very best kinds, from an economical point of view, are marked with an asterisk. This constitutes a second selection.

We can scarcely hope that our selection will prove universally acceptable within these Islands; but those who garden in lake districts, especially if the principles of cultivation which we have endeavoured to explain are carried out, may rest assured that the selection made is suitable, for every one of them grows and thrives well north of the Forth. Most of our notes indeed, from which we make the selection, are the results obtained in a Fifeshire garden. Those who are favoured with very favourable climate and soil may advantageously add to our selection; but our advice, in closing, is—make your selection from gardens or orchards in your own locality, for very great mistakes have occurred by planting trees, suitable enough in one locality perhaps, but totally unsuited to the circumstances under which they were placed in another.

A. H. H.



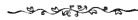
#### CHRYSANTHEMUM INDICUM PRECOCITE, &c.

THIS is a dwarf-growing, early-flowering variety of the common winter-flowering Chrysanthemum, with very double, medium-sized, neatly formed flowers, which are borne in great profusion from July till

destroyed by frost. As a pot-plant it is a very effective and desirable subject; but is most useful and effective as a mixed border-plant, and for large beds. It grows about 18 inches in height, branches freely, and is as rigid in habit almost as a young thorn-tree. It stands ordinary winters in the open borders, and during the most severe weather will live with very slight protection. For mixing into borders of hardy plants it has no equal as a bright yellow flower; while for lines and large beds it is splendid, and the wonder is that it is not more extensively used as a decorative border-plant. There are several other varieties that bloom at the same early date, but precocite is the most effective and useful. Still the others, being of various colours, are also desirable.

C. delphine caboche, a purplish-rose variety, is a little taller than precocite. C. illustratum is about 18 inches high, having pink flowers with orange centre; this is a very effective variety. C. indicum nanum has immense and very double white flowers, and is of neat compact growth. C. Scarlet Gem has rather dull crimson flowers, and is dwarf and stiff in habit. These varieties of Chrysanthemums should be grown by all lovers of mixed borders. Precocite and indicum nanum are the best; but all are worth a place, and can be grown with very little trouble. Of course, to enable them to keep on blooming for months, they require generous treatment, and watering in hot dry weather; but this applies to most border-plants.

A. P.



## HINTS FOR AMATEURS.

### FLOWER-GARDEN.

VALUABLE kinds of plants in open ground are not safe from frost at this season, and should be lifted and potted, or protected at night. Propagating should be brought to a close as early as circumstances will allow, except in the case of Calceolarias and Pansies, which may be left till next month. Pits on which glass-lights can be placed suit well for Calceolarias. Pansies, after they are rooted, will stand almost any weather; but to have nice fresh plants to turn out in spring, a few glass-lights will do much towards that end. Take note of the rooted stock of cuttings and others on the way, and see that they are sufficient for the demand. Look well to the staking of Dahlias, Hollyhocks, and other tall-growing plants; as, if frost keeps off, they may be found useful for months to come. Many herbaceous plants can now be replanted with good soil with best results; but when such work is done, it is better to regulate and renew the whole border—fresh soil and manure may be wanted. They should be kept thin, and regulated according to height. There is plenty of time to think of this when flowering is quite over for the season; but now is the time to note heights, &c., before the tops die down. Hedge-clipping and



box-trimming may have attention now : repairing lawns by turf, and sowing of grass, may be done when weather is moist. Walk-turning, to destroy moss, and gravelling, may be done now, but better later. Every portion of the ground should show taste and high keeping. As leaves will now begin to drop, especially Limes, much labour must be expended to keep all parts in good order. Pinks and Carnations rooted may now be planted. We often have found these do best of all by allowing them to remain to the old plants all the winter, and during April lift them and plant carefully, with all roots entire. Sow annuals now of choice kinds, to stand the winter and flower in spring. They may be sown in boxes or on a border, to be transplanted when the other bedders are done with. Roses should have all dead bloom cut off as they appear. To keep mildew in check, a syringing of soapy water, in which a quantity of sulphur is mixed, will be of much service : so will Gishurst's Compound. Strong rambling shoots cut back will throw out later a number of useful blooms. Climbers should be regulated by thinning their growths.

#### PLANT-STRUCTURES.

The work in this department is much as was recommended for last month. A general preparation for harvesting the stock through the winter should now have attention. The washing of all glass houses, lights of pits, frames, &c., may with every advantage be done now, heating apparatus examined, painting done, or any other work which will aid the keeping of the plants in good condition during the winter season. All hard-wood plants should be overhauled : surfaced if wanted, drainage put right, pots washed, worms eradicated, staked where wanted (much of this is ruinous to the appearance of the plants), and any trimming required (for appearance' sake, which will not injure the plants) should have attention at "housing time." All soft wooded plants, such as Pelargoniums, Cinerarias, Calceolarias, Kalosanthes, &c., requiring more pot-room, should get it before growth becomes sluggish, and while there are sun and air to help them on. Cut down stage Pelargoniums which are for late work. Those which are well broken into fresh growth should be shaken out and re-potted into smaller sizes, using rather sandy soil for this work, which gives plenty of fibre for next shift, when the soil is richer and the shifts of some size. Fumigate with tobacco three times a week, to keep aphid in check. Plants not required for the conservatory for some time should be arranged in classes—as examples, Azaleas by themselves ; also Heaths and Epacris ; and so on, according to time of flowering or taking to forcing-house. They should be in lots ready to be removed as required, without disarranging the whole stock. Roses of the Tea class, and Chinas, should be put right at roots by sound drainage, surfacing, or potting, if they require it. All inert soil should be taken away, as far as it can be spared, and replaced with good wholesome loam and very rotten

manure ; but nothing should be given to sour the soil : much manure in pot-soil always does mischief. Plants done flowering, and to be used next year, should not be treated carelessly, as sometimes is the case when good servants have finished their work for the season ; but they should be placed in pits or other structures, and the necessary requirements allowed them. This applies to Veronicas of sorts, Kalosanthes, Hydrangeas, Fuchsias, Statice, and suchlike : a little trimming of huge growths may be necessary. All potting should be done early enough, so that the roots may be established in the fresh soil before winter sets in. The whole stock of forcing-plants should now have their flower-buds well ripened, and be ready, after a fair season of rest, to start gently into flower at the proper time. Early prepared Camellias will now be well forward, and some showing their colours : water them and all such with much care. When drainage is good, they should have good soakings when they need it. It may now be better to water all plants in the mornings, so that they and the structures in which they are placed may be dry and clean at night. The airing of cool houses must now be done judiciously, and if a damp time should set in, gentle fires may be required. Potting of bulbs will now have attention : good turfy loam, with a little well-rotted manure and sand mixed, suits most kinds. Hyacinths may be potted, one to three in each pot ; each potful should be one kind. The same applies to Tulips, Narcissus, and Jonquils—using pots suitable for the positions in which they are to be placed. Tulips may be well covered with the soil ; Hyacinths and Narcissus, only a third of them should be under the soil. All, when potted, may be placed under 3 or 4 inches of old tan or leaf-mould, till their pots are full of roots and they have begun to grow ; then they may be brought forward in greenhouse temperature slowly, forcing a few as they are required. Potting may be done from September to the middle of October or later, putting in a proportionate quantity of bulbs each time : successions will come into use accordingly. In the show-house, such plants as were referred to last month will still be in good bloom. Less shading will be needed as the season advances. Plants introduced now should be of neat and distinct habit. Creepers—such as *Plumbago capensis*, *Habrothamnus*, *Lapagerias*, *Kennedyias*, &c.—may require cutting-in a little to prevent matting ; but wholesale clearing is damaging for next year's supply of flowers. *Chrysanthemums*, *Salvias*, *Eupatoriums*, &c., should now be well forward and ready to do their part. The two first may be aided with clear manure-water as soon as their buds are set ; a good rich surfacing will do much to keep them in vigour. In the stove, a bed of tan with warmth to start *Gardenias*, *Ixorias*, *Jasmine sambac*, *Eucharis*, and other flowers for early winter, may be of great service ; but if the plants are to be taken to cooler structures or rooms, they must be removed gradually from bottom-heat as the buds begin to open, otherwise dropping of blooms would take

place. All the Stocks should be examined and put right at the roots for winter. Sponging and cleaning should be done thoroughly. Pot-bound plants would suffer during the winter—better risk a shift than allow them to be injured by starvation: extra drainage should be allowed when potting is done late. Creepers should be cut in, to allow light to the whole house. Air as freely as circumstances will allow: let syringing decrease gradually. When fire is used, it should as yet be moderately; but the weather is the best guide to this. Heat may range about  $65^{\circ}$  at night, rising  $10^{\circ}$  with sun-heat. Gross spongy growth is very objectionable at this season of year. Look to all winter-flowering plants in pits and frames: they must not be starved by cold and damp. See that they are not rooting through their pots, and have root-room. In stoves such plants are now more manageable. Plenty of Gesnerias, Libonias, Euphorbias, Epiphyllums, Poinsettias, Thyrsacanthus, Scutellarias, and suchlike, are of immense value where flowers are wanted during winter. Calanthes should be well forward for early flowers: the soil about their roots should not be allowed to become sour or sodden.

#### HARDY FRUITS.

In this department attention to netting of fruits from birds and protecting from wasps will be an everyday consideration. Gather all stone-fruits before they are ready to drop. The trimming of dwarf trees, to let in sun and air to the fruit, should be completed. If any root-pruning is to be done, now is a good time to do it; but the idea that trees require this annually is simply absurd—indeed such a practice is positively injurious. Roots going away into bad soil from sun and air should be cut off; but the destruction of fibres is barbarous in the extreme. Careful lifting is better, and good mulching draws the roots upwards, and improves the fruit immensely. Allow sun and air to have full power on wall-trees.

M. T.



### GREENHOUSE PLANTS.

#### NO. VII.—KALOSANTHES COCCINEA.

MORE than 150 years have passed away since this grand flowering-plant made its appearance in the greenhouses of Great Britain; and notwithstanding the large number of other kinds of beautiful flowering-plants that have been introduced during the intervening years between then and now, it is still deserving of a prominent place amongst the later arrivals.

Of late years a few varieties of this plant, differing somewhat from the original type in the colour of their flowers, have been brought under the notice of the gardening public; but in the writer's opinion none of them have flowers of a superior colour to those produced by the old plant. For the decoration of the greenhouse or conservatory

during the months of June, July, and August, it has few equals; and during the same time it is one of the most "telling" flowering-plants that can be introduced into floral decorations in rooms of the dwelling-house. For the latter purpose, during the months mentioned, it is indeed invaluable, as it can be flowered successfully in pots of all sizes, from 5 to 20 inches in diameter.

When used for the purpose here referred to, and surrounded with a fringe of Maiden-hair Ferns, or other plants with graceful foliage, the effect is highly pleasing, and seldom fails to attract the notice and call forth the praise of all who see the arrangement. The merits of the *Kalosanthes*, however, are not confined to the pleasing effect produced by its flowers on the ocular nerves of the beholder; as, in addition to their bright colour, the flowers have the property of exhaling a delicate perfume, and this quality enhances the value of any plant when employed as an ornament in the dwelling-house. Then, when in good health, it makes one of the grandest exhibition plants that can be taken out to a flower-show. A healthy well-bloomed plant of *Kalosanthes coccinea* will produce as striking an effect on the exhibition-table, and rank almost as high in the eye of a good plant judge, as an *Ixora* of equal dimensions, and having the same number of flowers thereon.

Well, now, notwithstanding that the plant is possessed of all these good qualities, we have to admit that it is seldom seen in private places in a condition creditable to the cultivator. Why it is that so useful and beautiful a plant is not better cared for by private gardeners is not easily understood. The reason for the neglect of this plant cannot arise from any difficulty experienced in its culture, as it is as easily managed in all stages of its growth as a Scarlet Geranium or *Cineraria*.

For the benefit of any reader who may not have had any experience in the culture of *Kalosanthes coccinea*, and who may wish to grow it successfully, I will now give a few directions that may be of use to him.

*Propagation.*—This is effected by cuttings. And although cuttings will emit roots at any time of the year, the months of August and September are the best time to insert them. Let the cuttings be from 3 to 4 inches long, taken from the tops of shoots that have not produced flowers. Insert three cuttings in a 3-inch pot that has previously been properly drained, and filled with a compost of leaf-mould and coarse sand in equal parts. When the desired number are put in, give them a good watering by means of a fine-rosed watering-pot, and place the pots containing them in a close frame or in the propagating-pit. While the rooting process is going on, they will require very little water, and they should not have any shading except in the case of very bright sunshine.

As soon as the rooting process is complete, the cultivator must decide the particular purpose that he intends the plants for. Those of them wanted for general decorative purposes should be transferred

from the cutting pots into pots of larger size, without breaking the balls of soil about the roots of the young plants—thus there will be three plants in each pot; and if duly attended to, and not interfered with in the way of nipping or cutting out their points, they will keep on growing all through the winter, and each, as a rule, will produce a head of flowers the following July or August.

If the cultivator is desirous of producing specimens, he must replot the plants as often as the pots become filled with their roots, remembering not to give large shifts at any time. It is also necessary, when large plants are the object, to stop or nip out the points of the shoots as often as the latter have made 3 or 4 inches of growth. This stopping of the shoots must be continued up to the middle of August of the year previous to that in which the plants are wanted to flower. Good fibry loam, to which has been added some coarse river-sand and a little pounded charcoal, will be found a good compost for the roots. In all stages of growth this plant should be kept as near to the glass as possible, and at no season should a superabundance of water be applied to its roots. Perfect drainage at the roots, and a judicious application of water thereto, are the principal points to be attended to in the culture of *Kalosanthes coccinea*.

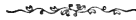
J. HAMMOND.



#### THE LARGE VINE AT SPEDDOCK, DUMFRIESSHIRE.

At Speddock, near Dumfries, there is a very remarkable specimen of the Black Hamburg Vine. It is distinguished for its size, but not more so than for the splendid Grapes it bears annually. As far as we are aware, it has no equal in this country, if its size and the quality of its produce are considered. The Vine at Hampton Court, as well as those at Cumberland Lodge and Finchley, are all larger; but the produce of these is not so fine as the Speddock Vine. This Vine is about eighty years old, and until a few years ago it occupied a much smaller vinery than the one it has now nearly filled, and which is something over 60 feet long and 20 feet wide, with a lofty back wall, and consequently a long rafter. The Vine is planted at the extreme east end of the house, so that its growth is entirely to the west. Last year it bore 600 lb. of Grapes of superb quality both as to size and finish. This year it has fully 700 lb., every bunch from end to end and top to bottom being a model one; and while some are quite 3 lb. weight, they will average at least 2 lb. each. They are large in berry, conical in shape, and jet black. Mr Smith, who manages all his Vines in four vineries with great care and skill, wings all the bunches, so that they are all remarkably uniform in shape. This grand Vine is in a most vigorous condition, and if the vinery were added to 60 feet to the east, it would soon fill it all; but the nature of the ground prevents extension in that

direction. The border is liberally manured annually, very much in the manner referred to in our last issue. In another adjoining house there is a very superb crop of Gros Colmar on Vines, planted some four years since, and that are now in full bearing. In the other houses there are some remarkably vigorous and fruitful younger Vines, of such varieties as Alicante, Black Hamburg, and Muscats. The Vines are allowed plenty of room, and carry a good spread of foliage, and amply justify the practice of giving individual rods plenty of room, instead of crowding them together at the rate of 2 and 2½ feet. To do such Grapes as Muscats of Alexandria and Gros Colmar justice, they should never be closer than 4 or 4½ feet. They will carry as many Grapes as when planted more closely, and they have many conditions in favour of properly ripening the crop and wood, which do not exist in the crowding system.



#### MANURING AND DIGGING AMONG ROSES.

HYBRID Perpetual Roses are cultivated in every garden in these Islands, but in too many cases with but indifferent success. Being universal favourites, and having a very large number of admirers, it is no wonder that all owners of gardens should endeavour to produce as many Roses as possible, even though circumstances may be unfavourable to even fair success. One reason of many failures, especially in cold, late, or northern districts, is the extremely severe weather experienced in winter; and in not a few cases the low temperature of summer, from which we have suffered much in late years, has largely contributed to the dying out of the plants, because of the immature condition of the shoots consequent on the want of a temperature high enough to properly ripen them. These evils have been, we believe, in a large percentage of cases, aggravated by heavy mulchings of manure in winter, the digging of this manure into the ground in spring, and the liberal application of manure-water in summer.

The application of manure does not get the attention which the subject demands. Writers on gardening subjects, practising perhaps where there is a moderate rainfall, and where the days of sunshine and dry warm winds prevail, often give advice which is thoroughly good for those who garden under like conditions, but which proves disastrous when followed to the letter in other districts where the rainfall is great, the temperature low, and the climate damp. This is especially so in the case of the Rose. Most of our best and most extensive Rose-growers, and almost all of those who have produced books on the subject, reside south, some of them far south, of the Tweed, and even the Humber. Nevertheless the teachings of men in the sunny south are followed on "the bleak Northumbrian coast" and far north in Scotland with evil results.

This is not only the case with Roses, but with almost everything else. From Apple and Pear trees down to Strawberries and Onions, manure is applied in quantities which cause growths which ripen badly, and are unfruitful in proportion to the over manuring.

Almost all writers advise the liberal use of manure, and a good depth of soil of as good a description as possible, in the preparing of beds for Roses. We need hardly say anything here about this, as we thoroughly agree with those who advocate the proper preparation of the soil intended for Roses. To plant Roses on poor, thin, gravelly, unenriched soil is, not to court, but to insure failure. If H.P. Roses cannot stand on well-prepared soil, better plant the commonest, hardiest kinds, for no satisfaction will be derived from them otherwise. But while going thus far, we are certain that heavy mulchings in winter, when dug in in spring, and after-applications of manure-waterings, are disastrous evils in late, cold districts, and are sometimes not altogether an unmixed good even in what are considered fairly good climates. It may be, indeed it is, quite different in favoured localities; but we live in a very cold, late one, and we wish to give our experiences in this matter, for we know that there are many similarly situated to ourselves whose Roses suffer from mistaken kindness.

Wishing to excel in the cultivation of Roses, we, on the formation of what may be called our Rose-garden here, procured and studied the works of the authorities on Rose-growing. We prepared our soil by trenching and liberal manuring, and after the Roses were planted, mulched them heavily. This course secured splendid growth, fine Roses, and much satisfaction. For a year or two this went on,—winter mulchings dug in in spring, and heavy manure-waterings, securing ever-increasing strength and luxuriance. But a day of reckoning soon came. We had walked in the light of orthodox Rose-growing, instead of adapting our practice to our climate, and we suffered to the extent to which we erred. Dull, cold summers came, followed by arctic winters, and death thinned our Rose-beds fearfully. Even those which were spared grew wofully weak, and gradually became “beautifully less.” This happened in our regular Rose-beds. In a mixed border the Rose-trees bade defiance to the elements, and waxed stronger and produced finer flowers than did those of robust growth. This set us thinking, and the consequence was that we resolved that henceforth no manure, either liquid or solid, would be applied; and to give the system a fair trial, we lifted the whole—they were sadly needing rearrangement—trenched the ground, and replanted the Roses very deeply, in order to make sure of their not being killed even if they were frozen down to the ground-line. The following winter, '78-'79, proved exceptionally severe, so that our “new departure” was put to a severe test—indeed every plant was frozen to the ground-line. We would not have been surprised at the usual number of deaths, considering the circumstances,

but as a matter of fact we lost *not one*. Instead of digging in manure in spring, as usual, we trod the ground firmly—it is rather light—and merely cut off the dead wood, and hoed and raked the ground. Although the summer and the autumn were the coldest and wettest on record, the plants made and ripened a fair growth. The following winter again cut them down; but as before, they came up—this time strongly. Again the ground was merely firmed and dressed. The summer and autumn ('80) were favourable, and we had a magnificent growth, and the best display we ever had. Last winter also proved killing, the thermometer being again and again below zero, and again every bush was cut down to *below* the ground-line. This year they are again first-class and the growth magnificent—too much so, in fact, for nearly every shoot needs staking to prevent its being broken by the wind, to which we are much exposed. Near by these Roses are similar beds not under our charge, treated in orthodox style, and any one can see that the treatment is *too good for the climate*. Notwithstanding heavy mulchings, many of these Roses are annually killed by the severity of the winter. A number of the survivors are seriously crippled by the “coddling” and the weather, so that their growth in spring and summer is far from equal to ours. The heavy mulchings, which are dug in in spring, and the manure-waterings, make the soil richer, and the consequence is a strong growth at a season when growth should not be making but maturing, and which is always killed because it is always immature. The natural result is death and disablement. Any one looking on these beds in spring would fail to see much difference; both are generally cut down, the one to the manure, the other to the ground-line. A month later the difference is obvious. Ours are growing stoutly, the others are growing weakly on account of the little vitality left in them—some indeed are past growing at all. Why the difference? The reason why ours grow strongly is because the growth is made early and matured early, and therefore the root-stock is strong and mature, and able to again throw up sturdy growths to bloom early and mature early. The others hang long and make little growth; but the rich soil, aided by liquid manure, acts by-and-by, and strong shoots at length appear, but appear too late, for the winter finds them in midsummer condition—and the whole plant being in an immature state, suffers accordingly. Were the season to last a month or so longer, these might mature, and consequently stand the winter; as it is, they are the innocent victims of “orthodox” treatment. We cannot make the climate fit us; but we ought to make our practice fit it. Without liberal supplies of manure, southern growers could not produce the grand Roses they do. It does not follow that the same treatment in cold or northern localities will produce equal results—often the very reverse will follow. Many are delighted when they see trees making great strong growths; but the practical men among us know that unless we get fine dry summer and autumn weather to



mature that grand wood, evil results will follow instead of good, in the case of fruiting and flowering trees. Better by far have only moderate growth that the climate will perfect—we then may confidently look for good results. The lesson is to adapt ourselves to our circumstances, and not mourn because they won't adapt themselves to us. To give manure or to withhold it, to apply it sparingly or liberally, depends not altogether on the state of the soil, nor yet on the crop to be raised ; but if we are to reap the fullest good, we must regard the climate also. It is the same in the matter of digging. A loose open soil which will allow roots to run freely and retain moisture in as great quantity as possible when aided by mulching, may be proper in one case and disastrous in another. With a dull sky, a heavy rainfall, a damp soil, and a low temperature, a firm soil which will retain a minimum amount of water, and discourage strong, pumping roots, tending to produce fibry ones which produce firmer growth—such is the practice which should obtain. We have spoken generally. It is impossible to do more, for no two localities, soils, or situations are the same, consequently each one must cut a path for himself.

“FAR NORTH.”



#### THE ART OF COLOURING GRAPES.

“It is pitiable to see Grapes which are fine in every other way—large and regular in berry, beautiful in form, and large in size of bunch—yet lacking that all-important point of excellence, good colour, and consequent good flavour. It is possible to have good colour without good flavour, inasmuch as colour under good cultivation will come first ; but it is not possible to have good flavour without good colour. I do not say that Grapes should be all either black or yellow ; there are some of the best-flavoured varieties which will not, under any system of cultivation, approach either of these colours, and are therefore not so much grown as their merits would warrant ; but when we see, as all of us who attend exhibitions do see every year, red Grapes conspicuously labelled Black Hamburg, and Muscat of Alexandria as green as a Leek, we may be sure there is something wrong either in the culture or nomenclature. At local shows especially, judges have an unthankful office to perform when size is pitted against finish, and of course everybody is on the side of the giants. At the larger shows, in consequence of a greater number of persons attending who know what a bunch of Grapes should be, and there being amongst the crowd a certain amount of confidence in the great men who are supposed to act as censors on such occasions, the task of judging is not so thankless.

“In the case of Muscats at the early summer exhibitions we must, I suppose, be content to see them green, for they have never, to my

knowledge, been shown otherwise, and I think it is a pity they should be invited at all before the end of July. But Hamburgs are just as easy to colour in April as in September. They are not, perhaps, so easy for everybody to grow in the winter months as they are in the summer, but any person having grown them at any time of the year, and brought them in good condition through the stage of stoning, the question of colouring is then merely a matter of air and light acting on a good supply of healthy foliage; and I should not be afraid to say, that if a house of Hamburgs were given over to me at this stage in a moderately healthy condition as to foliage, that I could insure the colouring of all such berries as would not shank. The process would be a very simple one. I should first take great care that the quantity of fruit was not in excess of the capabilities of the foliage. There can be no rule laid down for this, as one good substantial leaf in full sunlight is worth more than a dozen flimsy ones which are partially shaded. What would be a heavy crop for one Vine where the plants are close together might be a light crop for another where more space is allowed. Next I should see that the border was never dry; and lastly, that the house was never without ventilation, unless for an hour or two when a cold spell of wintry weather came on suddenly.

“A minimum temperature of  $65^{\circ}$ , with a rise of  $80^{\circ}$  by sun-heat if the fruit has to be hurried in ripening, and all the air continually that these conditions will allow, without admitting a cold draught or necessitating too much hard firing, is the treatment recommended. The colouring cannot take place without a constant change of air. The colder the outside temperature, the smaller of course must be the aperture for ventilation, and in frosty or rough weather sufficient air will often enter through the laps of the glass during nights and dull days; but this constant stream of fresh air, till we find some better method at this particular stage, is an imperative necessity. When Grapes of the Hamburg class are not forced, and there is no necessity to hurry them, the simplest way to insure colouring is to leave them open night and day. There is far too much opening and closing of ventilators with most of us.

“The thick-skinned Grapes, such as Lady Downes and Alicante, which are intended to be kept through the winter for use in February, March, April, and May, require a higher temperature at this stage than is necessary for Hamburgs, and they will do with a less amount of ventilation when once the stoning process is over. The colouring of this class of Grapes should commence at the end of July or the first week in August, and a minimum of not less than  $65^{\circ}$  should be kept for two months afterwards. If a little ventilation can be allowed all night so much the better, but it is an absolute necessity to have some before the temperature rises in the morning.

“Muscats, to colour them well, require similar treatment to the thick-skinned varieties; but there is this difference between them—all

black Grapes will colour without direct sunlight on the fruit, but the Muscat of Alexandria and its allies of the same colour will not; they must therefore be trained wider apart, and, if necessary, the leaves where they shade the bunches must be tied back. I think, too, that no class of Grapes better pays for an extension of growth beyond the bunch than this; 6 feet apart is near enough for the rods, and the growths should be allowed to meet, but not to overlap or become crowded.”—WM. TAYLOR in *Journal of Horticulture*.

[Mr Taylor’s remarks are well worthy the careful consideration of all who are interested in the colouring of Grapes, and are entirely in accordance with our own experience and observation. “The good substantial leafage in full sunlight” is nearly the whole secret of colouring Grapes well. Of course it is indispensable to ventilate, &c., on sound principles; but all other conditions that can be afforded will fail if the foliage is not healthy (the Grapes in proportion to it, of course), and well exposed to sunlight. A rather striking illustration of the potent and indispensable necessity of sunlight on the foliage in laying on good colour has come under our observation in a vinery where Black Hamburgs are grown. The house is a three-quarter span, running east and west, and the north is steeper than the south side, and consequently has less chance of light. When the season happens to be bright and sunny, the Grapes on the north side colour very much as those on the south; but in summers such as this and 1879, they are brown Hamburgs on the north and black ones on the south. There is no inequality of ventilation, for the top ventilation is all on the north side, and there is bottom ventilation there also. There is one black Grape, viz., Gros Colmar, that we have always found to colour the quickest and most perfect when the bunches are exposed to direct sunshine, the same as is acknowledged to be best for Muscats. The crowding system of Vine-growing cannot be too severely condemned. It produces a less robust foliage, and prevents the free circulation of air about it. Vines planted at 4 feet will, moreover, produce as great a weight of fine Grapes; for the amount of crop perfected as it ought to be, depends on the amount of fine strong foliage more than on anything else. Dryness of soil at the time of colouring is undoubtedly a great evil, for it is just at this time that Grapes increase very much in size, as well as put on their colour. There is, of course, a medium in the matter of moisture; for we have seen Grapes fail to colour in excessively wet seasons, when the border was constantly heavily rained upon for a long time, and no other cause could be thought of than over-much wet and absence of sun. During such seasons it would be well, if practicable, to throw off the excess of moisture during the colouring period. And perhaps this is the only time that a well-drained border is much benefited by a waterproof covering.—ED.]

## THE FLOWER-GARDEN.

LAST month the value of hardy Florist flowers in mixed borders was brought before the readers of the 'Gardener.' I have now to ask that their usefulness for cultivation in formal beds should be examined. We have all read what has been said about the absurdity, the want of taste, the unnaturalness of planting out masses of plants in beds and borders cut out of lawns, and have no doubt been considerably affected by all such remarks. Yet, after all that has been said, we have not had a method of growing plants placed before us which can compete with the above system of garden decoration for the summer and autumn months. Not as doing away with Geraniums and other continuous flowering-plants would we therefore advocate the admittance of hardy florists' flowers into the flower garden proper, but as valuable helps to these, and as forming a feature in the garden of a style of beauty which can stand on its own merits. As a matter of necessity, the number of kinds of flowers which can thus be employed is restricted to those which flower freely and continuously through the late summer and autumn months; all kinds which cannot be depended on to fulfil that condition being inadmissible in arrangements whose richest term of beauty is seen in autumn. I should like to see all these improved forms of hardy flowers removed from their position in beds marked off in corners of kitchen-gardens, and made the most of in the best decorative position that can be found for them. All of them can be admitted to the mixed hardy border, to the enhancement of their individual charms, and the increased beauty of these borders; but we ought not to stop there, in the case of plants which are fitted to add to the attractiveness of gardens laid out on grass. Some plants, as the Dahlia and the Phlox, have been made use of as decorative garden plants; but, and especially in the case of the Dahlia, only dwarf-growing varieties have, as a rule, been considered admissible for this purpose. Now I think this is a mistake; some of the tallest sorts are the best decorative plants. In Phloxes, for instance, I don't know any better kinds than such tall sorts as Lothair, Bryan Wynne, or Charlotte Saison; and the same rule will generally be found to apply to other kinds of flowers.

In arranging the plants, I would not so much plant them in a mass, as dot them thickly over the beds. We have, for instance, a bed which has been bright with Roses, planted with an undergrowth of "Sir Walter Scott" Viola, and dotted with Hollyhocks, the edging being *Campanula pumila alba*. Unfortunately the disease which is so destructive to Hollyhocks has attacked these, and we have had to destroy the whole of them, in order to save, if possible, a lot of clean plants half a mile off. A light-coloured Gladiolus, such as Shakespeare, may be dotted amongst scarlet Geraniums, or *Brenchleyensis* amongst a mixture of Bijou Geranium and light-blue Violas; and so with other

shades. Beds of one colour of Pentstemons may be planted with an undergrowth of such dwarf-growing plants as *Koniga variegata*, mixtures of *Polemonium variegatum* and Blue Lobelia, or many other plants. The best Pentstemons for this purpose will be found in any or all of the undernoted sorts : Mrs Sutherland Walker, and Mr R. Dean, both red, may be used together ; Junius, Brutus, Lady Boswell, Miss C. Taylor, and Champion, are all purplish crimson in hue, and may be used together ; Egerton Hubbard and Abbot's Meadows are dark purple, and do together ; Eclipse, light rose ; James Harknell, deep rose ; Candidate, crimson ; Inimitable, purplish crimson, and Master Fox Tarbet, —are all well adapted for the above purpose. All are dark sorts, as Pentstemons which are light in colours are not effective as decorative subjects. We shall have our stock rooted by the time this appears, but there is yet plenty of time to strike plants before winter sets in. I find that weakly plants never make up ground sufficiently to be of any value, even when the cultivation is good. To get really fine plants, with six to a dozen strong spikes to each, it is advisable to pot them up in spring. Their value is not nearly sufficiently recognised.

The dot style of planting all these will be found, on the whole, more attractive in most gardens than that of massing them closely together. If the garden is very large, it is, of course, possible to take liberties and make capital hits, which in ordinary-sized gardens prove a blunder not to be repeated. And we northern gardeners have within our reach a class of plants which in the south cannot be used with anything like the same effect. We fail with many subtropical plants, such as Cannas, Castor-oil plants, and others of massive leafage. But these hardy plants, are better adapted to our northern climate than they are to that of the south, and give to our flower-gardens a feature which, with the aid of such massive plants as Tritomas, Sun-flowers, herbaceous and annual Salvias, and other hardy late-flowering plants, relieve the dumpiness which has been too much the order of the day for many years.

R. P. B.

## BOTANY FOR GARDENERS.

### NO. IX.—SEEDS.

THE seed is the grand provision for continuing and multiplying vegetable species, and presents a considerable analogy in the vascular classes of the vegetable kingdom to an egg in the oviparous classes of the animal. Every seed, if properly fertilised, contains the embryo or rudiment of a future plant, and comprises an ample and most beautiful provision for its protection during dormancy, and for arousing and feeding it at the time of germination.

In some cases the embryo occupies the whole of the interior ; and in some cases it is so small as to be minute ; and again it is altogether absent. In the two former cases the seed is termed albuminous : the

Bean or Pea when the skin is taken off presents a good example of nothing but the embryo. The embryo of the seed of a Palm when cut vertically is very small and white. The *seed* may also be described as the *ovule* (see No. VII.) arrived at maturity, and consists of *integuments*,—collectively termed *testa*, which consist of membranes resulting from the sacs of the ovule, and sometimes expanded into wings, that are probably intended to render seeds buoyant, and are frequently spongy, and sometimes consist of spiral cells,—and *embryo*—which is the organised body that lies within the seed, for the purpose of protecting and nourishing which the seed was created—and was originally included within the sac of the *amnios* which contains a fluid in which the embryo is developed, and which is usually absorbed or obliterated during the advances of the embryo to maturity; being exceptional in the case of *Vitellus*, &c., where it remains surrounding the ripe embryo.

The embryo consists of (1) cotyledons, (2) radicle, (3) plumule, and (4) collar. The *cotyledons* represent undeveloped leaves,—a very good example is found in the Broad Bean, whose cotyledons, after performing the required functions under the soil, are afterwards formed into the first leaves or cotyledon leaves. The *radicle* is (the rudiment of) the descending axis or root, which throws out fibrils and spongioles, to absorb moisture and other nourishment, and to preserve the plant's equilibrium. The *plumule* is the ascending axis, which gives out the stems, leaves, flowers, &c. The *collar* is the line of separation between the radicle and the cotyledons, and the space between the collar and base of the cotyledons is called *cauliculus*.

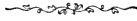
The direction of the embryo, with respect to the seed, will depend upon the relation that the integuments, (1) the *raphe* (*i.e.*, the cord of fibro-vascular tissue which connects the base of the nucleus of an ovule with a placenta); (2) the *chalaza* (the part of the seed where the nucleus joins the integuments, and is invariably opposite the end of the cotyledons); (3) the *hilum*; and (4) the *micropyle* (the aperture in the skin of a seed which was once the foramen of the ovule)—bear to each other. If the nucleus be erect, the embryo will be inverted, or *antitropal*: *Ex.* Nettle. If the nucleus be inverted, the embryo will be erect, or *orthotropal*: *Ex.* Apple. If the micropyle is at neither end of the seed, the embryo will be neither erect nor inverted, but will be in a more or less oblique direction with respect to the seed; and it is said to be *heterotropal*: *Ex.* Primrose.

These must not be confounded with similar terms applied to the ovule, and consequently to the seed itself. In general seeds are, like ovules, enclosed within a covering, arising from a carpellary leaf; but all gymnosperms are an exception to this. Moreover, some ovules rupture the ovary soon after they begin to advance towards the state of the seed, and thus become naked seeds: *Ex.* *Leontics*. Others are imperfectly protected by the ovary, the carpels not being perfectly closed up: *Ex.* *Reseda*.

A very easy and simple way of examining the growth of the plumule, radicle, &c., is to grow some of the large Broad Beans on damp cloth, or else in a little earth, when the successive growth of each can be very plainly seen, the radicle making the first appearance, followed by the plumule.

W. ROBERTS.

(To be continued.)



### STANDARD PLANTS IN DOORS AND OUT.

WHERE a choice arrangement is specially desirable with plants of fine foliage or those which flower freely, we always prefer a goodly number of standards. Extensive shrubberies which we planted some years ago are now much admired, when the kinds formed as standards are in full flower, or at their best with foliage. First of all they were arranged as to height, colour, and form. The heads, cut rather formal the first year, for the sake of uniformity of growth, but afterwards encouraged to droop, the undergrowth are a proportionate mixture of showy flowering shrubs, of nearly every name worthy of cultivation. Plenty of Lilacs, flowering Currants of sorts, Cotoneaster Simondsii, Hollies, Weigela, Deutzias of sorts, Rhododendrons, Kalmias, Azaleas, double Furze, Broom, yellow and white, Syringas, &c. Amongst these are a great variety of evergreens, Coniferæ of the Cypress and smaller-growing class, Yews in variety, Retinosporas, Portugals, and so on; and the whole surface of soil is carpeted with Ferns, such as Osmundas, Lastræas, &c., with a goodly mixture of Berberis, St John's Wort, and other dwarfs. Plenty of Snowdrops, Hyacinths, Violets, Primroses, &c., occupy vacant patches. These, with the Palm-like standards—Birches, double Cherries, Crabs, a selection of Apples and Pears, forming a large proportion of the flowering kinds, kept at proper distances not to overshadow,—make a most pleasing picture. Under glass the same idea is carried out with standards of Fuchsias, Kalosanthes, Acacias, Azaleas, Heaths, Maréchal Niel Roses, Tree-ferns, Camellias, and others; under which is a carpet of bushy forms of Ferns, Pelargoniums, Heaths, Begonias, and endless favourites, which are much admired by visitors. "OLD SUB."



### SOME NOTES.

*Stratagem Pea.*—This Pea has proved a complete failure with us this season. Perhaps the cold wet season may have something to do with its failure; still other varieties—such as Ne Plus Ultra, Telephone, &c.—have cropped well. From our experience, we are perfectly aware of the fact that Peas that are first-rate in some localities are scarcely worth growing in others. Veitch's Perfection, for

instance, a Pea that is a standard in many, if not most, places, is in this soil and climate very indifferent, though not so complete a failure as Stratagem.

*Odontoglossum Vexillarium*.—A wonderfully fine variety of this lovely Orchid has recently flowered at Fernfield, Bridge of Allan. The colour is remarkably telling, and it has the peculiarity of producing branched flower-spikes, which is the first instance of this Orchid doing so. If it retains this characteristic in conjunction with its other excellent points, it will become an acquisition. But unfortunately it has a trick of going suddenly off when it attains to a large size, and we believe the manner of watering has something to do with this. Water should not be applied close to the collar or neck of the plants. The bulbs and leaves of this Odontoglossum are much more soft and tender than any other, and on this account it should be potted high and extra well drained.

*Tuberous Begonias*.—Another year's experience of these as border-plants more than confirms our high opinion of them for outdoor decoration. In fact they are by far the most effective beds amongst very many things this exceptionally wet and sunless summer. Large plants can be had the first season from seed sown in the end of January or early in February; and these can be grown to almost any size the second year. Many fail in getting the seed to vegetate, chiefly, we think, because they cover it. It should be sown in a moderately fine surface of light rich soil and not covered, but merely covering the seed-pan with a piece of glass or paper. The surface should never be allowed to become dry; and it vegetates best in a temperature of 65° to 70°. As bedding-plants, they are most easily managed. The bulbs can be pitted, mixed with moderately moist soil, and kept from frost till they show signs of sprouting, when they are "run out" into light rich soil in cold frames, from which they are transplanted into their flowering quarters. In moist localities Geraniums have no chance with Begonias for a display of brilliant bloom.

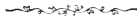
*Green Frogs in Orchid-houses*.—These little jumping beauties are most useful creatures among Orchids. They devour all sorts of insects, such as slaters, ants, &c., and are themselves perfectly harmless among the plants, jumping about on the slenderest stems and leaves without doing any harm to the plants. Dr Paterson of Fernfield has a lot of these nimble little creatures in his houses, and no such thing as a slater, ant, &c., escapes them.

*Clerodendron Balfouriana*.—As a rafter-plant in a cool house this is a most useful and ornamental flowering-plant. It comes into bloom in a cool fernery (where no fire-heat is applied in summer) about the beginning of August; and grown in this cool way, it lasts a long time in bloom. By having a plant or two on the rafters of the warm stove where it blooms in spring, and again in autumn, this lovely climber may be had in bloom the greater part of the year. For cutting and



mixing with *Bougainvillea glabra* it is most useful, and if the two plants are bloomed near each other, the effect of the two colours is very chaste.

*Begonias* of the ornamental-foliaged or Rex type are not so much made use of as they might be. They are so extremely easy to grow, and so clean and fresh-looking, that scarcely any other plant is better adapted for growing below stages, by the sides of passages, or any—often bare and unsightly—places in all houses that are slightly above the temperature of a greenhouse. They even do under gratings where such are used for paths; and dotted here and there under stages, with the general surface covered with *Selaginella denticulata*, few things are more effective. All unsightly or bare places on the floor-level of plant-houses can thus be clothed with very pleasing and refreshing-looking verdure.



#### A FEW SHOWY HERBACEOUS PLANTS.

*LYTHRUM salicaria roseum superbum* (Loosestrife).—This is one of the finest hardy herbaceous plants that we have. It is a stately-looking plant—well-established plants of it growing to 4 feet in height. The stems are very stiff, and in sheltered positions it can be grown without much, if any, support. It produces its long spikes of dark-rosy flowers in July and August. It thrives, like other *Lythrums*, best in rather damp deep soil; and where these conditions of soil do not exist, it requires to be well watered in dry weather.

*Galega officinalis alba* (Goat's Rue).—This is also a stately and most effective back-line plant in mixed borders. It produces its handsome spikes of white flowers for a long time in succession. It is a Pea-flower (*Leguminosæ*), and is an excellent plant for supplying graceful racemes of white flowers for mixing in glasses or any of the purposes for which cut-flowers are used. Blooms from June till September.

*Anthemis tinctoria*.—This is a very brilliant golden-yellow daisy-looking plant (a Chamomile) that forms a graceful bush about 2 feet high, and flowers most profusely; and now that single blooms are more in fashion, it should be a favourite. At all events it is a most effective border plant, producing blooms about the size of the Marguerite Daisy. Blooms in July and early part of August.

*Oenothera speciosa* (one of the Evening Primroses).—This is a most showy white flower. It grows about 2 feet high, and produces large blooms—quite 3 inches across—for a long time, from June till the middle or end of August.

*Trollius daravicus*.—As far as colour is concerned this is particularly rich—a bright orange-yellow. The flowers are large and open, more than 2 inches across. Height about 16 inches. Blooms in July and August, and is a most effective plant for mixed borders.

*Geranium armenium*.—A compact but vigorous-growing, distinct, and very beautiful plant. Leaves handsomely lacinated, and strong branching flower-stems, about 18 inches high. Flowers rich purplish rose, with black centres. July and August.



### EAST LOTHIAN STOCKS.

ALTHOUGH it is a good many years since the editor of this magazine brought these famous Stocks prominently before the public in the 'Scottish Gardener,' I do not think they have yet received the attention their great merits deserve, and in many instances their capabilities as decorative plants have not by any means been brought out. No doubt climate has much to do with the perfection they can be brought to, and that it is in dry warm localities like the Lothians they do best. The treatment they receive, from the time the seed is sown till the plants are put out in the borders, has, however, much to do with their success.

In order to get these Stocks to produce an abundance of large spikes of bloom for a long time, the seed should be sown thinly in boxes, the last week of February or early in March, and be placed not, in heat but in a house or pit very little warmer than a common greenhouse, keeping them near the glass. Before they become crowded or drawn in the seedling state, they should be potted into 4-inch pots, and grown in the same intermediate state till they get pretty well established; then they should be put into cold frames near the glass, and by the end of April or beginning of May they will be ready to plant out. The beds should always be in a warm position well exposed to the sun. The soil in which they do best is a rather sandy loam, well enriched with old hotbed manure. They should not be planted closer than 16 inches each way. Managed thus, they do not receive any check at planting-time, and they progress into strong bushy plants, that, in warm localities especially, yield spikes of bloom from a foot to 15 inches long, and continue in flower from early in July till autumn; and I do not know of any other plants that pay better, by giving a fine display of bloom, for any extra treatment they receive.

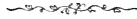
This strain of Stocks has been well abused by many who have been supplied with seed under the name of East Lothian Stock which has not been true; for the strain is not yet over-plentiful, and purchasers should make sure that they are supplied with the true strain.

To save seed, the single plants should be potted up in October, and planted out when severe frosts are over in spring, taking care to keep the various colours well apart, or cross-fertilisation takes place, and the colours become broken and unsatisfactory.

For greenhouse decoration these Stocks are most useful. By lifting and potting the double ones in autumn, and wintering them in any

cool house or pit, they produce a wonderful crop of bloom in spring, and are most useful for arranging among bulbous flowering-plants, Cinerarias, and other spring-flowering subjects. All the varieties, white, purple, and scarlet, are equally valuable for this purpose, and I think their colours are never more pure and effective than in spring. They last a long time, and are very useful for cutting. In this way they can be had in bloom the greater part of the year, and when the strain is true we do not get tired of them.

A FLORIST.



### DUNDEE HORTICULTURAL ASSOCIATION.

THE ordinary monthly meeting of this Association was held in the Templar Hall, Reform Street, on Friday evening, the 5th ult.—the President, Mr Doig, Rossie Priory Gardens, in the chair. Mr James Grieve, Pilrig Park Nurseries, Edinburgh, read a paper on “Florists’ Flowers.” As subjects for his remarks he made choice of the Carnation, Pink, Phlox, Pentstemon, and the Viola and Pansy. These he considered the most valuable of the many so-called florists’ flowers. He gave the first place to the Pinks and Carnations, than which no richer flowers were in cultivation. The herbaceous Phlox and the Pentstemon then claimed Mr Grieve’s attention. Most of the florists’ species of these, he said, were natives of America, and appear to have been introduced into this country at various times from 1732 to 1818. The Viola and Pansy were then treated of: though last on his list, they were by no means the least worthy. No other class of plants ranked higher in favour with the multitude; nor was this to be wondered at, seeing they flourished in almost any soil, blooming profusely in many cases from early spring to early winter. This was especially true of some of the bedding Violas introduced of late years, some of which might well be termed perpetual bloomers. In treating these subjects, Mr Grieve detailed in full the most successful and approved methods of cultivation. In speaking of the culture of the Viola and Pansy, Mr Grieve (an acknowledged authority) said they were in many cases killed with over-kindness. All the knowledge required for even a novice might be contained in a nutshell. The first essential was deep digging, with a good supply of well-rotted manure; of equal importance, though less generally practised, was early planting and *planting deep*, at least up to within an inch of the head of the plant. Planted in this way, every eye under the surface would send up a shoot, and thus form fine bushy plants, while at the same time the roots would be protected from the summer drought. Another advantage gained by this system of planting was that it obviated the necessity of watering, which in the case of Pansies almost invariably produced scalding or damping off at the necks.

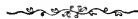
Mr John Nicoll, Arbroath, then read a most interesting and highly

instructive paper on "Natural and Artificial Hybridisation." He introduced his subject by noticing the minute and intricate nature of the processes by which the reproduction of plants are effected, and proceeded to give a description of the various parts of a flower, pointing out those more immediately connected with the production of seed,—some of the most common modes by which fertilisation is effected being by agencies in some instances within, in others beyond, the flower. The wind and insects are the principal agents in this operation when the flower is not adapted for self-fertilisation, and observation shows how perfect are the means for accomplishing this object. When there is no gaily coloured flowers to allure insects, the pollen is light and powdery, and wind is commonly the means of transfer; but when flowers have bright-coloured corollas, there is also, in most cases, honey to induce the visits of insects, or at any rate pollen as food for the young of the domestic bee, and the pollen is of a gummy nature. Insects in quest of food carry off some of the pollen-grains, and in their visits to other flowers deposit at least a part of these grains on the stigma. In addition to that class of plants which are unable to fertilise themselves in consequence of the sexual organs being on different plants, or at least in different flowers, there are others in which the sexual organs, though together, are not matured or sufficiently developed at the same time. Sometimes the stigma is in a ripe or receptive state long before the stamens are fully developed; while in other cases, the anthers shed the pollen-grains before the stigma is in a state to receive them. An example of this latter arrangement is to be seen in the *Campanula* family, where the pollen is not only shed, but in some cases the anthers are completely withered away before the stigma is fully developed. On the other hand, the Plantain or Ribgrass furnishes an example where the stigma has become developed and decayed before the stamens make their appearance on the same flower. The examples referred to will indicate that nature has made ample provision for cross-fertilisation, and that in the vegetable as well as in the animal world close breeding is provided against.

Mr Nicoll then spoke of the amazing number of the pollen-grains, and their great variety of form in different species. When pollen from the same flower, or different flowers on the same plant, or even from a different plant of the same species, is deposited on the stigma, and fertilisation follows, no change need be looked for in the future progeny from seed thus fertilised, further than may be produced by cultivation, change of soil, climate, or other extraneous conditions—in short, no hybrid form will result. It was only in cases of cross-fertilisation between two distinct species that a new form might be looked for. But even though no improvement, or even alteration, were to result, cross-fertilisation might be of great value in regard to the extra production of seed.

A Mr Williams, experimenting on the Victoria Regina, got the following results: a flower naturally fertilised produced 25 seeds; artificially fertilised with its own pollen, 60 seeds; artificially fertilised with pollen from a separate flower on the same plant, 100 seeds; while a flower fertilised with pollen from a separate plant produced 300 seeds, or 12 times that of the naturally fertilised flower. This showed how important, from a mercantile point of view, cross-fertilisation may become, if seeds entering largely in common use can be thus increased. In some parts of Germany, when fields of grain are in bloom, and the anthers in the act of shedding the pollen, a rope is drawn across the heads of the grain to insure better fertilisation than would be effected naturally. There had been considerable discussions as to whether the male or female elements have most influence in determining the character of the plant resulting from cross-fertilisation. Some have held the theory that the male parent has in all cases the greatest power; others hold that the result depends not upon the male parent, but upon the proportionate health and vigour of both parents. It was reasonable to suppose that, if the male and female parents are equal in all respects, the progeny will show some intermediate characteristics; whereas, if one parent be superior in constitutional energy and sexual vitality, the future progeny may be expected to partake most of its distinctive features.

In closing his paper, Mr Nicoll pointed to the many inducements cross-fertilisation offered to the scientist, as well as to those who, caring little for the exactness of science, seek rather to increase the productions of nature, either for utility or beauty.



### STIRLING HORTICULTURAL SOCIETY'S SHOW.

THE Show of this Society, which was held in the show-ground of, and in connection with, the Highland and Agricultural Society of Scotland's Show, on July 26, 27, 28, and 29, was, so far as exhibits are concerned, a complete success. In absence of any other stirring horticultural event in Scotland, it may in some sense be regarded as *the* event of the year; although we must characterise as absurd the statement that appeared in one at least of the local papers, that "it was equal to any similar exhibition in the country, not even excepting the metropolitan one." That it was "equal to any similar exhibition" may be true; but that it was equal to such Shows as are from time to time to be seen even as near our doors as Edinburgh, Dundee, or Glasgow, is not a fact. It was, nevertheless, a fairly creditable show, and many fine examples of cultivation were staged. Among foliage-plants, the Crotons from Mr John Russel, Keir House, were good examples of culture. Among stove and greenhouse flowering-plants was a grand specimen of *Pancreatium speciosum*, with over a dozen extra-strong spikes of marvellously fine flowers, in the four staged by Joseph Souza, Touch (gardener to Sir H. J. Seton-Stewart), to which was awarded the premium prize in that class. Among Ferns, the only noteworthy lot was the two *Todeas* and magnificent *Platycerium grande*, which

gained for Dr Paterson, Bridge of Allan, the first prize in the class for three. The collections were of the usual kind, and by no means particularly well arranged. The winning collection (18 ft.  $\times$  7 ft.), of Mr Thomas Boyd, gardener to Wm. Forbes, Esq., Callander House, Falkirk, contained four remarkably fine specimens of *Eucharis amazonica*, which rendered his table much brighter than the others, and doubtless did much to secure him the first place. The table-plants were of the usual kind which are to be seen at every Show, and were fairly good. Most, however, were too small, and too valuable and tender for the purpose. Cockscombs were particularly fine, reminding one of those exhibited by such growers as Mr Syme. Liliiums were *not* "as good as may be seen anywhere," although a local oracle declared them to be so. Orchids were nothing remarkable. Among cut-flowers, the Roses from Mr Gray, Dunkeld, and A. Kirk, Norwood, were exceedingly fine. Grand stands were staged (for exhibition only) by Messrs Dickson, Belmont, Belfast, and Smith, Stranraer. The first prize Pansies, both fancy and show, from Mr T. Paterson, Denny, were such as are seen at northern shows only. Among cut-flowers, perhaps the most attractive were the grand Phloxes and spikes of hardy herbaceous flowers. Should such summers prevail as have now become chronic apparently, these hardy plants must ere long become more largely grown.

Fruit, especially Grapes, was shown in quantity and quality not often seen outside of Edinburgh, and not always there. As much dissatisfaction prevailed in regard to the awards, we prefer to single out no particular exhibitors, although some of those who failed to secure prizes staged samples which were exceedingly fine. We understand that the interpretation put upon certain rules by the judges, led to awards being made which, without explanation, appeared quite incomprehensible. For instance, in the class for any other black than Hamburg, Alicants were placed before equally well-coloured, well-bloomed, and riper Muscat Hamburgs; and the same thing occurred in the class for best bloom. The collection of ten dishes from Mr Boyd, which gained the first prize, was very meritorious, and included beautiful examples of Grapes, Peaches, Bananas, and Figs, in addition to Melons and outdoor fruit, all of which were fine. The Melons which gained the two firsts for Mr Thomson, Kilkerran, Maybole, were remarkably fine samples. The green flesh was William Tillery: we could not ascertain the name of the scarlet. T. Boyd's Peaches were fine and well coloured. Black Currants were extremely fine—indeed were comparable to Black Hamburg Grapes: finer we have never seen. Most of the other classes were fair, though some were blanks altogether, as, for instance, Apricots and Nectarines.

Vegetables were, considering the season, very fine indeed. Mr Souza's first-prize box of ten kinds was quite remarkable.

We are sorry that we cannot say something in favour of the arrangements made by the Society's officials. According to the rules, exhibitors were obliged to have everything staged by 10 A.M., and yet by that hour a third or more of the tables were to erect, and one of the three tents. The consequence was, that staging and judging went on simultaneously, and the judges had to go over the fruit three times. Not only so, but the judges had to group the classes, and to do so each card containing exhibitor's name *printed in conspicuous capitals* had to be turned face up to ascertain the number of the class—a very objectionable proceeding, but not the judges' fault. It would have been much better if the officials had adhered to the rule, which was to the effect that only *sealed* envelopes, containing the exhibitors' names *inside*, and only the numbers *outside*, were to be affixed to each lot. The placing of the cards

as the envelopes were opened would have been a simple and a satisfactory matter. The final arrangement of plants, &c., was made at the close of the first day's exhibition.

The following gentlemen officiated as judges, and, from their well-known character, it is hardly necessary to say with acceptance: For Cut-flowers—Messrs Lewin, Drumpellier; and J. Whitton, Coltness. Vegetables—J. Begg, Lanrick; D. Mathieson, Meikleour. Fruit—Johnstone, Glamis Castle; and M. Macintyre, The Glen. Plants—R. Fleming, Garscube; Lewin; Whitton; and J. Paterson, Millbank, Edinburgh.

### PRIZE LIST.

#### CLASS I.—OPEN TO ALL.

##### *Plants.*

Finest Collection of Plants arranged for Effect.—1, T. Boyd, Callendar House, Falkirk; 2, J. Russell, Keir; 3, J. Robertson, Springbank.

#### CLASS II.—OPEN TO GARDENERS AND AMATEURS ONLY.

##### *Plants.*

Finest Collection of Plants arranged for Effect.—1, W. Lowe, Viewforth; 2, J. Souza, Touch; 3, A. Ferguson, Woodville.

Four Stove and Greenhouse Plants, in flower, distinct species.—1, J. Souza; 2, H. Watson, Park Terrace; 3, J. Russell.

Six Fine-foliaged or Variegated Plants (exclusive of Ferns).—1, J. Russell; 2, W. Lowe; 3, J. Muir, Randolphfield.

Six Stove or Greenhouse Ferns, varieties (Tree Fern excluded).—1, A. Kirk, Norwood, Alloa; 2, J. Souza; 3, W. Lowe.

Three Stove or Greenhouse Ferns, varieties (Tree Fern excluded).—1, Dr Paterson, Bridge of Allan; 2, P. Brown, Hillpark, Bannockburn; 3, A. Ferguson.

One Tree Fern.—1, J. Russell; 2, A. Honeyman, Bonnybridge.

Six Hardy Ferns, varieties.—1, P. Brown; 2, J. Souza; 3, W. Lowe.

Six Plants for Table Decoration.—1, W. Lowe; 2, J. Robertson, Springbank; 3, J. Cocker, Wheatlands, Bonnybridge.

Three Orchids, in flower (Exotic).—1, Dr Paterson; 2, A. Honeyman.

Three pots Liliums, varieties.—1, J. Robertson, Roseville.

Three Caladiums, varieties.—1, J. Souza; 2, A. Kirk; 3, W. Lowe.

Three Coleus.—1, J. Souza; 2, J. Robertson, Springbank; 3, J. Muir.

Two Specimen Fuchsias, in flower.—1, H. Watson; 2, J. Muir; 3, J. Souza.

Three Specimen Ornamental-foliage Geraniums, varieties.—1, J. Souza; 2, A. Brown, Orchill; 3, A. Ferguson.

Three Zonale Geraniums, in flower, varieties.—1, A. Kirk; 2, J. Robertson, Springbank; 3, J. Souza.

Three Cockscombs, in pots.—1, J. Muir; 2, J. Souza; 3, W. W. Ritchie.

Four Specimen Exotic Lycopodiums varieties.—1, J. Robertson; 2, J. Souza; 3, James Cossar, Linnlithgow.

Two Trained Petunias, varieties.—1, H. Watson; 2, J. Muir; 3, J. Souza.

Three Balsams.—1, W. Lowe; 2, W. W. Ritchie.

Two pots or pans Achimenes, sorts.—1, J. Souza; 2, J. Robertson, Springbank.

One Hanging Basket filled with Plants.—1, J. Robertson, Roseville; 2, J. Souza.

One Rustic Fern Case, planted.—1, H. Wood, Callander.

##### *Cut Flowers.*

Twelve Bunches Roses, varieties.—1, A. H. Gray, Dunkeld; 2, Alex. Kirk, Norwood; 3, John Thomson, Maybole.

Six Blooms Roses, varieties.—1, James Dick, Kippen; 2, W. W. Ritchie, Polmaise; 3, J. Souza.

Twelve Blooms Show Pansies, varieties.—1, Thos. Paterson, Denny; 2, J. Stewart, Lennoxtown; 3, John Beatson, Alva.

Twelve Blooms Fancy Pansies, varieties.—1, T. Paterson; 2, J. Stewart; 3, A. Kirk.

Twelve Quilled Asters, not less than three varieties.—R. Montgomery, Beechwood.

Six French Marigolds, striped.—1, R. Montgomery; 2, J. Thomson; 3, J. Souza.

Six African Marigolds, orange and lemon, three of each.—1, G. McLeod, Westbourne; 2, A. Ferguson, Woodville; 3, J. Thomson.

Six Spikes Ten-Week Stocks, varieties.—1, J. Souza; 2, H. Watson, Park Terrace; 3, J. Muir, Randolphfield.

Twelve Phloxes, varieties. — 1, G. M'Leod; 2, J. Dick; 3, J. Stewart.

Twelve Geranium Trusses, varieties, one of each.—1, A. Brown, Orchill; 2, H. Watson; 3, A. Kirk.

Twelve Hardy Herbaceous, varieties.—1, R. Montgomery; 2, A. Ferguson; 3, G. Dingwall, Ardloch House.

Twelve Hardy Annuals, varieties, one bouquet of each sort.—1, A. Ferguson; 2, J. Thomson.

Six Tender Annuals, varieties, one bouquet of each sort.—J. Thomson.

One Hand Bouquet.—1, J. Paterson, Dunfermline; 2, H. Watson; 3, G. Dingwall.

One Table Bouquet.—1, T. Boyd, Callendar House, Falkirk; 2, J. Cossar, Linlithgow; 3, J. Paterson.

Floral Device.—1, W. Street, Burghmuir, Stirling; 2, J. Cossar, Linlithgow.

### Fruits.

Collection of twelve sorts of Fruits.—1, T. Boyd, Callendar House, Falkirk; 2, W. Lowe; 3, G. M'Leod, Westbourne, Tillicoultry.

Collection of Hardy Fruits, eight varieties.—1, W. Lowe; 2, J. Paterson, Torrie Gardens, Dunfermline.

Three bunches of Grapes, three varieties.—1, J. Robertson, Springbank; 2, J. Dewar, Beechwood, Tillicoultry; 3, Alex. Crosbie, Buchanan Castle, Drymen.

Two bunches of Grapes, one black and one white.—1, James Dewar; 2, G. M'Call, Woodlands; 3, J. Robertson.

One bunch Black Hamburg.—1, A. Kirk; 2, H. Watson; 3, J. Robertson.

One bunch Black, any other sort.—1, G. M'Call; 2, J. Boyd; 3, A. Kirk.

One bunch White Muscat.—1, A. Crosbie; 2, J. Souza; 3, G. M'Call.

One bunch White, any other sort.—1, J. Dewar; 2, J. Robertson; 3, A. Honeyman, Hopepark, Bonnybridge.

One bunch Grape, finest bloom.—1, G. M'Call; 2, H. Watson; 3, D. Howie, Culross.

One bunch (not less than one pound), finest flavoured.—1, J. Souza; 2, D. Murray, Calzean Gardens, Maybole.

One bunch (not less than one pound), largest berry.—1, J. Dewar; 2, J. Souza.

One Melon, green fleshed.—1, J. Thomson, Kilkerran; 2, W. W. Ritchie; 3, G. M'Leod.

One Melon, scarlet fleshed.—1, J. J. Thomson; 2, R. Montgomery; 3, J. Muir, Randolphfield.

Six Peaches.—1, J. Boyd; 2, J. Thomson; 3, Jas. Cocker, Bonnybridge.

Twenty-five Cherries.—1, J. Thomson; 2, J. Souza; 3, J. Robertson.

One Pint Strawberries (or two pounds in weight).—1, W. W. Ritchie; 2, J. Paterson; 3, J. Souza.

One Pint Gooseberries, do.—1, J. Thomson; 2, J. Dick; 3, J. Souza.

One Pint Currants, red, do.—1, James Cossar, Linlithgow; 2, W. Lowe; 3, J. Thomson.

One Pint Currants, white, do.—1, W. Boss, Gartur; 2, J. Russell, Keir; 3, J. Thomson.

One Pint Currants, black, do.—1, J. Dick; 2, W. Boss; 3, J. Thomson.

### Vegetables.

A Box of Vegetables, ten varieties.—1, J. Souza; 2, W. Boss, Gartur; 3, J. Thomson.

Two Cauliflowers.—1, J. Thomson; 2, W. Boss; 3, G. Dingwall.

Two Early Cabbages.—1, J. Thomson; 2, A. Kirk, Norwood, Alloa; 3, J. Souza.

Two Heads Celery, red.—1, D. Murray, Calzean; 2, J. Souza; 3, H. Watson.

Two Heads Celery, white.—1, J. Robertson; 2, J. Souza; 3, J. Thomson.

Twenty-five Pods Peas.—1, J. Dick, Kippen; 2, J. Graham, Thornhill; 3, W. W. Ritchie, Polmaise.

Twenty-five Pods Beans.—1, A. Kirk; 2, J. Thomson; 3, W. Christie, Kippenross.

Twenty-five Pods Kidney Beans.—1, W. W. Ritchie; 2, T. Boyd; 3, J. Thomson.

Twelve Potatoes (round).—1, J. Thomson; 2, D. Murray; 3, R. Montgomery, Beechwood, Stirling.

Twelve Potatoes (kidney).—J. Dick; 2, W. W. Ritchie; 3, J. Souza.

Six Onions, best.—1, J. Souza; 2, D. Murray; 3, W. Lowe.

Six Leeks, best.—1, J. Souza; 2, J. Robertson; 3, D. Murray.

Two pots Parsley, single plants.—1, W. Lowe; 2, J. Souza; 3, J. Robertson. Six Turnips.—1, W. Lowe; 2, J. Dick; 3, J. Russell.

Six Carrots.—1, J. Souza; 2, J. Thomson; 3, J. Muir.

Two Lettuce.—1, W. Lowe; 2, J. Souza; 3, J. Cocker.

One Collection of Salads.—J. Thomson.

Two Cucumbers.—1, G. Dingwall; 2, W. W. Ritchie; 3, H. Watson.

Two Vegetable Marrows, fit for use (each from two to three pounds).—1, D. Murray; 2, W. Boss; 3, W. W. Ritchie. Six Rhubarb, heaviest stalks.—1, G. M'Leod; 2, J. Cossar; 3, A. Ferguson.



## CLASS III.—AMATEURS ONLY.

*Plants.*

Two Greenhouse Plants, in flower, varieties (not otherwise competed for).—1, W. Street; 2, T. Anderson.

One pot Liliun.—1, J. Robertson, Roseville; 2, A. Leishman.

Two Fine Foliage Plants, varieties.—1, W. Street; 2, J. Robertson.

Two Specimens Fuchsias (one light, one dark).—1, T. Anderson, Newhouse; 2, T. Harris; 3, A. Wright.

Three British Ferns, varieties.—1, T. Harris; 2, A. Liddell; 3, W. Chalmers.

Two Greenhouse Ferns, distinct varieties.—1, T. Harris; 2, A. Wright; 3, A. Leishman.

Two Ornamental Foliage Geraniums, varieties.—1, A. Wright; 2, T. Harris; 3, T. Anderson.

Two Zonal Geraniums, in flower.—1, T. Anderson; 2, A. Wright; 3, T. Harris.

One Petunia.—1, T. Anderson; 2, A. Liddell; 3, T. Harris.

One Pelargonium.—A. Stevenson.

One Balsam.—1, W. Chalmers; 2, A. Liddell; 3, T. Anderson.

*Cut Flowers.*

Six Blooms Show Pansies, varieties.—1, J. R. Hendry, Tillicoultry; 2, J. Beatson, Alva; 3, T. Paterson, Denny.

Six Fancy Pansies, varieties.—1, J. R. Hendry; 2, T. Paterson; 3, J. Taylor, Raploch.

Three Blooms Asters, other than quilled, varieties.—A. Wright, Newhouse.

Three Spikes Ten-Week Stocks, varieties.—1, J. R. Hendry; 2, T. Harris, St Ninians; 3, A. Wright.

Six Blooms French Marigolds.—1, J. Taylor; 2, A. Wright; 3, W. Chalmers, Tillicoultry.

Six Blooms Roses, varieties.—1, W. Cousine, Bridge of Allan; 2, J. Thomson, Carronflats; 3, W. Street.

One Hand Bouquet.—1, W. Street; 2, J. R. Hendry; 3, A. Wright.

One Table Bouquet.—1, T. Anderson, Bannockburn; 2, W. Street; 3, J. R. Hendry.

Four Picotees or Pinks.—1, J. Stewart; 2, T. Harris; 3, A. Wright.

Six Sweet-williams, three varieties, one spike of each.—1, J. Stewart; 2, A. Stevenson, Bannockburn; 3, T. Anderson.

Four Geranium Trusses, four varieties.—1, J. Robertson, Roseville; 2, T. Harris; 3, A. Leishman, Tillicoultry.

Four Herbaceous Trusses, one spike each.—1, J. Taylor; 2, T. Harris; 3, A. Wright.

Three Herbaceous or Perennial Phlox, one spike each.—1, R. Dawson, Thornhill; 2, W. Heron, Alva; 3, J. Beatson.

Six Hardy Annuals, six varieties, one bouquet of each.—1, J. Cousin; 2, D. Kennedy, Doune; 3, A. Liddell, Bannockburn.

Three Ornamental Grasses, three varieties, one bouquet of each (Dyed excluded).—1, A. Stevenson; 2, A. Liddell; 3, T. Harris.

*Fruits.*

Two Bunches Grapes, one black and one white.—1, J. Mitchell, Abercromby Place; 2, J. Harrower, Culross; 3, J. Robertson, Rosevale.

One Bunch Grapes, Black Hamburg.—1, W. Street; 2, J. Mitchell; 3, J. Harrower.

One Bunch Grapes, white, any sort.—1, W. Street; 2, J. Mitchell; 3, J. Harrower.

One Pound Strawberries.—1, A. Liddell, Bannockburn; 2, J. Paterson, Denny; 3, D. Kennedy.

One Pound Rasp.—1, J. Robertson; 2, A. Liddell; 3, A. Stevenson.

One Pound Gooseberries.—1, D. Kennedy; 2, A. Stevenson; 3, A. Leishman.

One Pound Currants, Black.—1, A. Liddell; 2, R. Dawson, Thornhill; 3, D. Kennedy.

One Pound Currants, red.—1, W. Chalmers, Tillicoultry; 2, D. Kennedy; 3, A. Leishman.

One Pound Currants, white.—1, A. Stevenson; 2, T. Paterson; 3, A. Leishman.

*Vegetables.*

Two Heads Greens.—1, A. Liddell; 2, W. Street; 3, A. Wright.

Two Early Cabbage.—1, R. Dawson; 2, T. Anderson; 3, A. Wright.

Two Cauliflower.—1, T. Hutchison, Alva; 2, R. Dawson; 3, W. Street.

Two Carrots.—1, A. Leishman; 2, T. Paterson; 3, W. Street.

Four Leeks.—1, A. Wright; 2, T. Harris; 3, T. Anderson.

Six Onions.—1, W. Chalmers; 2, A. Leishman; 3, T. Anderson.

Four Turnips, two yellow and two white.—1, R. Dawson; 2, W. Dickie, Thornhill; 3, T. Harris.

Twelve Pods Peas.—1, Dr James Forrest, Stirling; 2, R. Dawson; 3, W. Dickie.

Six Pods Beans.—1, J. Mitchell; 2, W. Street; 3, R. Dawson.

One Pot Parsley, single plant.—1, A. Wright; 2, W. Street; 3, T. Anderson.

Six Potatoes (best).—1, T. Paterson; 2, A. Wright; 3, A. Stevenson.

Six Stalks Rhubarb (heaviest).—1, W. Chalmers; 2, A. Leishman; 3, W. Street.

One Basket or Box Vegetables, eight varieties.—1, T. Paterson; 2, A. Wright; 3, D. Kennedy.

*Open to Boys and Girls under 14 years of age.*

Hand Bouquet of Wild Flowers, for

Boys.—1, J. Brown, Orchill; 2, A. Hunter, Inzievar, Row; 3, C. Souza, Touch.

Hand Bouquet of Wild Flowers, for Girls.—1, Isabella Dingwall, Ardoch; 2, Mary Dingwall; 3, C. B. Lowe, Viewforth.

## ROYAL HORTICULTURAL SOCIETY.

AUGUST 9TH.

GLADIOLI from Langport and Petunias from Swanley were the two special features of the meeting, though new plants were well represented by the Chelsea firms. The Council-room did not present a crowded appearance, nor were the duties of either Committee very onerous, but for the fast-advancing season the exhibits were good in quality and numbers.

FRUIT COMMITTEE.—Harry J. Veitch, Esq., in the chair. W. H. Dunnnett, Esq., Stour House, Dedham, Essex, sent fruits of a new seedling Black Currant named Black Champion, for which a first-class certificate was granted. The individual fruits were of remarkable size, globular, and very black. The bunches also were unusually large, and, judging by the small branches exhibited, the variety must be an extremely prolific one. Both the members of the Committee and the horticultural visitors generally were unanimous in their praises of it, and several unhesitatingly affirmed it was the finest Black Currant that has been seen at Kensington. Mr R. Phillips, gardener to Captain Jackson, The Deodars, Meopham, Kent, showed three handsome bunches of Duke of Buccleuch Grape, for which a cultural commendation was deservedly awarded. The berries were of remarkable size even for this variety, and the flavour was good. Fruit of Tomato Perfection, a cross between Trophy and Acme, were also shown. They were very even and globular in form, and of excellent colour. It is also said to be prolific. Mr Record, gardener to Charles Hanbury, Esq., Belmont House, East Barnet, was awarded a cultural commendation for three Queen Pine-Apples, of good size, regular in shape, and of good colour. Messrs T. Rivers & Son, Sawbridgeworth, exhibited a collection of Cherries, comprising eleven varieties, especially noteworthy being the handsome Bigarreau Noir de Schmidt. Several other varieties were also superbly represented. A vote of thanks was accorded. Mr T. Bailey, The Gardens, Shardeloes, Amersham, sent a finely netted fruit of Victory of Bristol Melon, weighing 7 lb. 2 oz. Mr J. Monro, The Gardens, Harefield Grove, Uxbridge, also sent a very large ribbed green-flesh Melon named Highfield Grove Melon, of moderately good flavour, but not great depth of flesh. Mr J. Walker of Thame obtained a first-class certificate for Pea named Walker's Perpetual Bearer, a variety of moderate height and prolific, the pods being about medium size and well filled. Mr H. Eckford, gardener to Dr Sankey, Sandywell Park, Cheltenham, also had a new Pea named Victor, a cross between Champion of England and Advancer, but which was not considered specially remarkable. Mr Culverwell of Thorpe Perrow sent several seedling Peas that were thought very promising, and recommended to be tried at Chiswick. A collection of Apples and fruits of the Pear Bergamotte Auguste Jurie were contributed from the Society's Garden. Mr Fleming of

Cliveden, Maidenhead, sent fruits of Dr Hogg Fig in good condition, and the Committee requested that the variety should be tried at Chiswick.

Messrs Hooper & Co.'s prizes for fruits of the green-flesh Melon Sirdar of Cabul were accorded to Mr G. Williams, The Gardens, Peasemarsch Place, Rye, and Mr G. Stiggles, gardener to H. W. Green, Esq., Faulknors House, Hadlow, Tunbridge, who were placed first and second respectively for fruits of good size, the former smooth and the latter ribbed. There was no exhibit in the class for Tomatoes.

FLORAL COMMITTEE.—James M'Intosh, Esq., in the chair. Messrs J. Veitch & Sons, Chelsea, staged a beautiful though small group of new plants, including several fine Orchids, one of which was certificated and is described below. A Solanum-like plant named *Jasmonica Sodenia* (?) was noteworthy for its cymose panicles of white starry flowers; and hybrid *Cypripediums* were also well represented. Mr Bull of Chelsea contributed a collection of new plants, several being honoured with certificates. Messrs Kelway & Son, Langport, Somersetshire, had a handsome collection of *Gladioli*, over four dozen spikes being shown, the flowers large, and the colours varied, either exquisitely delicate or strikingly rich and bright. Messrs H. Cannel & Son, Swanley, contributed a fine display of double *Petunia* blooms, 160 being staged, representing many distinct and beautiful varieties. Some very pretty fringed forms were particularly noteworthy, and the tints ranged from white to pink of various shades, crimson, and purple, some being very rich. Several large Sunflowers, fine African Marigolds, specimen of the dwarf, free, brightly coloured *Tropæolum Vesuvius*, and varieties of *Salpiglossis sinuata* were exhibited by the same firm, for all of which a vote of thanks and cultural commendations were awarded. Mr A. Waterer, Knap Hill, Woking, had some fine examples of *Lilium Parkmanni* and *L. Mrs Waterer*, the former being very handsome and well deserved the cultural commendation awarded for it. Baskets of *Erica vulgaris aurea* and *alba nana* were also shown, the last-named being very floriferous and compact in habit. A variegated *Abies* was certificated, and is described in another portion of the report. Messrs Carter & Co., High Holborn, exhibited some good specimens of the deep orange-coloured *Lily L. Batemannæ*; flowers of a new bright rose-coloured *Eschscholtzia* named *Rose Cardinal*, very pretty; and flowers of the new dwarf *Tropæolum Empress of India*, which were very bright in colour. Mr T. S. Ware, Tottenham, staged a collection of single *Dahlia*s. A white variety of good form named *White Queen* was noteworthy, as were also some yellow, scarlet, and purple forms. Mr W. J. Cross, florist, Salisbury, sent a stand of blooms of a *Carnation* named *The Governor*, bluish white, compact, full, even, and of good substance.

Captain Patton, Alpha House, Regent's Park, sent a plant of *Lilium auratum* with a peculiar fasciated stem, the numerous flowers being very closely clustered near the summit. G. F. Wilson, Esq., Weybridge, was awarded a vote of thanks for a spike of *Watsonia rosea*, the flowers possessing a very pretty shade of light rosy purple.

In the vestibule Messrs C. Lee & Son, Hammersmith, had an interesting collection of hardy trees and shrubs, comprising ornamental and variegated forms of Oaks, Beeches, Elms, Alders, Horse-Chestnuts, Maples, Elders, Dogwoods, and many others, all more or less attractive. Messrs F. & A. Smith of West Dulwich also had a group of Balsams in pots, the plants of moderate size, but the flowers were of excellent form, very double, and good in colour. The Committee recommended that medals should be awarded to

Messrs Kelway for their Gladioli, to Messrs Cannell for their Petunias, and to Messrs Lee for the hardy plants.

First-class certificates were awarded for the following plants :—

*Cattleya Chamberlainiana* (Veitch).—A beautiful hybrid between *C. Leopoldi* and *C. Dowiana*, the former parentage predominating. The sepals and petals are narrow, of a purplish crimson hue, the lip being fringed and rich purple in colour.

*Bouvardia Alfred Neuner* (Bull).—The double American *Bouvardia* which has been repeatedly described in these pages. Some of the umbels on the plant shown had over a dozen flowers of neat form.

*Adiantum ancitense* (Bull).—One of the pedate section of Maidenhair Ferns, the pinnules being oblong in shape and very closely placed, forming a neat frond of moderate size.

*Actinopteris australis* (Bull).—A pretty but well-known little Fern with neat palmately divided fronds, the divisions being linear in form.

*Gladiolus Pelargo* (Kelway).—A handsome variety. Flowers large, of a rich scarlet colour, with a few darker streaks. The blooms are very closely placed in the spike, which is massive and imposing in appearance.

*Asplenium pteroides*.—Mr C. Green, The Gardens, Pendell Court, Bletchingley, was accorded a first-class certificate for a Fern under the above name. It is a native of Lord Howe's Island, and has pinnate dark-green fronds, the pinnae having narrow tooth-like segments closely set on the stalks. In general outline the frond is acutely elliptical, 8 to 12 inches long, the pinnae 1 to 4 inches long.

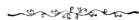
*Cereus pectinatus* (Croucher).—A species with peculiar barrel-shaped stems, covered with reddish spines, form quite a close network on the surface.

*Cereus giganteus* (Croucher).—A strongly ribbed form with greyish or bluish spines, much larger than the last.

*Echinocactus Wistizenii* (Croucher).—Also strongly ribbed. The spines very strong and long, curved at the extremity. A few white filaments are distributed amongst the spines.

*Abies canadensis variegata* (Waterer).—A variegated form of the Canadian *Abies*, the young shoots being very prettily marked with white.

*Malva moschata alba*.—Messrs H. Cannell & Sons were awarded a first-class certificate for this plant, which is a beautiful variety of Mallow with pure white flowers. These are produced in great abundance, and the plant being quite hardy, it is a really valuable addition to the list of border plants. No doubt the flowers would prove very useful for cutting.—*Journal of Horticulture*.



#### THE WEATHER IN THE SOUTH-WEST OF SCOTLAND.

THIS has been one of the coldest, most sunless, and damp summers on record. Excepting about ten days in the latter part of May, there has, up till the time we write, not been anything like a summer day. The night temperature in July was often at 40°, and on the morning of the 3d of August, there was ice as thick as a sixpenny-piece found on the glass of cold frames between six and seven o'clock A.M.

D. T. D.

## Calendar.

### FORCING DEPARTMENT.

**Pines.**—Attention must this month be more particularly directed towards laying a good foundation for a supply of strong young plants for next season. Suckers yielded by early Queens, and that were potted some time ago, will now be well rooted and growing. If, to economise space, they were plunged thickly at first, they should now have more room to prevent their drawing. They can now be more freely aired, and should never be allowed to get very dry. Avoid syringing them much overhead; but on fine afternoons shut them up with a moist atmosphere. The night-heat for these should range from 65° to 70°, according to the state of the weather, and the bottom-heat should not exceed 85°. Another batch of suckers can now be procured from plants ripening their fruit, or from which fruit has recently been cut. Suckers of Smooth Cayennes and Charlotte Rothschilds, that are very strong, may be potted into 8-inch pots; but Queens will do best in 6-inch pots. Plunge them in a bottom-heat of 90°; shade them slightly from the sun for a time, and keep the atmosphere moist by frequently sprinkling paths and walls, and dew the plants lightly overhead on the afternoons of warm days. Smooth Cayennes, and other sorts most suitable for an autumn supply of ripe fruit, will now be swelling rapidly, and should be nourished with ordinary manure-water, alternately with guano and soot water. See that they have a bottom-heat of about 90°, a moist atmosphere, and a night temperature at 10 P.M. of 75°, allowing it to fall to 70° by 6 A.M. Syringe about the axils of the leaves every bright afternoon when the house is closed, and let the heat rise for a time to 85° or 90° with sun-heat. Do not syringe much over the crowns, for if water stands in the crowns they grow too large and become unsightly. Any late Queens or other sorts that are ripening now should have a circulation of dry warm air about them, and be exposed to full sun, so that they may ripen a bright colour and be of fine flavour. If any strong suckers are clustering about any of the fruits, either remove them or tie them back off the fruit, so that

they may ripen and colour equally all round. To retard or keep any ripe fruits not required for immediate use, remove them to some cool vinery or fruit-room as directed in former Calendars. The stock of Queens required to start into fruit at the beginning of '82 will now require careful treatment. Should the weather be dull and sunless, apply water to these very sparingly. Air them freely on fine warm days, and by the end of the month the night temperature should not exceed 65°, so that they may gradually be brought to a state of rest by autumn. Plants intended to start in succession—about March or April—should still be encouraged to grow freely. All syringing of plants in this stage should be discontinued after the middle of the month.

**Grapes.**—Late Grapes that are colouring this month in localities where the rainfall may be small, should not be allowed to suffer for want of water; for, as the colouring process goes on, the fruit increases much in size, and a great demand is made on the Vines. If old Vines, and the border be at all dry, give them a thorough soaking, and if with weak manure-water, all the better. Assist them in the colouring and ripening process with a well-balanced amount of fire-heat, according to the state of the weather. The air should be kept continually in motion, by having the house constantly open more or less at top and bottom; and whenever the weather is sunless or cold, keep the pipes always warm. Unless Grapes are thoroughly ripened by the end of this month, they do not keep well, and are never well flavoured. Examine the foliage minutely, and see that red-spider does not get a footing; for in autumn, when fire-heat is necessary, and less moisture is applied, the pest thrives and injures the foliage. The best way to deal with it now is to syringe it off the leaves whenever it is detected. The inside borders of houses where Grapes are to hang late should now be watered if dry, and then be covered over either with clean straw or dry mushroom-bed manure, to prevent them drying quickly again, and to keep the air dry. Look over

the Vines, and remove all lateral growths, if any have been allowed during the process of stoning, and up to the colouring period. It is now desirable that a free play of air should be allowed about every leaf and bunch. Look over ripe Grapes weekly, and remove any shrivelled or decaying berries, and keep the house cool and dry. If wasps or flies attack the Grapes, lose no time in putting hexagon netting over the ventilating openings. As we have often directed, let the borders of all Vines from which the fruit has just been cut be examined, and if the roots are not found near the surface, remove the old inert soil down to the roots, and replace it with fresh loam, bone-meal, and manure, so that while the foliage is yet healthy on the Vines, the roots may bite upwards. As this has in some districts been a cold and wet summer, it may be necessary to apply fire-heat after the crop is all cut, in order to thoroughly ripen the wood, without which all other points are useless. Pot-Vines intended to be started in December should be shortened back to the length desired, and be placed in some cool airy position. See that they do not at any time suffer from becoming over-dry at the root. Young vigorous-growing Vines that were planted last and this year should be fired until the wood is hard and brown. If the lateral growths of these are at all crowded, shorten them back to let light and air play about all their parts, but do not remove much foliage suddenly. Now is a good time to get and stack loam, that may be required for new borders for another season.

**Peaches.**—Trees from which the crop has just been gathered, if growing strongly, should have a circulation of warm air about them; and should the weather prove sunless, let artificial heat be applied to this end. If there be any signs of red-spider about them, give them a few vigorous washings with water, in which a handful of flower of sulphur is mixed. Remove any superfluous shoots that may have been tied in, so that air and light can act on all parts of the trees. Late crops in cool houses will now be ripening, and will require to be examined every day, and all ripe fruit carefully gathered. If this be neglected, the fruit are apt to fall off and get bruised.

Protect them from flies and wasps; and any leaves that may be shading the fruit should be pushed aside, so that it may be properly coloured by exposure to light. See that the borders do not become over-dry if they are inside.

**Figs.**—Let trees swelling off crops be encouraged by waterings of manure-water. Give plenty of air to those ripening, and syringe trees from which all the Figs are gathered, to keep the foliage clean and healthy. Plants in pots from which the second crop is all gathered may be placed in a sheltered warm spot outdoors; but see that they are never allowed to suffer for want of water.

**Melons.**—Keep fruit that have got to the ripening stage well exposed to sun and air, and rather drier at the root, but not to such an extent as will cause the plants to suffer before the fruit are ripe. Keep the night temperature at 70°. Plants swelling off crops may be watered with manure-water; but be careful not to over-water at this season when the fruit are full-sized, or they may burst. The best way is to mulch the surface of the soil, to prevent its drying so often. Fire-heat at night will now be necessary for Melons in all stages, to prevent the temperature from sinking below 70°.

**Cucumbers.**—Plants raised from seed or cuttings last month for winter fruiting should be planted out this month. A rather moderately light soil, and not too much of it, is best for winter Cucumbers. Expose them to as much light and air as possible, in order to produce robust plants that will stand the trying ordeal of dull damp weather by-and-by. Plants now in full bearing should be watered with liquid manure. Keep the heat from 70° to 75°, according to the weather. If the temperature is allowed to fall too low at this season, mildew is apt to be troublesome, and all symptoms of it should be checked by dusting the affected parts with sulphur.

**Strawberries in Pots.**—If former directions have been carried out, these will have well filled their pots with roots; and should the weather be bright and dry, give them manure-water three times weekly. Keep them free of runners and weeds, and see that they do not get crowded.

## KITCHEN - GARDEN.

WHERE there are means to keep gardens in good order, one expects at this season to meet with neatness and cleanliness in every department. All refuse of crops which have served their purpose may be cleared off, and the space prepared and cropped with Spinach, Lettuce, Coleworts, Endive, or whatever may be wanted during the winter months. Should there be no demand for these, it is well not to waste labour and raise produce to be thrown away. The ground may be deeply trenched, if subsoil will allow; and when sunk to its ordinary level, the surface may then be ridged to the action of the weather, which does a deal to purify the ground. But close cropping with little vacant space during the winter is pleasing and profitable alike. Cabbage for main crop may be pricked out till they are strong and fit to transplant: when thus treated they are more likely to combat with a severe winter. The ground we prefer for Cabbage is where the Onion crop has been cleared and stored. Some loose material, such as what the rubbish-heap contains, may be turned into the bottom of trenches to give free drainage during the winter. A quantity of good manure may be put under the top spit, and drills drawn for the Cabbage plants, which may be ready towards end of the month. Then plant; and around each collar dust with soot mixed with ashes and sawdust. The plants should not be allowed to become stunted, otherwise premature seeding may be expected. Plant double thickness, so that plenty of greens may be had by cutting out every alternate plant. Soil can hardly be too rich to grow this crop well.

Cauliflower may be sown from the end of August till October, according to locality and means of protecting and growing them. When they are early and gross, they are liable to be injured by severe weather. They may be pricked out, when ready, on a sheltered border, and glass, if such can be spared, placed over them when frost is likely to be severe. Coddling, of course, means killing the plants. The earlier ones may be placed under the protection of hand-lights which will admit air and light freely. Two or three successions of young Cauli-

flower are very desirable, especially when one remembers the severity of the last and two previous winters.

Celery should be earthed up well to blanch it for earlier crops. A good soaking of manure-water first will cause a tender succulent growth, which is very desirable—and a nutty flavour accompanies tenderness. Stringy, coarse Celery we consider most indigestible, and is often the result of starving the plants on poor soil, or of intense drought. Sow Salads, such as Golden Cress, American Cress, Mustard and Curled Cress: the latter two may be under glass protection now. Lettuce and Endive of sorts plant on sheltered borders well dug. Sow Corn Salad and Radishes. Allow no crops to become matted before they are thinned. Sow Carrots of the Horn class for drawing young. Sow more Onions for spring and for drawing young. Tripoli, White Lisbon, and Giant Rocco are of much value in autumn where large mild Onions are in demand. Leeks which were planted in ridges like Celery may now be earthed up, and well watered with liquid manure. Peas to supply late pickings may be molested with sparrows: netting or other means may be necessary for protection. Dwarf Peas on a sheltered border are often useful in autumn, and can be protected from early frosts by hoops and mats. A full crop of Spinach sown now on deeply-dug ground, with a good dusting of soot and ashes thrown over the surface of the soil, may be a profitable and exceedingly useful crop during spring, succeeding the August sowings when they have been severely picked and tried by frost. Parsley should be trimmed of all rough leaves preparatory for winter. Rank growth, which often rots the younger leaves, is sure to be destroyed. A quantity of Parsley should also be in a sheltered position, where temporary protection may be given during a period of snowy weather. Store Herbs by first drying them in the shade, and hanging up afterwards in dry and airy quarters. Lift Potatoes as soon as they are fit: by leaving them in the ground they are liable to disease. In some localities, such as our own, it is better to sell the crop for immediate use, and

buy others later from parts where disease is little experienced. The main crop of Onions may be well forward, and can be lifted, dried, and stored: an open shed, thoroughly dry, we have found to be the best store for Onions. Frost will not hurt the bulbs if they are thoroughly dry. Beware of allowing the Onion crop to remain in the ground after it is ready for pulling: second growth might take place, then good keeping would be unknown. Turnips—thin, clean, and hoe, and get useful tubers before the growing period is at an end. Tomatoes should now be gone over often, and disbudded, thinning the fruit to

from four to six to each bunch: a matted growth ruins the crop. Put in cuttings for winter work. Ridge Cucumbers, Gherkins, and Vegetable Marrows may be kept long in bearing by using protection at night: frost puts an end to these tender things. French Beans are also a crop easily injured. Sowings in pits may be made to give a late autumn supply, and successions kept up by sowing every two or three weeks. Mushroom-beds may be made as formerly advised. Small beds made often are the most certain method of keeping regular supplies. Potatoes may now be started for early winter supplies. M. T.



### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

J. A.—In the case of your early vinery, fork into the surface of the border a good dressing of bone-meal, and then apply about 3 inches of farmyard manure. This should be applied at once. About the middle of October add a covering of 6 or 8 inches of dry litter—Fern or straw—and the tarpaulin. The later Vine-borders you can top-dress with bone-meal and manure in November or December; and if your Vines are in need of more feeding, remove the winter dressing when the Grapes are set or thinned and apply a fresh one.

A LEARNER.—Transplant your Gooseberry and Currant bushes immediately they drop their leaves. A paper in our present issue supplies the other information you ask for.

A. M. S.—We suspect the evil is caused by an escape of sulphureous gas from the furnace in some way or other. See if there are any openings round the hot-water pipes where they pass from the boiler into the house, and if there are, stop them.

L. Y.—You should have put Gros Colmar Vine in your Muscat-house, and the Duke at the warm end of your Hamburg-house. At the setting period the former requires quite a Muscat heat to do it really well, and the latter a little more warmth than is necessary for Black Hamburgs.

W. C. N.—The dropping of leaves is very common this year. Green-fly early in the season and the cold wet summer have caused it.



T H E  
G A R D E N E R.

OCTOBER 1881.



N O T E S.



THE greatest earthquake of our time is beginning to be felt amongst us, and the wisest can only conjecture where and how it will all end. I am writing this in a quiet English village, and without a thought of Ireland (beyond a love for her) or of her land agitation. In a village known from my boyhood, and formerly one of peace and prosperity, there is scarcely a home that has not suffered more or less from what is called agricultural depression, and perhaps the landlord has suffered in mind and pocket most of all. In former times it was the home of thrifty cottars, every man with his few acres of land—a village commune—every man a neighbour and a friend. Then came good seasons when farmers prospered; land-hunger grew—the landlord turned the cottars adrift, and threw their well-cared-for little acres into big farms. In this way much of our dear Old England was robbed of her beauty. Farmers and landlords vied in getting rich too quickly. The old shady hedges of milk-white thorn, thickly enamelled in spring with crab and sloe blossom, and in autumn with wild fruits for the birds, were ruthlessly swept away. What cared money-grubbers, if farmers or landlords, whether a blackbird got its breakfast of haws on a bitter frosty winter's morning, or whether the dappled song-thrush had shelter for its nest and young ones in the spring! Had it not been for fox-hunting, every hedge would have been replaced by wire-fencing, and pastoral England's beauty sacrificed to mammon like a soft-going bride to a lover of old iron. Prosperity for the landlord and for the large farms, however, was only for a time, and all around for miles land is unlet, or is farmed by the landlord himself. Everywhere here in Leicestershire one hears of farmers ruined, after having clung on to

the old home and the dearly loved well-known fields to the last in hopes of better times, which for them never came. Large capitalists will not now embark in farming ventures, as was formerly the case. Whatever charges may be brought against the landlord, one is the destruction of the small tenant-farmer and grazier in England. This destruction is a great national loss bitterly felt now, but unless it be repaired it will be still more severely felt in time to come. By driving the small cottars from the English villages, the national interest in earth-culture was weakened. Sons and daughters of cottar-tenants, instead of following the avocations of land-culture to which they were born, were obliged to turn to other avocations. Fortunately for them the expansibility of English manufactures made it easy for them to follow in other grooves; and now that bad seasons and foreign competition has lowered the value of farm-produce, and so of the producing agent land itself, there is no one to bear the burden but comparatively large farmers and the landlord. Large tenant-farmers do not, as a rule, cling on to the "old home" and the dear old village. They simply made a business of farming, and do not wait for ruin to overtake them. In many cases they promptly realised their capital ere the depression materially affected them, and left the landlord to do the best he could with his land. Now that the depression is more forcibly felt, the land is resigned to its owners still more freely, and if perchance a farm is let, it is only possible at a large reduction of rent.

Some may say this is not a question for the 'Gardener;' but of all men gardeners are, or should be, most interested in land and its value. The modern idea of a garden with many is to make it pay. The thing in times past was not usual; but at present those who depend on rents cannot afford to spend so much on gardening as a luxury as was formerly the case. Owners of gardens have a perfect right to sell garden-produce, just as they have to sell shorthorns from the home farm or yearlings from the paddock. A time is coming when skilful cultural knowledge on the part of a gardener must be supplemented by ability to sell his produce, or a portion of it, in the best market; and that man who can do both the one and the other best will be considered the best gardener. All this may lead to a good end; for if gardens can be made profitable as well as interesting or beautiful, so much the better for all gardeners.

Every now and then we hear how lovely a water-plant is *Aponogeton distachyon*, with its fragrant forked spikes of white bracts and hawthorn-like perfume. If imported tubers be now obtained—or well-rested ones of home growth be now planted in pans or tubs of good sound loam, this to be first surfaced with an inch of sand, and afterwards with three or four inches of water—they will soon commence growth in a greenhouse temperature, and will flower freely from Christmas until April or May following. I find it does best in rather a shady

position; and its ivory bracts are very useful for cutting during the winter months, apart from the interest of the growing plants themselves.

We grow a batch of *Aponogeton* tubers every year in this way, and find they give a very welcome supply of fragrant spikes. In May we empty off the water, and set the pans and tubs in the sun all summer. In this way they are thoroughly rested, and when planted in October start at once into growth, a crop of fresh green young leaves and numerous spikes being the result.

I often wonder why one of the finest of all the *Vandas*—*V. teres*—is not more often seen in bloom in orchid-growing establishments. For some time I thought that culture had something to do with its blooming, but now I know that this is by no means the whole truth of the matter. Leaving out of the question the pure-white variety—as rare as a white elephant, only far more beautiful—there are three other distinctly different varieties of what we know in gardens as *Vanda teres*. First and best, *V. teres Andersoni*, with stout growths and large richly-tinted blooms, a free-blooming plant. Then we have a plant similar in habit, but the flowers are not better in size or colour than the ordinary thin-habited and proverbially shy-flowering *Vanda teres*. Its advantages are a more robust and vigorous habit of growth, and it has no objection to flower once every year, usually bearing from five to seven flowers on a spike. I now grow this form, and find it most satisfactory, blooming every year without any of that special treatment of “drying off” which is so often recommended as a panacea of non-flowering for the old thin-growing *Vanda teres*.

When I was in Singapore I found *Vanda teres* was brought down from Burmah in trading vessels and sold to the residents as a popular hardy flower for their gardens. I need scarcely say that Singapore possesses a tropical climate—a mean of 82°, I believe—so that all our *Crotons* and *Dracenas* and other stove shrubs from both hemispheres grow there in the open borders and beds just like *Phloxes* and *Delphiniums* here in England. I was in the Botanical Gardens out at Tanglin one day, and saw in the distance a mass of flowers dancing in the hot wind. Seeing numerous stakes to the plants, and their lilac flowers, they reminded me of a mass of Sweet Peas in a sheltered home garden. “What is the pretty mass of lilac yonder?” I asked. “Oh,” replied the curator, “that is *Vanda teres*!” Planted out in the ordinary red loam of the island, it grew up the stout stakes, adhering by its numerous aerial roots as Sweet Peas or Vines cling by their tendrils: there it was in glorious flower, masses of it seven feet in height, and wide in proportion—a sight to delight any one who only previously knew of *Vanda teres* as cramped in a pot, scorching and starved under a glaring roof of glass.

Of other things which suggested themselves to my mind as I saw Orchids of this and many other kinds growing in trees in Eastern gardens, and on trees in the forest-wilds, nothing was so fully impressed as the great fact that nature everywhere gives air in abundance, and always at night a comparatively cool and moist, if not actually wet, climate. Tropical Orchids often experience the rudest of winds and the pelting of the heaviest of rains. At night especially, heavy rains are most usual—if not heavy rain, copious dews are ever the rule. So heavy are these dews, that one is drenched to the skin in ten minutes if you venture into the jungle in the early morning—every leaf, every grass blade, being laden with big drops of condensed moisture. Hence it is that abundance of fresh air and a moisture-laden atmosphere (especially at night, or during seasons when dry fire-heat must especially be employed) are of all things the most essential to the permanent wellbeing of Orchids and all other tropical plants. The great fact of most tropical rain falling after sunset has not yet been fully felt and appreciated by cultivators. Coolness and moisture at night is nature's great law, and those cultivators who neglect to obey it will have an uphill fight to the last.

Of the new race of summer-blooming Chrysanthemums too much cannot be said. They are easily propagated either by cuttings or division in the spring. Once well planted, they will grow throughout the summer with as little care and attention as a Phlox or a Michaelmas Daisy; and then we are quite certain of their affording a fine display of bright-coloured flowers from the end of July until the frost cuts them off in November or December. In pots they are as useful as the late-blooming kinds for conservatory decoration indoors. As border flowers, however, they are most effective. The varieties we have now in bloom are Golden Madame Damage (yellow), White Queen and St Mary (white), Scarlet Gem (bright red), Madame Pecaul (purple), Illustration, and several others unnamed. As is also the case with the late-blooming section, we find that young plants propagated in late autumn, or early in the year from cuttings, are the best. In May last Mr Robertson Munro sent us a dozen sorts—rooted cuttings; these planted at once in a deep rich border are now in fine flower, and are admired by all our visitors, to most of whom they are quite a novelty.

To those who are anxious to cultivate Lilies, or indeed most other bulbous-rooted plants, this season of the year is of especial interest. October is perhaps, of all months of the year, the one most suitable for planting Lilies and other bulbs. Our own best results in Lily culture have been obtained by planting and repotting all Lily bulbs this month. Just as the leaves turn yellow all Lilies may be most safely removed, as their young roots have then scarcely protruded into the earth, and

are ready to do so as soon as fresh compost is added to them. Of Lilies not generally met with even in good gardens there are one or two worthy of especial note. *L. Browni* is especially beautiful with its purple-backed tube and silvery-white lining. *L. martagon* (*Dalmaticum*) *catani*—a purple-black-flowered Martagon with a stem seven feet in height, and bearing a spire of twenty to thirty turn-cap flowers—is, when well established, one of the finest of all good Lilies.

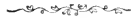
Of all annuals, the biggest and brightest, the largest-flowered and the stateliest, the tallest and the most easily grown, is the Common Sunflower and its numerous varieties. Just now, too, it is most fashionable. Whether 'tis its grace of slender stem, or its rich Daffodil-like yellowness of hue, which has most contributed to this, I know not. What I do know is, that the Oscar Wilds and Mrs Cimabue Brownes of society have made an especial *protégé* of it, and artistic people generally are now mad after its big blossoms, which they are busily trying to represent in all sorts of material, plastic and textile. They are now at this moment, and long have been, a great feature in our dear old garden. They tower aloft over Phloxes and Bell-flowers, but not above the tops of 14-foot-high old grey walls, which afford a pleasing background for the massive leaves and gold-fringed discs as they glisten and wave in the autumnal sunshine. Formerly a common flower beside honeysuckled cottage-windows, it is now rarely seen in even the best of gardens. Birket Foster often represents it along with happy groups of ruddy-cheeked children; and now we look to the Frank Miles and Alfred Parsons of our time to show on canvas the glory of the great gold-rayed Sunflower, as now so lovely in our gardens.

Now is a good time to insert cuttings of Pentstemons, Pansies, Veronicas, Phloxes, and other half-hardy flowers for next spring and summer blooming. Seeds of many good strains of Canterbury Bells, Sweet-Williams, Delphiniums, &c., will also now be ripe, and should be gathered, and either sown at once in boxes in a cold frame, or preserved in packets until next spring.

Of choice bulbs for present planting, there are one or two of especial interest, perfectly hardy at Dublin, and worth making note of. *Amaryllis formosissima* does well planted on a rubble bottom near a south or south-east wall. *Hyacinthus candicans* planted deeply in very light soil (leaf-mould and sand is best) grows well, and affords fine spikes. Tiger-flowers are gorgeous, although now seldom seen. We find they succeed much better treated as hardy bulbs by planting in October, than when planted in spring after being stored in a shed all the winter. They, like Belladonna Lilies and the Jacobean Lily

(a formosissima) before mentioned, should be deeply planted on a well-drained border, close to a warm plant-house wall with a sunny exposure.

Next April and May hundreds of people will be delighted with the lovely flowers of the blue Siberian Squill (*Scilla siberica*), the golden chalices of the Hooped Petticoat Narcissus (*Narcissus bulbocodium*), or the vivid blue white-eyed flowers of the "Snow Glory" (*Chionodoxa lucilliae*). Then the exclamation is, "Oh, how lovely! I wish you would tell us how we may grow these in our own garden!" The right way is to obtain bulbs at this season, and to plant them carefully in light sandy earth, placing a little silver sand around the bulbs, and burying them 4 to 6 inches below ground-level. A coating of leaf-mould preserves them from frost, and enriches the earth likewise. All the above are now to be purchased at a moderate price by the dozen, or hundred. The *Chionodoxa* last season fetched 5s. per bulb, and is now offered at 20s. to 30s. per 100. *Narcissus bulbocodium*, one of the best of bulbs for flowering in pots in a cold frame, is offered at 15s. per 100, and the Siberian Squill at 5s. to 7s. 6d. per 100. All are fine for pots, but any attempt to force them early is fatal to their beauty.



#### FORCING LILY OF THE VALLEY.

THE plants that produced flowers about Christmas or the New Year, if aided by light and heat until growth was completed, as previously directed from time to time in the 'Gardener,' will now have plump buds or crowns. The foliage would be fast fading, if not entirely gone, during the month of August; and this is necessary to obtain success with this much appreciated flower if wanted early. Where the plants have been properly matured, and brought to rest under a judicious system of cultivation, they will be ready for forcing, and cannot fail to give satisfaction. Home-grown plants are preferable to those obtained from the Continent for very early work. I have produced flowers with ease about the 3d of November during the past few years, and this cannot be done with purchased single crowns. It is generally believed that Continental single crowns are the best for early forcing, but this is a great mistake. It is unreasonable to suppose they can compete with plants grown and prepared for the purpose. For flowers about Christmas and onwards, single crowns are invaluable; and in the majority of cases they produce very fine sprays of flower. Clumps, when sent over, not unfrequently have a quantity of foliage attached—I have never seen foliage adhering to the single crowns—sufficient to convince the practical cultivator that they are in any but a satisfactory state to be forced at once. The plants require a rest; and without a fair season of repose, Lily of the Valley will not force,—they will not

even start when placed in heat as soon as they arrive, but remain dormant for months before flowering. It is very well to recommend a bottom-heat of  $100^{\circ}$  to start them, but in spite of such unnatural driving they will not start until they have rested. Home-grown plants, if ripened early, will not need such a high temperature by  $20^{\circ}$ , and will quickly spring into flower. Last year my plants forced with greater ease than during any previous year, and with less heat, and this through being earlier ripened than in previous years. If it is difficult to give the plants a steady and regular bottom-heat by means of hot-water pipes, a bed should be made of leaves and litter, and the plants plunged into it when the rank steam has subsided. Regularity in maintaining a certain degree of bottom-heat is a decided advantage; and a more uniform temperature can be kept with hot-water pipes than with the other system, and the risk considerably less. When fermenting material is used, some care is necessary in case the bed gets too hot, and the crowns are injured in consequence. Under whatever system bottom-heat is obtained, the plants should, if convenient, be plunged in old tan or cocoa-nut fibre, and the crowns buried an inch or two beneath the plunging material. They force better and commence growing earlier when the crowns are excluded from light. Why this should be the case, I cannot tell, for, when growing outside, the crowns generally are nestling on the surface. When the flower-sprays appear through the material in which they are plunged, a flower-pot should be turned over them, with the hole in the bottom stopped for a time at first. This assists materially in drawing them well up. When forced in a close frame this assistance is not necessary.

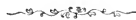
#### LILIUM LONGIFLORUM.

This Lily can be purchased very cheap as compared with the price of a great many others, and yet it is not cultivated in private gardens half so much as it ought to be. However beautiful many other Liliiums may be, none are easier to cultivate, and few that can surpass this one for purity and usefulness. Considering all its qualities, it is a Lily that should be grown in every garden, and those who have never grown Liliiums will not fail in cultivating this one. I have never had a bulb yet that failed to produce from three to five of its large trumpet-shaped flowers, which are pure white and highly fragrant. If placed in a pot it will do well either in heat or in a cold frame, or planted in the borders outside. For the latter purpose it is a grand plant, but is of the greatest service when cultivated in pots. One great feature in this Lily is its dwarf habit. It does not exceed 18 inches in height, unless drawn up in strong heat, and a great distance from the glass, and even then it is not inclined to grow much taller. When under cool treatment it seldom attains that height. It can be grown in 4-inch pots, which are sufficiently large to develop its highest qualities. For room decoration it is useful, and for cutting

for vase work,—in fact it is suitable for all kinds of decoration. In the early season when Azaleas are nearly past, and Hyacinths and many other bulbous plants have done flowering, this Lily can be had in flower, and for the conservatory is invaluable. To have it in flower early in the season, the bulbs should be obtained as soon as possible, and placed in pots, either singly in the size mentioned, or three in 6-inch pots, or six in 8-inch pots. When principally wanted for the embellishment of the conservatory, it is wise to grow a few in both sizes. As regards soil, this Lily does not appear very particular. It flourishes well in loam and a seventh of manure with plenty of coarse sand; or loam and peat will grow it equally well. In potting, the pots should be well-drained, and a little sand placed under each bulb, and covered with at least half an inch of soil. After potting, if the soil is in proper condition, little or no water will be needed until the roots commence working. At the same time, the soil must not become dust-dry if wanted to grow. The pots containing the bulbs can either be placed in a vinery starting, or in a peach-house, or, if not wanted early, placed in a cool house. If required earlier than these positions will bring them on, the pots can be plunged in gentle bottom-heat, keeping the tops much cooler in proportion, until a good quantity of roots are formed. When the stem appears through the soil, more water can with advantage be given, and the temperature kept at about 55°. to be raised another 5° when the plants are about 9 inches high. Bottom-heat should then be dispensed with, or the plants will develop weakly. In the last-named temperature the plants will grow rapidly enough, and the pots soon be full of roots, when weak manure-water may be given every time they require water. When the flower-buds can be seen, the plants, if desired, will stand a higher temperature than—but they develop rapidly in—60°. When grown in that temperature, they should have a position close to the glass, where they can enjoy plenty of light. If a batch is grown on rapidly until the flowers are observed, it is surprising what a time they can be kept back afterwards, by proper management. The plants must not be syringed after the flowers open, or the yellow pollen is liable to spoil the inside of the flower. For some time after flowering, manure-water should be given to assist in developing the bulbs as they mature.

While growing they are subject to green-fly in the end of the shoot, which is readily destroyed, either by fumigating the plants or by dusting them with tobacco-powder.

WILLIAM BARDNEY.



## FRUIT-CULTURE.

### THE PEAR.

ALMOST everything that we have said in regard to the preparing of the soil, planting, lifting, root-pruning, shoot-pruning, pinching, and training of Apple-trees applies to Pear-trees, so we need not repeat our



directions for these operations. Still, the cultivation of the latter differs in some particulars from that of the former, and we proceed to notice these.

The first thing that deserves attention is, that Pear-trees grow more vigorously, attain a larger size, are longer lived, and do not naturally bear fruit freely at so early an age as Apple-trees. The Pear is not so generally useful as the Apple—hence, in stocking small gardens, Apple-trees should preponderate: nor are there so many really good varieties that are hardy enough to bear fruit freely in any part of our country—hence many gardens may produce a good supply of Apples, in variety for the table and the kitchen all through the autumn and winter, which would fail to produce anything like a supply of Pears. In utility, then, the Apple takes a place before the Pear; but when good Pears can be produced in tolerable abundance, they are always put before Apples as a dessert fruit, so much so that Pears rank as the first of our hardy fruits, while Apples are voted common. Not many of the class to which we address ourselves will care very much whether the Apple or the Pear ranks first in the dessert, if they find that crops of good Apples can be produced easier, where inferior crops of Pears can only be produced with difficulty, and this no matter whether the produce is intended for market or the grower's table. On the other hand, when fine Pears can be produced in equal quantities with Apples, and as easily, or nearly so, the planter who plants for his own table's supply will plant a fair proportion of Pear as well as Apple trees; and the grower for market will plant Pear-trees more freely, for good Pears fetch much higher prices than Apples. Whether, then, to plant Pear-trees in quantities, or not at all, should depend on whether the climate is suitable or not, and this the cultivator must find out for himself.

*Soil.*—A heavy deep loam suits the Pear best; but hardy kinds will grow and flourish in any soil, from stiff clay to light sand. In Scotland the Carse of Gowrie is famed for its Pears, and there the soil and subsoil are of the heaviest description. In Strathmore, and in Fife and Stirlingshire, Pears are to be found growing well and fruiting prodigiously on the heaviest clay and on the lightest sand. Splendid Pears are produced in the valley of the Thames, and there the soil is mostly of a very heavy description. Still, the *best* Pears are invariably produced on a good medium loam, with a dry subsoil. The best Pear-orchards that we are acquainted with in Scotland are on a soil composed of degraded trap of an unknown depth. The soil at Newburgh-on-Tay is of this description; and there Pears are produced of better quality and larger size than are produced either on the heavy soil of the Carse of Gowrie, a few miles distant in one direction, or on the sandy soils of Stratheden, a few miles in the other. The simple reason is that, in the one instance, the staple is so deep that the roots, go down as they may, are never out of it; while, in the other two cases, the roots soon get into pure clay in the one case, and into a pure sand

in the other. The lessons here taught by nature are very simple. They are—first, a deep well-drained soil ; and second, means taken to keep the roots in it, instead of allowing them to go into the subsoil, as they are very apt to do ; for Pears on the free stock are very apt to form tap-roots which go straight downwards. If the subsoil is good, large crops of not bad fruit may be expected in time from hardy kinds ; but keeping the roots up to the surface improves even hardy kinds past recognition almost, as we have repeatedly seen demonstrated ; while for fine kinds it becomes an absolute necessity, especially in an unfavourable climate. We have seen fine kinds which produced only small useless fruit while the roots were deep in the cold subsoil, produce, after the roots were carefully lifted and laid in near the surface, fruit of the very best description.

The amateur cultivator will understand from this that we wish to make a strong point of looking after and training the roots in their proper places, just as much or even more than carefully pruning and training the shoots ; and will also understand that it is a good plan to begin this at the very first. When young orchard-trees are planted with this object in view, and at intervals of a year or two carefully examined and put right in this respect, and then trained in the way they should go while young, there is good reason for saying that in their old age they will not depart from it.

Of course the above remarks apply principally to orchard and other trees which are to be allowed to grow their full size ; but such trees are by no means suitable for small plots of ground—they are for orchardists who want quantities of fruit for sale, and who have a sufficient amount of land to devote to the purpose. For ordinary gardens we decidedly prefer medium-sized trees, and these, to keep them as they should be, require regular attention in the way of lifting and pruning the roots, as described for Apples. For good loamy soils such trees are best when grafted on the *Quince* stock, for it naturally spreads its roots near the surface, and promotes a shorter, dwarfer, but more fruitful growth than the free stock. At the same time, it needs to be regulated by root-pruning too, especially in rich garden soils. Indeed, Pear-trees on the *Quince* should be treated just in the same way as Apples on the *Paradise* stock.

But for light poor soils the *Quince* is not good, even for small trees—at least that is our experience. Trees on the free stock are sure to do better, and dwarfness and fruitfulness are easily induced by root-pruning. When Pears on the *Quince* stock are planted on poor, sandy, or gravelly soils, they, sometimes at least, get stunted, even with careful feeding ; and as root-pruning, when it is necessary, produces all the good results ever claimed for the *Quince*, we certainly advise amateurs not to use it except on good, heavy, loamy soil. We have inspected handsome healthy trees on it in such soils.

As Pear-trees grow larger than Apple-trees, it is right to allow them

more room to develop. Large trees on walls and in orchards should be allowed 4 or 5 feet more than Apple-trees, medium-sized ones 2 or 3 feet, and dwarfs 1 foot. The fruit requires to be kept in the same way as Apples, but we may observe that it suffers more readily from bruises ; it is therefore necessary to take care not to bruise it, especially if it is to be kept. Any one almost can tell when a summer Pear is ready for pulling from the tree by its appearance. Sometimes, however, the fruit should be gathered and kept in a cool room before it is quite ripe, in order to have it in perfection. If it is wished to retard fruit for any purpose, it may be done in this way ; and if it is desirable to forward it a few days, this may be done by gathering it and placing it in a warm temperature.

Although there is little chance of a beginner making great mistakes in the gathering of summer-ripening Pears, it is likely enough that he will do it in the case of those kinds which do not become fit for use for months after they are gathered. A good rule is, to gather the Pears when the stalks readily part from the spurs, but not before—by this time the seeds are black, which is another sign that the fruit is ready for gathering.

In the list of Pears which we attach, the month when the fruit should be fit for the table is mentioned, but it is well to observe that the time when this takes place varies a good deal. In early seasons the fruit will ripen very much sooner than in late ones. The same holds good in regard to early and late localities, and the difference in the dates of maturing sometimes amounts to a month. It may be well to remark that a variation of a few degrees in the heat of the place where the fruit is kept makes a great difference. Those things can only be learned by the grower as he gains in experience, seeing that no two districts are exactly alike ; but we ought to add that almost all the kinds with which we are acquainted ripen much more satisfactorily if they are placed in a temperature of from  $55^{\circ}$  to  $65^{\circ}$ , when they show signs of maturing. There is generally no great difficulty in managing this, for the placing of them in a drawer in any room where the temperature is high enough will secure the desired result. Even placing them in a box on or near the kitchen hearth will do.

The list we append is very select, and we confidently submit it ; for we have watched every variety named for years, and have found them to prove trustworthy in the midland counties of Scotland. Those who are favoured in the matter of climate may safely add to the list by following the advice given with regard to Apples.

*Early Crawford.*—An old-fashioned, but by no means a despicable Pear ; ripens on pyramids during August ; a free and pretty certain bearer, and suitable for northern localities when finer kinds will do no good.

*Citron des Carmes.*—Rather later than the above, and very good for succeeding it.

*Jargonelle*.—A well-known universal favourite. In Scotland it should be placed against a wall, otherwise it will do little good. It should be allowed to extend itself pretty freely. Although it grows and bears freely with by no means good treatment, it is very much benefited by having its roots looked after, kept fibry by pruning, and near the surface by careful lifting. Ripens at the end of August.

*Hessle or Hazel*.—Another trustworthy kind, for cultivating as a standard or pyramid in northern localities. It is only medium-sized, and perhaps scarcely first-class in quality; but if we had only room for one standard or pyramid Pear, we would unhesitatingly plant this, for it is a prodigious and certain bearer, and very good indeed when none other will grow. Ripe in September and October—in late years sometimes in November.

*Benic*.—Another of the same class as the above, and, like it, good for an orchard-tree in northern or late localities. October.

*Swan Egg*.—Another of the same; scarcely so good as Hessle, but keeps rather better; very hardy.

*Louis Bon de Jersey*.—A very fine Pear, but requires a wall in Scotland. It is a free bearer, especially when the roots are cared for in the way we have indicated. If we had only room for one wall Pear-tree, the Jargonelle would have the position; and if there were only room for two, this would be the second. Ripe in October, but very easily forwarded a few days.

*Brown Beurré*.—Ripe in November; requires a south wall, but is a very fine Pear, and should be planted wherever there is room.

*Easter Beurré*.—Another of the same as the last. Well worth a place. November and onwards.

*Seckle*.—A very fine, peculiarly-flavoured Pear. We have known it good as a pyramid in Scotland, but recommend planting it on a wall. October.

*Marie Louise*.—Another good Pear, requiring the advantage which a wall affords—at least in Scotland—but well worthy of it. November.

*Beurré d'Arenberg*.—Also well worthy of a wall. In England it does as a pyramid; but does not succeed in ordinary seasons in Scotland unless on a wall, and then it is sure to do well. November.

*Beurré Diez*.—Almost indispensable for those who require Pears at Christmas and on through January; and quite sure to succeed, if favoured with good cultivation and a warm wall.

*Ne plus Meuris*.—A late keeper, and one of the very few such succeeding as a pyramid or standard in Scotland.

We are sorely tempted to add some more from our note-book, but think that our selection is quite long enough for any villa gardener whose garden is small, and room for Pear-trees limited.

*Fastening Wall-trees*.—Perhaps this is as good a place as any to say a word on the best method of securing trees to walls. The old-fashioned way, which is still extensively practised, is to use shreds of strong tweed or other cloth, half-an-inch or more broad, and 2, 3, or 4 inches long, as need may dictate, and cast-iron wall-nails. So far as the trees are concerned the plan is a very good one, for the branches rest easily in the shreds without much chance of having the bark damaged; but it is a bad one for the walls, for the constant driving in and pulling out of the nails very soon loosens the mortar, thus letting in moisture, than which there is no greater destroyer of walls. The holes thus made also afford a safe retreat for many troublesome insects. A better way is to have the walls furnished with wire-work trellises. These are easily put up, and we need only refer to the illustrated advertisements, where the

system is explained, while all the materials necessary are detailed. It may be as well to state, however, that the wires should be laid as closely against the walls as possible, for it is found that, when they are placed some distance from it, the trees do not receive the full benefit of the wall's shelter. When the sun shines the walls are warmed by it, and they in turn raise the temperature of the air in close proximity to them, and the trees, which lie close to the walls, are benefited by the higher temperature. When, however, the trees are fixed to wires which are some inches from the wall, a current of air passes between the wall and the trees, and much of the benefit which the walls afford is thus neutralised.

There is another thing to which we might profitably refer here, and that is the distances at which branches should be trained. Hard and fast rules are generally laid down for this, but we unhesitatingly say that this is wrong. A recent writer in a contemporary says that the branches should be placed "so thinly that the leaves of one branch do not overlap those of another. If the spurs and leaves of a fruit-tree cover a space of 9 inches, the branches of that tree should not be less than 10 inches asunder. This is a safe rule to follow." We have no doubt that such is the practice of the writer of the sentences quoted, and we believe that the writer's practice is successful; but it makes some difference in the results sometimes when a practice, successful enough, perhaps, in the south of England, is applied four, five, or six hundred miles further north. The greatest mistake made by persons who have had no experience nor opportunities for observation is to overcrowd trees of all kinds. The sunshine ought to reach every part of a tree which bears fruit, and the more especially when the sun-rays are few and weak. This applies with double force to trees on walls. They are planted there partly for the sake of the shelter which the walls give, partly for the heat which the walls radiate. If, however, the branches of the trees are so thickly trained that the wall is wholly covered with leaves, the wall can radiate little heat. To do this it must first be warmed, and for this purpose part of the wall should be *purposely left bare*. In the sunny south the bare portion might sometimes get damagingly hot; in the cold north a portion of bare wall is often necessary in order to raise the temperature a little.

Not far from where we write are two Easter Beurré Pear-trees and two Jefferson's Plums, planted at the same time and under precisely the same conditions every way, and all fan-trained; but the branches of one Pear and one Plum are 15 inches apart (which is generally considered ample) and the others are 2 feet. For what reason they were thus trained I know not, and may never know, for the gardener who planted and trained them has gone to his rest, and no one who was ever under him seems to consider it as anything but just one of his "freaks," as they call his many experiments; but this I know, that the thinly-trained trees seldom fail to produce a good crop of very fine fruit, while the others are neither so fruitful, nor yet is the fruit so fine in quality, and it is always some days *later*. We have again and again seen similar results from the same cause; and we are convinced that the cause is the larger amount of bare and *therefore warming* wall-surface. In trying to overreach others, it often happens that we only overreach ourselves; and it is exactly the same with plants. We have said a good deal on this point, but not more than necessary, for it is a stumbling-block to many, and we don't remember having seen the same view expressed before.

*Insects.*—The most troublesome insect which attacks the Pear is a kind of aphid or green-fly. A thorough washing with the syringe occasionally, is the

best way to get rid of this insect, or to keep it within bounds. Syringing wall-trees in summer should always be practised, for it is good for washing off dust, red-spider, and other things which militate against the trees' health. Scale sometimes attacks wall-trees in warm positions. The easiest way to get rid of it is to syringe the trees thoroughly in winter, with water mixed with a sixtieth part of paraffin-oil. It is not likely to be troublesome in cold localities. Sometimes different kinds of caterpillar attack the leaves of this and other fruit-trees. Handpicking is the best cure.

A. H. H.

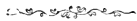


#### HÆMANTHUS CINNABARINUM AND H. KALBREYERI.

HÆMANTHUS is a genus of Amaryllidaceæ, and these two are very striking plants. They were introduced from the west coast of Africa, and are evergreen bulbous plants, the foliage of which, in general appearance, resembles that of *Eucharis amazonica*, and they throw up their flower-scapes in very much the same way as that popular plant. They produce dense globular heads of bloom on strong stems: good bulbs of *cinnabarinum* have heads 6 inches in diameter, and *Kalbreyeri* are still larger. The colour of *cinnabarinum* is a most brilliant cinnabar scarlet, tinted with carmine, resembling the colouring of *Masdevallia Veitchii*. The anthers are of a brilliant yellow, which add to its effective appearance. *Kalbreyeri*, of more recent introduction, produces splendid heads of bloom of vermilion-red colour, on very stout stems, that are spotted with bright claret.

These two plants should be in every plant-stove. Their flowers are very lasting, and keep fresh for a long time when cut and put in water. They are of easy culture, and, like most bulbous plants, should have small pots rather than otherwise. They do not require any peculiar treatment to make them produce their blooms annually. If grown in loam, a little rotten manure, and a dash of sand, not too far from the glass, and their foliage kept clean, these two *Hæmanthus* will amply repay, with their long-lasting and strikingly brilliant heads of bloom, any trouble bestowed on them.

R. M'C.



#### WINTER-FLOWERING PLANTS.

THE time of year is again at hand when all winter-flowering plants will or should be placed in their winter quarters. The nights have turned cold rather earlier than usual in this locality, and plants have in consequence been placed where they are safe. It frequently happens that when housing time arrives we are not ready for it, and plants are often checked while houses are being prepared for their reception. Sooner than run the risk of failure in this respect, it is better to house the plants, and then wash and do the necessary cleaning to the houses afterwards. Great difficulty is often experienced in finding

suitable places for the different plants during the autumn months. Many cultivators have to contend with such disadvantages, and yet in the end achieve wonderful success. The spring is a busy season, and plant and fruit houses are often too crowded with plants; but in autumn these are comparatively useless for many subjects except those only that require sheltering from frost. Many plants, such as Euphorbias, Poinsettias, Plumbagos, and others, will not do in fruit-houses, but require gentle warmth to bring them forward. In too many instances, for want of room and proper accommodation, these plants are either starved or placed in strong heat, which causes them to make a second growth and become tall and leggy, to produce only poor flowers or bracts. Such plants only require gentle warmth to keep them moving until growth is completed, and the bracts or flower-buds about to form, when they can be developed in stronger heat. The early batches will have completed their growth, but successional plants must be encouraged for some time yet. Poinsettias are much improved, after they commence to form their bracts, if developed in a higher temperature—say about 65°. The bracts are not only brighter in colour, but larger in size. Celosias are also improved if their rich golden and crimson plumes are brought out in heat: a temperature 10° lower than the preceding will suit them well. Where these plants are in a backward state, they must be pushed forward with all possible speed. If in cold frames, they should be placed where heat can be given them, with a good circulation of air, and as close to the glass as possible, to keep them dwarf and sturdy. Celosias quickly draw up tall and weakly in heat if not given abundance of air, which is essential to their wellbeing. Winter-flowering Begonias should be out of cold frames by this time, especially the *Manicata* type, or the leaves soon damp, as it is impossible after this season of the year to keep the atmosphere sufficiently dry to suit them. Damp is the greatest enemy to Begonias in the autumn; and they are more liable to suffer from it than from a little cold.

Cyclamen are amongst the most useful of plants, either for the conservatory or room decoration, and should by this time be showing a good quantity of flowers. The most forward plants, if wanted in flower early next month, should be placed on a shelf close to the glass, where the plants can enjoy a little warmth and a good circulation of air. This is necessary, as, when Cyclamen are placed in heat, the flowers quickly appear above the foliage, and soon draw up tall and weakly. The later batches can be kept cool for some time yet: any light position will suit them well where frost can be excluded; in fact they will do yet for some time in cold frames. These plants are not injured by their foliage being damp, which is sure to be the case every morning while in cold frames. To grow Cyclamen well, their foliage should never be allowed to become dry during the growing season. They soon fail to grow and do well if subject to a dry atmosphere. *Daphne*

indica that has been standing outside should now have the protection of a cold frame, where abundance of air can be given when favourable. Any plants that may be wanted to flower early, and have their flower-buds well advanced, may be pushed gently forward, as their flowers are always acceptable whenever they are produced. Frames should now be cleared of Heaths and Epacris, and the plants housed in light, airy structures, where frost can be excluded during severe weather. A few of the early-flowering kinds are invaluable for flowering during the month of November ; and those that were pushed gently forward early in the season will have their flower-buds far advanced, and a little warmth will soon bring them into flower. Chrysanthemums may still be left outside, but in readiness for housing any time, should sharp frosty nights set in. Disbudding must be pushed on with the late plants, and the buds not required should be removed as soon as they can be discerned. Any that may be wanted to flower early should be taken indoors at once ; and if early-flowering kinds are selected, there is no difficulty in having them in flower as early as required.

Salvias, Solanums, Callas, Bouvardias, and others that have been planted out during the summer, and are yet unlifted, should be placed in pots without delay. Instead of placing them outside until root-action commences, they should occupy some of the frames from which other plants have been removed. They should be well watered, syringed, and kept close for a few days, if necessary, until established, and then be placed in their winter quarters.

Roman Hyacinths and early Narcissus, if potted up early in the season, will now have filled their pots with roots. When in this condition, they are ready to be pushed forward gently until they come into flower.

W. BARDNEY.

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#### MANURE-WATER.

In nearly every garden this is used. In some it is made the most of—in others it is not used to the extent it should be ; and much that might be made into manure-water, or what has actually been converted into this, is allowed to be lost in various ways. Those who do their best to make the most of their land and everything they possess, generally keep a sharp eye on the manure-water or any kind of matter good for making this ; and in offering a few remarks on the subject, attention may be directed to it in two ways : firstly to its manufacture, and then to its application.

Every one who has any kind of living vegetation under his care that would be benefited with manure-water, may find ways of getting or making it. In some cases it is made of itself daily ; in others it can only be had artificially. In large gardens the former plan should be followed, if possible. Wherever there is a manure-heap there



should always be a manure-water tank close by. Here our manure is placed on a spot with a sharp incline, and at the bottom of this there is a large deep manure-tank. Nearly all the year round there is some manure or other kept in store, and every time it rains much of the valuable properties which are washed out of the manure are conveyed to the tank. From here it is sometimes taken as fast as it comes in, and at other times it is kept in stock, to be drawn in small quantities as required ; but on no account is any allowed to run away. Such an arrangement as this gives the full benefit of every particle of the manure to the plants ; and the best part is not lost, as is too often the case, by the liquid sinking into useless ground. In summer, when no rain may fall for weeks, and the manure heap and tank become quite dry, it may be filled up with water, and a quantity of pig or fowl manure be emptied in and stirred up in it. In a very short period this will make a valuable supply, and more can be made in the same way when it is done. The next best plan to this is to have a large tub or barrel for making it up in the same way. This may be placed near the plant-houses, or in whichever part of the garden it is most wanted. Two or three manure-water tubs are always handy in all gardens, as different manures can be mixed up in them to suit any kind of crop. Pig-manure is a good material to make manure-water with, and so are fowl-droppings. Cow-manure is the next strongest, and then the manure from the stables ; but the strength of all depends a good deal on how the animals have been fed. A bag of soot kept at the bottom of the water is also valuable for almost everything ; and all kinds of manure-water may be made from the different kinds of artificial manures. Guano is a favourite material for this, and there are few better ; and we have an impression that everything is better when mixed up in a large quantity together. Some kinds of liquid manures are very burning, if mixed up in a watering-pot and at once given to the plants ; but they are not so much so if dissolved in some large holder, and allowed to remain there a little time before using. Old barrels placed in odd corners about the sheds are always convenient for keeping liquid manure in stock, and with a number of them different kinds of manures may be had to suit different plants. Soap-suds and all kinds of slops from dwellings are also good liquid manures, if they can be emptied into some large receptacle and mixed up with other stuff. Few liquids about a garden are so valuable as soap-suds, and they would pay well to be more used than they generally are. For syringing trees affected with any kind of insect, they are more efficacious than many bought compounds ; and if Carrots, Parsley, or any kind of roots are being destroyed by worms, a thorough soaking with suds will, as a rule, entirely destroy them, and leave the crop in a most healthy condition.

In speaking of applying liquid manure, a caution may be given never to use it too strong, as two or three weak doses are more beneficial than one very strong one. This applies to everything, and

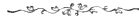
should be remembered, as much of the success of the liquid depends on this. In applying liquid to Vine, Peach, Fig, and other borders, some think it is only when these subjects are in leaf that they need attention in this way; but poor borders might be wonderfully enriched if some good strong liquid was thrown over them in winter, when the top-growth is dormant. In the case of manure-tanks being attached to dung-heaps, it is generally in winter that these are oftenest filled, and they cannot be too often emptied on to the borders or around trees, and even empty quarters in the kitchen-garden may have it thrown over them—that is to say, where there are not other crops in want of it, or where the supply is greater than the demand. Unless for some special purpose, few are in the habit of giving their vegetable crops regular supplies of liquid manure; but in many cases it would pay well. Peas and Celery are two crops which may always be improved with liquid, and Cauliflower and all this tribe are benefited by it, particularly at the time they are about forming heads. In all cases of giving liquid, it is a great advantage to apply it when the soil about the roots is quite moist. With outdoor crops we generally try to give it after the soil is well saturated with rain. Then it does not run away from the roots, but lodges amongst and near them.

In watering pot-plants with liquid, how often may it not be seen running out at the bottom as fast as it is put in at the top, and passing away without doing the slightest good! whereas, if the soil is really dry at watering-time, and clean water is given until it is retentively moist, and then give the liquid, little or none of it will run from the soil, but all will remain stored past, as it were, for immediate and future use. All pot-plants, including Pines, which we water with liquid, are always gone over first with clean water, to make the soil thoroughly moist, and then a good supply of liquid manure is given. This is the best way of applying it to all kinds of plants and soils, no matter whether in pot, border, or field. It is generally no loss to allow clean water to drain away at watering time; but as little as possible of this should take place with valuable liquid. When to apply liquid manure is also a matter of much importance. If weak and cool, few and tender roots may escape being injured by it; but to use strong water to plants with few roots is always dangerous. Supposing the soil in a Pine-pot to be saturated with guano-water shortly after potting, and just as the young roots were beginning to push, ten chances to one they would never go much further, but growth would stop, and the plant assume a yellow, unhealthy colour. Subject the same plant to similar treatment when it is showing fruit, and has a pot well crammed with roots, and the advantage of it will soon be apparent. The use of liquid manure to all plants should be guided by the same considerations. Some manures, early applied, will burn; others will cause the soil to become sour and unhealthy, as there are not sufficient roots to utilise the manure; but with abundance of roots

and robust top-growth the result is very different. It is not easy to say how often liquid manure should be given, so much depends on the state of the roots, the kind of plants, and the weather. In warm, dry weather, when watering must be done often, liquid may sometimes be given every other day; but when growth is going on slowly, once a-week or so is often enough to use manure; and it will generally be found safest to be very careful with it until the plants have passed their soft growth, and are on the way of gaining maturity.

J. MUIR.

MARGAM.



## NOTES ON DECORATIVE GREENHOUSE PLANTS.

### THE BORONIA.

THE Boronias are a genus of plants some of which should be in every collection. They are very free-flowering and sweet-scented, and besides being useful for cutting and general house and conservatory decoration, are among the best of exhibition plants. They are not now nearly so much grown as they formerly used to be, and as their merits deserve. *B. serrulata* especially, makes a splendid specimen when well grown, but it takes a deal of care and attention to maintain it in good health, as it has a habit of going off in the most unaccountable manner, and therefore requires constant watchfulness in the way of watering, &c.

The Boronia is a native of the Australian continent. The soil best adapted to its wants should consist of fine fibry peat and a good portion of sharp sand, with some small pieces of charcoal incorporated therewith. Though the Boronias are greenhouse plants, they are very much benefited by getting a little extra heat in spring, just when growth commences, and until they have fairly started into growth, when they may be gradually introduced to the cooler temperature of the greenhouse. They are propagated by cuttings of the half-ripened wood, which should be inserted in pure silver sand in a properly prepared pot, and covered with a bell-glass. They are somewhat liable to damp off, and therefore, to reduce the chance of this to a minimum, the bell-glass should be taken off and wiped dry inside every day. As soon as the cuttings have made roots, they must be potted up singly into thumb-pots, and kept growing on in a mild heat. They will require to be kept close and shaded for a time, until they start into fresh growth, when the shading may be discontinued, and a little air given on favourable opportunities. The aim at first should be to get nice stocky plants, and therefore pinching the points of the shoots must be resorted to, whenever they have made sufficient growth to admit of it. When the small pots have got filled with roots, they must be shifted into larger pots. The shifts, however, should never be large, as it is a very fine-rooted plant, because if large shifts

were given, the soil would be more likely to get soured by repeated waterings, before the roots had permeated the ball. The pot should in no case be more than two sizes larger than the one the plant is in; and it will be even safer should they be only one size larger. In potting, the soil should be rammed in pretty firmly, so that it may not retain more water in suspension than what is necessary for the wants of the plant. As the season advances the plants should be introduced into a cooler and more airy structure, in order that the wood may be thoroughly ripened before winter sets in. The temperature during winter should be maintained at from 40° to 50°. They should be frequently syringed, in order to keep them free from scale, to which they are somewhat subject, as also a kind of smut or fungoid growth, which frequently gathers on the leaves and stems, rendering them black and unsightly, and injuring the health of the plant. In order to keep them clear of these pests, nothing beats tepid water in which a little soft-soap has been dissolved: it is the most harmless, and one of the most effective of insecticides. The foliage being so small, it is next to impossible to hand-wash it, so the syringe should be in frequent use. *Boronia serrulata* and *B. Drummondii* are the two best of the species, and flower from the middle of April till the end of June.

#### THE POLYGALA.

This genus of plants comprises a great many varieties, embracing as it does hardy annuals, hardy herbaceous plants, and greenhouse evergreen plants. The latter, to which alone the following notes refer, are all natives of the Cape of Good Hope, and all bear purple flowers. The varieties which are best known, however, and oftenest met with in cultivation, and which used to be more frequently met with than they are now, consist of the two varieties, *P. Dalmaisiana* and *P. oppositifolia*. They are both worthy of a place in the greenhouse, as they are exceedingly useful subjects to cut from, for they stand the knife well, and one can cut-and-come-again at them. They are very useful for house and conservatory work, and are good exhibition plants also, though perhaps not among the very best for this purpose. They have the further merit of taking but a moderate share of attention to grow them well. The soil which suits them best consists of two parts of good fibry peat and one part of loam, with sufficient sharp sand to keep it open. They are increased by cuttings of the side shoots, taken off when they have made about 2 inches of growth. These should be put in among silver sand, in a properly prepared pot in the usual way, covering with a glass, and set in a warm pit until they have struck roots, when they should be potted off singly into thumb-pots, and set back into the warm pit until they get a fresh start. They should be kept well pinched back when they are young, as otherwise they are apt to grow straggly. They must be shifted on

into larger pots as the others get filled with roots ; and they should get plenty of light and air, so that they may be kept stocky, and that the wood may get well ripened. The winter temperature should range about 45°; and after the flowering season is past, they should be cut back pretty hard, and started away into growth again in a mild heat. This operation should be performed annually, so that they may be kept bushy. After they have started again into growth, they should be hardened off, and placed outside in a sheltered position, but where they are fully exposed to the sun. In order that the wood may get matured, they should be put either on a deep bed of ashes, or on inverted flower-pots, so that worms may not obtain a lodgment in them. They are occasionally attacked by red-spider ; but the best way to keep this in check is to maintain the plants in a healthy condition at the roots, and to syringe them now and again.

J. G., W.



#### FEEDING VINES AND SETTING MUSCATS.

I CAN thoroughly corroborate the remarks in the leading article of your August number, on the feeding of Vines in general and the setting of Muscats. Having annually practised the same manner of mulching all our Vine-borders for the last five or six years, the roots of the Vines are now running all over the border within 3 inches of its surface : previously not one could be found nearer it than a foot.

The Vines under my care are nearly forty years old, and I would not advise any one to adopt the common practice of uprooting old Vines in order to substitute young ones, if they showed signs of moderate vigour ; for from these old Vines, after five years of rich top-dressings, there has this season been cut bunches weighing 5 lb., and the average weight all over was 2½ lb.

I have advocated low night-temperatures, as I consider it only a waste of both fuel and vegetable force, if I may so term it, to force with high night-temperatures. But after several years' trial of this system, we are convinced that a set of Muscats is more certainly secured with a rather high temperature. Our former temperatures for Muscats at the blooming period ranged from 55° to 60°, according to the state of the weather. Under this temperature some bunches set very fairly ; but this season they set very much better with fully 5° more heat. Besides, our best set bunches have always been at the hottest part of the vinery. At one particular place there is a hot-water tank and a flue passing up the wall, and near to this hot part our best set bunches have always been found. The damping of the house is never stopped when the Vines are in bloom, and I do not consider a very dry atmosphere necessary ; but certainly my experience points to a rather high temperature for the greater part of the twenty-four hours of the day when Muscats are in bloom.

J. W. B.

## HINTS FOR AMATEURS.

## HARDY FRUITS.

THE gathering and storing of fruits is often attended with much anxiety, it being of great moment to have them dry and free from injury when taken under cover. Very late kinds should not be gathered too soon; shrivelling would then take place. When the seeds begin to assume a black colour, it is a sign the trees have done their work for the fruit. This applies to Apples and Pears. They also break off freely from the trees. They ought to be handled carefully, and laid out on shelves, clean and dry, and plenty of air admitted to the structure till "sweating" is over; then a close dark atmosphere suits them well. In large old barns they may be seen stored in this district as one would Potatoes; and they evidently keep well in such quarters. To keep frost from them it is well to throw dry straw over the stores; but there is not much fear of their requiring such protection during October. Now is a good time to prepare for planting fruit-trees. It is well to consider what purpose the trees are ultimately to serve. Orchard-trees under which sheep and cattle are to graze should be on high stems, and the bark protected. Some rub them with a mixture of lime and tar; but though recognising the use of lime by itself as a wash to cleanse trees, we would prefer three or four stakes placed round the stems, lashed together at the top by a piece of wire. Bush and pyramid trees are most suitable for gardens and private orchards; and, preparing for all and sundry, we would trench the ground all over, and place brick-rubbish below each tree. Firm planting, secure staking, and careful mulching, are matters of no small importance to begin with. Strong loam, well drained, on a slope to the south, is the most favourable condition for the trees that we know of. A quantity of free healthy loam placed with the roots of each tree as the work of planting goes on, gives a favourable start to the trees. Transplanting, lifting, or root-pruning should be done as early as possible before the cold weather sets in. The same remarks apply to bush fruits of all kinds. They mostly require manure in liberal quantities, especially good mulching. A stock of Currants (black, red, and white) should be grown in the shade of a wall or hedge, to give late supplies.

Apricots, Peaches, and Plums should be well kept up above surfaces where they are flat; these all do well with careful lifting (replanting the roots out flatly). When they are again placed in the soil the fibres should be retained with the greatest care, cutting off clean any injured roots, or any which are long and naked. In flat orchards channels should be made to take off the surface-water as quickly as possible. Though orchards are to be met with in fruit-growing districts in every position, aspect, and elevation, and growing as if to shut out the horizon, it is worth the trouble to give them a fair amount of attention as to thinning their centres, proper aspects, keeping the bark free from moss, and preventing them from growing the one into the other, as is too

frequently the case in favoured districts where nature is allowed to do as she pleases, and then is grumbled at when the trees grow out of bearing by neglect of the most ordinary attention. Where trees are cankering and showing each year numbers of dead and dying shoots, the cause may be found in the soil; deep down the roots will have grown into sour unhealthy subsoil, and are there decaying like their top: prevention at planting time to send the roots horizontally would save much trouble and loss. Choose kinds of fruits well known in the district for their hardiness and free-bearing quality. Among Pears we mostly find (they are with us this year extra good) Louise Bon of Jersey, Marie Louise, Pitmaston Duchess, Thompson's, Glout Morceau, Jersey Gratioli. Apples, such as Stirling Castle, Lord Suffield, Eclinvillie, Wellington, Keswick Codlin, Irish Peach. Plums in abundance were Green Gage, Blue Gage, Jefferson, Kirke's, Victoria, Coe's Golden Drop, Diamond, and Peach Plum. Peaches on open walls are and were Early Rivers, Hale's Early (both very useful), Bellegarde, Crimson Gillande, Royal George, Violette Hative. The foregoing are among the hardiest of their kind, and may often be seen plentiful in exposed positions when many other kinds are scarce. All late and sappy growths on wall-trees should be removed or shortened, and every means taken to assist the maturation of the wood. Shoots should be thin, and not platted one over the other; this applies particularly to Figs. These always do well when spurs are short, natural, and close to the walls. Strawberries should already be trimmed and manured, either by spreading rotten manure on the surface or by slightly forking it in. The roots need not be disturbed. Young plants may be put in reserve beds till wanted. In the orchard-house every attention should be given to ripening of wood without disturbing the foliage, which are maturing the permanent fruit-buds; late growths may be removed. Trees, whether dwarf bushes, tall standards, or trained to trellis-work, which are continuing to grow late, and showing absence of ripening their wood, should be carefully examined at the roots to see the cause; naked tap-roots going straight down may be found and may be removed; over-doses of manure-water may have done mischief, which will necessitate regulating at the roots; removal of mulching and surface-soil may be of service in hastening the ripening of wood. A dry current of air is indispensable to the wellbeing of trees at this season. Where ripe Peaches of the Late Admirable and Solway kinds are still hanging, and are wanted to ripen, dryness and abundance of air will aid them; but where hot-water pipes are at command, they will push forward ripening of wood or fruit. Trees beginning to shed their leaves of the Standard class, planted out, which are growing one-sided to the sun, may be lifted and replanted, placing the thin bare side next the south; they are very manageable under such a practice, and can be kept as fruitful dwarfs many years, and bear immense crops of fine fruit, and can be helped greatly by liquid manure.

#### SHRUBS.

Planting of the Evergreen class will now be well advanced where means and time can be spared for such. It is always well to get the roots well started in the fresh soil during autumn. Late-planting taught many a lesson last year to planters which they will not soon forget. Trees and shrubs which did not get a hold of the soil early were hard dealt with during the winter; and the dry spring experienced in so many parts put the finishing stroke on them. Well-trenched ground, good-sized pits to give all freedom to root-growth, and a quantity of fine healthy soil placed with them at planting time, are matters

which may not be termed labour in vain. Thorough staking is very essential; the wires forming a cone placed round the stem, which is well padded with cloth, hay, &c., and fixed so that the one prevents the other from drawing the tree from its position. To keep the plant entirely independent of wind, is the best method we know of keeping tops and roots secure.

#### FLOWER-GARDEN.

The planting of bulbs such as Hyacinths, Narcissus, Crocuses, Jonquils, Scillas, Daffodils, Early Tulips, Snowdrops, &c., may be done before end of the month. All do well in rich, well-drained, deeply cultivated ground; but these would not be too late if planted next month. Some prefer plantations made of them at different periods. Plants for spring gardening may be planted as early as circumstances will allow. Arabis, Alyssum, Aubrietias, Daisies, Pansies, Chrysanthemums, where they do well in borders under protection, may be planted, but they are seldom seen presentable out of doors. Calceolarias, Pansies, and other plants of a hardy character, may be propagated in pits or frames. Pansies often do well under hand-lights and temporary lights, but a slight protection during severe weather is of great advantage to them, and they can be hardened in spring and planted out strong-flowering plants. Ours planted last April are now full of flowers. The kinds are, Purity, White, Tory, Purple, Sir Walter Scott, Blue, Golden Queen, Blue Cap, and some others. They are in extra-rich soil, deeply cultivated, and well stirred on the surface to keep out drought. They were only watered once. Sedums of sorts, Cerastium, Menthas, Ajuga reptans and variegata, Aralias of sorts, and similar hardy plants, may be placed in a border to have them in quantity at planting time. Lifting and potting of flowering-plants of the more tender class may now be done. Frost may come at any time; last season it was very severe at first, and caused losses to many. Even tender plants in frames are not safe. Alternantheras, Iresines, Heliotropes, and suchlike, should be made safe at night. If the stock of Pelargoniums is not abundant, a number of old plants may be lifted: they do well for centres. Strip off plenty of leaves to prevent damping. Trim in the roots a little, and pot in sandy loam, using as small pots as possible. Variegated, bronzes, and tricolors may have extra care taken with them; a little dry heat with plenty of air would be of service in starting new roots. Bottom-heat in a mild form would aid them greatly. Store all cuttings and plants in quarters free from damp. Hedge-cutting, turfing, walk-repairing, may be pushed forward. Prepare ground for Roses by trenching and manuring.

#### PLANT-STRUCTURES.

Plants to be wintered under glass should all be safe from frost, neatly arranged in their winter quarters, clean and orderly. However hardy any plants in pots are (which have to stand the tear and wear of forcing), they should at least have protection in severe weather. If in pits under glass-lights so much the better. The whole stock of Azaleas, Rhododendrons, Roses (China, Noisette, and Teas, especially), Lilacs, Kalmias, Deutzias, Dielytras, bulbs of sorts, may be potted for succession. Syringas, Cherries, double and single, Kalmias, Lily of the Valley, and others well known, should be arranged in lots, in order to select from the earliest of the stock suitable plants for forcing, and this work will soon require attention. Where a gay conservatory and cut-flowers are matters of great request, Chrysanthemums should now be all secure by stakes, and taken under glass to flower, giving them



plenty of light, air, and liquid manure. Calceolarias may require potting, and should have plenty of air and light now. Fire-heat is much against their wellbeing. Cinerarias and Primulas also require cool airy treatment. Frosty winds are very injurious to this class of plants. Cyclamens growing planted out in frames should be potted, if not already done. Heaths, Epacris, and the whole class of New Holland hard-wooded plants, should be placed where there is plenty of air and light. A little fire-heat, with fresh dry air on, may be necessary to keep greenhouses and conservatories healthy; but should only be used as a necessary evil. Cleanliness in every respect is indispensable to the health of plants. Pelargoniums cut down and growing freely, may be potted into small pots, first reducing the roots. Keep them cool, and water with much care. Mildew may appear on some plants; sulphur sprinkled on the pest will soon eradicate it. All surfaces of pots should be free from moss and weeds, and the soil kept porous. Fumigate with tobacco, to destroy aphids wherever it appears. At this season choice plants in flower for show-house are not very plentiful; but there are so many with fine foliage and graceful habit, that there need be no lack of interest in this structure: neatness and order and absence of crowding always do much to help the appearance of plants—the reverse of this robs them of much of their beauty. Plants in flower now are autumn Heaths. Camellias which were forced early, Roses, Pelargoniums, Fuchsias, Mignonette, Violets in pots, Salvias, Valottas, and others, mixed with Phormiums, greenhouse Ferns, Palms, Dracenas, Cordalines, &c., make a good display. In stoves the stock of winter-flowering plants should have the best positions for light; shading everywhere may now be removed. All staking, surface-cleaning, washing of lights, sponging of leaves and stems, drainage, pot-washing, should be done thoroughly now, and cleanliness may be an easy matter afterwards. Plants coming forward for flowering are Euphorbias, Begonias, Justicias, Eucharis, Gardenias, Gesnerias, Scutellarias, Thysacanthus, Calanthes, Poinsettias, Libonias, and others. Stove-heat may not be over 65° at night.

M. T.

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#### KITCHEN-GARDEN NOTES.

*How our Broccoli Crop was Saved.*—When the critical reader—all gardeners are critical—has scanned these lines, he will probably be disgusted at having such an old-fashioned plan brought to his notice. But this, like some more old-fashioned modes of gardening, is one well worthy serious consideration. Well, for two seasons we were just as unfortunate as our neighbours in seeing the Broccoli quarter transformed from strong healthy plants in autumn to a lot of rotten stumps in spring. Last autumn I thought of an old plan which used to be carried out in a garden where I was employed, and I determined to follow it out. It was simply to lift the plants and lay them in sloping with their heads to the north. The way we went to work was to turn a deep spit over to the north, then the northmost row of plants was lifted and laid in deeply in the trench so taken out, the tops of the plants resting on the soil which had been cast out. The trench for the next row of plants was turned over on to the roots and stems of the first row; and so on till the whole lot was thus transplanted. As

to results : of most of the kinds not a plant was lost ; of the earlier varieties about half went. As a matter of course, the heads were about half the size they would have been had they not been lifted and the winter proved an open one ; but in a winter like last, the system was very advantageous. As to time of lifting, my plan was to choose just sufficient time to allow the plants to make a few fresh roots without starting them into top growth before the winter set in. Early in October suits our climate ; others may want to do the work earlier. The plants must be quite lifted. In a neighbouring garden where the plants were merely turned over, very little difference was made in the amount of top than if they had not been touched.

*Peas.*—My opinion of Stratagem Peas was exactly like that given in last month's 'Gardener.' I do not think, taking the crop as a whole, that we could get our seed out of it again. But I saw it near Liverpool, in the garden under the care of Mr Bardney, and there it was really fine. What becomes of all the new Peas, by the way ? I try some of the new ones every year, and still continue to depend on old sorts. While writing of Peas, I may say I think very highly indeed of Early Sunrise, a sort distributed this year for the first time. It was our earliest Pea here, coming in even before plants raised in heat and planted out under protection till established. William the First I cannot depend on now, so many rogues have got mixed up with the real Simon Pure. I find Princess Royal a most profitable second early Pea ; so is Champion of England, but it requires high cultivation. For flavour and general usefulness as a late Pea, nothing has yet come up to Ne Plus Ultra. I always get the finest Peas off the preceding year's Celery trenches. I never manure the ground for Peas ; they are fond of potash, and fresh manure as commonly used is of no use for Peas—at least such is my experience.

*Lettuce.*—I find Hick's Hardy Cos Lettuce the Lettuce *par excellence* for our soil. We have it summer, autumn, winter, and spring, and find no other sort to compare with it.

*Celery.*—Celery has been a continual plague to me for the last year or two. Big Celery has been wanted, and in growing big sorts I have miserably failed, as the plants would go in for seed-production some months before their time. I once had a pinch of Sulham Prize Pink to try, and thought highly of it. This year I have it and Major Clarke's Solid Red, a kind which never fails, though not large, for the main supply. The former is the finest I have ever yet had,—large, strong, and healthy, and only one plant in 1200 run to seed. In my endeavours to reach large Celery I have tried various ways of preparing the soil in the trenches, and find nothing better than this : Prepare a mixture of half mushroom-dung and half cow-manure, fresh loam if it can be had, one barrow-load each of soot and burnt-wood ashes to ten of the dung, and some chemical manure rich in phosphates ; this is

laid on 6 inches thick and mixed thoroughly into the soil by digging. A layer of mushroom-manure is laid on the surface and worked round the roots of the plants when put out.

*Trenching.*—Trenching I find to be the greatest possible help to successful kitchen-gardening. Every bit of ground bare in winter we trench, not only turning over the soil a couple of spits in depth, but shovelling the loose soil over as well and digging up the bottom of the trench. Decayed rubbish may be got rid of by being put in the bottom of the trenches, and in all cases a heavy dressing of dung is of advantage. You can take crop after crop without any trouble off land which is kept well trenched and manured. R. P. B.



### LOW NIGHT-TEMPERATURE FOR VINES.

IN a leading article in the 'Gardener' of August last, and containing much with which I quite agree, occurs the following passage: "In our practice we have never been able to corroborate the teaching of those who advocate a low temperature as being best for such varieties as the Muscat of Alexandria and others of a similar habit, for we have invariably found that these set best with a brisk, indeed a high, temperature; and we have seen Muscats that have been worked low at the blooming period which were not set at all." As I have, perhaps, had more to do with recommending low temperatures than anybody else, and have indeed been characterised as the "Author of low night-temperatures for the Vine" in some of the horticultural papers, whether that may mean credit or blame, I have to ask you to allow me to reply to the above damaging but exceptional testimony against the "cool system." Since I first drew attention to the subject about nine years ago, numbers have adopted low temperatures, and of those who have from time to time written to record their experience in the matter, your correspondent is the only one who has confessed to having failed—all have succeeded but him. That I reckon a fact of some importance. Only lately an able and frequent contributor to the 'Journal of Horticulture,' but unknown to me, said in reference to what I had written on the subject, that "Nothing in modern times has done so much to produce improved health in Vines and better quality in Grapes as the lowering of night-temperatures. There may be nothing new under the sun, but the high night-temperatures of a few years ago are a thing of the past, because those temperatures were destructive. I do not mean to say that nobody practises the old method, but I know that most of our best growers have abandoned the practice." The same writer only a week or two ago, in the same paper, stated that he cropped his Vine-canecan regularly at the rate of from 30 lb. to 50 lb. to the rod; adding that his command of heat was all that could

be desired, but that he "*maintained cold* pipes during darkness, no matter what the weather may be." The editor also of the same paper, answering a doubting correspondent on the same subject, states a very suggestive fact; he says: "There is no doubt whatever that Grapes have set freely in a minimum temperature of 50°. We have for years had fine and full sets of Black Hamburgs when the temperature on many occasions was as low as 45° when the Vines were flowering. This, however, was not by preference, but the consequence of what many might term defective heating appliances; still, as the crops were invariably satisfactory, the defect indicated was not admitted, and it was not deemed necessary to incur the cost of alterations when good results could be produced without them. More failures occur in setting Grapes by injudicious ventilation and other errors in management, than by the fall of a degree or two in temperature from the regulation high standard of 70° for Muscats and 65° for Hamburgs."

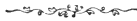
Since I drew attention to the subject nine years ago, I have subjected every vinery on the place here to the cool system—always strictly prohibiting a higher night-temperature by fire-heat than 50° until the berries were set and fit to thin, but never feeling the least uneasiness if the thermometer fell 5° lower than that in the morning, when the berries were in full flower. From 40° to 45° is our figure up till the flowering period. During these nine years I might any season have challenged any of my neighbours in any part of the country to produce better examples of setting. Our Muscats being in flower early in the year, have always been subjected to the most prolonged low temperature, and they have always set well, the berries becoming wedged together by the thinning period, so thick are they. We have a houseful of large shapely bunches of Muscats at present, not one of which presents a defective shoulder through bad setting. I will venture to say also, that there is not a range of vineries in England on which a less expenditure for fuel has been incurred for night-heat proportionately, if there be any which have cost so little. It has been a common practice with us to turn the heat of even the Muscat-house off at 2 o'clock P.M., and leave it off all night if frost was not feared, and then only a little was turned on at 10 o'clock or later. That the Vines are improved by the cool treatment I am sure, for no Vines suffer less from red-spider than ours. They are never either cleansed or painted, nor ever have been. This is one great gain, and the other is that we save at the very least fifty per cent in fuel. "I am aware that there are good cultivators who have set their Grapes in a temperature 25° higher than that advocated by me, and who believe it to be necessary; but having given both ways a fair trial with all sorts of Grapes, and under the strictest conditions of trial, I feel justified in stating that they are labouring under a complete delusion.

J. SIMPSON.

### THE BEST POTATOES.

THREE or four years ago, when we tried over five dozen kinds of Potatoes, we felt rather sure of getting at least one dozen really good kinds out of them ; but experience proves that we have been expecting too much. Since our first trial we have been weeding out the worst, and this year we find we must make further reductions. This is not so much owing to the bad quality of any kind, as to the ravages made by the disease. Good looks are always much sought after in the Potato, and the best-looking kinds I find are generally most liable to disease. International Kidney, for instance, is the finest-looking Potato of the kind in existence ; but it is exceedingly poor in quality, and three parts of it always go with the disease. Woodstock Kidney, another beauty, merits the same character. In round varieties, Fenn's Onwards, Foxe's Improved Round, White and Red Emperor, and many others, are all of fine appearance ; but they suffer so much from the disease, that they never pay for culture. The only kinds which have almost escaped with us, and which are well worth growing, are Sutton's Magnum Bonum, Scotch Champion, Turner's Schoolmaster, Hooper's Covent Garden Perfection, Wheeler's Gloucestershire Kidney, Mona's Pride, and the Improved Peach Blow. The Champion, Schoolmaster, and Peach Blow are rounds : the others are kidneys. The kidneys are best for early use, Schoolmaster and Peach Blow may be used in autumn, Magnum Bonum in winter, and the Champion in spring.

J. MUIR.



### SUBTROPICAL BEDDING IN PRIVATE GARDENS.

THE advantages to be derived from an extension of the subtropical system of bedding in private gardens, must sooner or later force its way upon the minds of those who have much experience of flower-gardening. The same plants, it is true, that are employed in the more favoured climate of the south, cannot be brought into general use in northern latitudes ; but at least many plants—and not a small number either—might be used to much advantage and good effect.

The meagre attempts at outdoor embellishment with many plants devoid of natural beauty, and many of them of little interest, except to botanists and scientific men, have already distracted attention from what was promulgated not long ago as being an ideal system of flower-gardening. Plants which possess few attractions of habit, form, or colour, and which are extravagantly extolled on paper and tinselled with fine words that are technically true but practically misleading, are not likely long to retain a hold of public favour. We have been too well schooled to admire gracefulness of habit, beauty of outline, and symmetry, to accept a plant as something startling because it has a long name.

Upon the other hand, there are innumerable sources to draw from, at a very cheap rate, which will supply us with adequate material to embellish and beautify our dressed grounds. From seeds alone there is an abundant wealth to be obtained of choice plants of rapid growth, and possessing in no inconsiderable degree the habits and properties that are best calculated to suit the tastes of the age in which we live. I am not now going to enter upon any exposition of cultural treatment, —my object is rather to ask all interested in flower-gardening to “compare notes,” and to insert in their note-books the “true” relative effects produced by the different plants generally employed for the summer and autumn decoration of dressed grounds and flower-gardens. I look in vain for anything like a show, to be obtained by grouping hardy plants. The past dry summer has so completely exhausted them, and in some cases reduced them to absolute poverty, as far as appearance is concerned, that no amount of laudation upon paper can possibly retain the position that was claimed for them amongst summer decorative plants. No. A good many have lost their lives (poor things!) during the past winter, and the reputation of a great many more has been decently interred since the late heat and protracted drought. Who will say that this is an over-coloured picture? I am writing from practical experience, and some disappointment at the turn events have taken in regard to many so-called hardy plants. What is a hardy plant? And who shall draw the line of demarcation (accurately) between what is a hardy plant and what is not, after the experience of recent winters? In all fairness, then, the half-hardy plants, commonly called subtropicals, are as cheap, some of them cheaper, and vastly, incomparably, more effective than the stalwart specimens that have been dangled before our eyes for some time past.

We will now look at the opposite side of the picture, and glance briefly at the material that can be raised from seeds within the short period of four months, and the relative effect produced by the two classes of plants. The different varieties of *Ricinus*, *Cannas*, *Zea japonica variegata* (which is as handsome or more so than the finest *Pandanus Veitchii* I ever saw when well grown), the lovely *Acacia lopantha*, *Solanum marginatum*, and the green prickly varieties, *Daturas*, with *Balsams* and different-coloured *Pelargoniums* for front lines, and many other plants equally simple to raise and cultivate.

I have omitted the many kinds of Palms, and other plants that could be objected to on the ground of cost, which are of course additional attractions; but as my object is to show how a fine effect may be produced in a simple way and by simple means, and to contrast or rather compare the display created by associating and blending plants of graceful habits and different colours with *Phloxes* and *Sun Roses*, I do not think it is necessary to give a very comprehensive list. But what of the relative cost? The short list that I have given as an

example contains nothing costly or expensive—the plants can all be raised from seeds ; it is in their rapid growth and development when generously treated that they excel most other subjects in appearance and effect. If they are planted 6 feet apart they will touch each other in six weeks, provided they have not been starved before being planted out. A few bright colours worked in amongst them for large beds will give tone to a large garden, and save the annual propagation of thousands of smaller plants, which are bright in their way, but beyond a passing look are both tame and ineffective. I will now conclude as I began, by asking all who are interested in flower-gardening to draw their own inferences from the suggestions I have ventured to make, and to draw them from actual comparison while there is yet material in abundance to compare notes which will enable one and all to conceive fresh arrangements for another year.

W. HINDS.



#### DRACÆNAS.

THERE are seasons when our collections of new and rare plants receive more than ordinary additions. They at times come and take us by surprise, like the discovery of a "gold-field," which, to use a colonial term, causes a rush. The life of a plant-collector may not always be one of pleasant ease or romantic experience : yet who does not envy him the pleasure of seeing the first blush of beauty of some new rarity, patiently waiting for its introduction to the floral world ? We have at present to deal with rarity in beauty of foliage, rather than in that of flowers, as we note a few of the *Dracænas* of recent introduction. In the year 1877 we can count no less than ten new varieties, which were introduced for competition against those of lesser fame. The list may commence with *D. Robinsoniana*, a distinct variety from the South Sea Islands, the leaves of which are elegantly arched. The ground-colour is good, with margins of crimson-rose. *D. triumphans* is a fine decorative plant, and forms a good contrast with the broader-leaved varieties. The colour is a dark purple, but much relieved by the glaucous hue of the under-surface. The incurving of the winged edges of the petiole is a distinctive characteristic. *D. ampliata*.—The foliage of this variety is distinctly marked with stripes, suffused with creamy-white, rose, and crimson. *D. nivalis*, with its drooping leaves elegantly margined with white, and its natural neat habit, is one of the favourite varieties. *D. cruenta* is more bold in habit, with a more robust growth, and is certainly most ornamental and effective. *D. roseo-perfecta*.—The younger foliage of this variety seems to be the most attractive, which in its early stage is creamy-white, suffused with purplish-rose. In *D. vestalis* we have the long lanceolate leaf, with its distinctive margin of white, relieved by the rich ground-colour of the leaves, giving to it a charm which few of the genus possess. *D.*

Goldiciana, a native of western tropical Africa, was one of the best successes of '77. The plant is of erect habit, with fine spreading leaves, which are delicately marbled with remarkable regularity. It is just the kind of plant which is sure to become increasingly popular for exhibition purposes. In '78 we had only two really good additions to this useful class—viz., *D. Gladilina* and *D. lucinda*. *D. Gladilina* is a useful and effective variety. The leaves are of elegant form, and of a rich full green. The margin is distinct and wide, the pinkish-crimson coming out in bold contrast against the darker background. *D. lucinda* has the advantage of possessing distinctive properties both in the young and old foliage. The young leaves have a rosy-carmine margin, while in the old leaves the carmine becomes much more intense as the leaf advances in age.

Among the many new varieties, we may be permitted to introduce an old one—viz., *D. australis*. In New Zealand and Australia its qualities are fully recognised, and it is now being extensively used where special effects are required. Even in our cold climate it might be more extensively used to advantage during summer months, as centres for large beds or other prominent positions. For greenhouse or conservatory decoration during winter it will be found invaluable, as it greatly assists in imparting to these structures a tropical appearance.

As a class of plants for table-decoration the *Dracæna* holds a first position, and more especially when we consider the ease with which it may be propagated, giving every facility for the increase of stocks to meet the largest demands.

W. F.



### IS THE ROSE RED?

POETS have occasionally said harsh things of science,—indeed one goes so far as to stigmatise the man of science as one who would untwist the rainbow, and even botanise upon his mother's grave. Still we are in duty bound to listen to scientific conclusions, although they go against the opinions and associations of the past or present, and pull down much that we cling to with true conservative spirit.

The able author of 'Inventions of the Nineteenth Century' takes up a Rose and thus discourses upon it. The Rose, he says, is red—not because it has redness in itself, but because the light which falls upon it contains some rays in which there are movements that occur just the number of times per second that gives us the impression we call redness,—in short, the colour comes not from the flower, but from the light. Now, might we not say the Rose is always red by whatever light we see it, and therefore the colour must be in the flower? For whether we view it by sunlight or moonlight, or candle-light or gas-light, we invariably see that it is red. All this must be granted, yet it is precisely this circumstance, the seemingly invariable association of the



object with a certain impression (in this case *redness*), that leads our judgment astray, and makes us believe that the colour is in the object; and it certainly requires the comparison of many observations and experiments to establish a truth so unlike the settled convictions of early life. The point in question, however, is one extremely easy of experiment, and one which would form a source of pleasant entertainment for any spare winter's evening. Let us procure a spirit-lamp, and place on the wick a piece of common salt about as large as a pea; let the lamp be lighted in a room from which all other light is completely excluded, and bring near to the flame a red Rose or scarlet Geranium. The flowers will be seen to have strangely transformed from the brightness of their colours, to what appears an ashy grey. A ball of bright scarlet wool, such as ladies use to work their bright designs, when held near this flame is apparently no longer scarlet, but of the more homely grey. The experiment may be made even more striking when at a little distance from the spirit-lamp is placed a feeble light of the ordinary kind—a rush-light, for example.

A bouquet viewed by the rush-light shows the so-called natural colours of the flowers; but when brought under the salted light or flame, the Roses, Verbenas, and Larkspurs, or whatever else the bouquet may contain, with one exception—viz., that of yellow flowers—all become of a uniform ashy grey. The same influence is observable upon fleshy matter—the pink coral-like lips become a livid hue, almost repulsive to weak nerves. Let us now seek for a few explanations. In the first place, it may be stated that spirit burnt in the way indicated gives off little or no light of any kind. When, however, common salt is introduced into the flame, then light is given off; but light of only one particular colour—that colour being yellow. Our search would be in vain for red, green, blue, or violet vibrations; and as the objects on which the light falls cannot supply these, it follows that with this light no impression corresponding to these colours can be produced on the eye, whatever may be the object upon which it falls. We must therefore come to the conclusion that the colours come from the light, rather than from the object. Of course it must be remembered that there is in each substance something that determines which are the rays absorbed, and which are the rays reflected to the eye; something that can destroy certain waves but is powerless over others, that rebound from the substance, and reaching the eye, there produce their characteristic impression. And it is but this power of sending back only certain rays among the multitude which a sunbeam furnishes, that can be attributed to objects, when we may properly say that flowers have such and such a colour. In this sense only, then, we have a right to say that the Rose is red. Yet it is also true that the redness is not in the Rose, if we believe that the agent which produces in our visual organs the impression of colour is not in the objects, but in the light which falls upon them. We offer the above as a mere outline of the

subject; and as gardeners, like other men, require some recreative study which unites pleasure with profit, we think there could not be a better than this science of colour, which has a rare capacity for adding both to our professional and intellectual enjoyment.

W. FORBES.



### THE MANCHESTER INTERNATIONAL HORTICULTURAL EXHIBITION.

AUGUST 24-27.

It was generally anticipated that a grand display of plants, fruits, and vegetables would be brought together in response to the liberal schedule of prizes offered by the council of the Manchester Royal Botanic Society; but the results apparently exceeded the most sanguine expectations. Larger and more varied exhibitions of plants are occasionally held; but it is doubtful if the Manchester display of fruit and vegetables was ever equalled. The council, and Mr Bruce Findlay, the respected and energetic curator and secretary of the above Society, are therefore to be congratulated upon the result of their labours with regard to the extent of the exhibition. Unfortunately the weather was uncontrollable, and on at least two days of the four advertised exhibition days, rain constantly fell in torrents, water at times flowing down the tent pathway in great streams. This, as might be expected, frightened away thousands of intending visitors; the consequence being, to a great extent, financial failure. Fortunately the prize fund was principally previously subscribed, the original intention of the organisers being to devote the gate-money to the rebuilding of a range of glass houses. This much needed restoration would be a very satisfactory outcome of the "Jubilee Exhibition," both to Mr Findlay and all interested in the Manchester Botanic Gardens, and it is to be hoped will yet be executed.

Manchester being comparatively a central spot, is equally convenient to northern as well as southern exhibitors, and both were remarkably well represented, notably in the fruit classes; and as these classes invariably prove most attractive to gardeners, we propose to discuss them more fully than our limited space will warrant in the case of the other sections of the show—good as all undoubtedly were. For the same reason (limited space), no attempt will be made to enumerate one-half of the prize-winners, and where mentioned, the gardener's name only will be given. In what may justly be termed the premier class—viz., that for a collection of fifteen kinds of fruits, there were four entries, all staging high-class fruit. Mr Coleman of Eastnor Castle secured the first prize with excellent examples of Black Hamburg, Muscat of Alexandria, Gros Maroc, and Madresfield Court Grapes; good smooth Cayenne and Queen Pines; Blenheim Orange and Eastnor Castle Melons; a dish each of highly-coloured Chancellor and Bellegarde Peaches, Elruge, and Lord Napier Nectarines; Brown Turkey Figs, Moorpark Apricots, and fine fruits of Pitmaston Duchesse Pear. Mr M'Indoe, Hutton Hall, Guisborough, was awarded the second prize for a good collection, in which were excellent examples of Barbarossa and Black Hamburg Grapes, highly-coloured fruits of Humboldt Nectarines, and a fine dish of Beurré Superfine Pears. In the third prize collection, staged by Mr Roberts, Gunnersbury, were creditable examples of Madresfield Court and Black Hamburg Grapes, Smooth Cayenne and Queen Pines, and

William Tillery Melon. With twelve kinds of fruits there were seven entries, but three failed to stage. The first prize was awarded to Mr J. Austen, Ashton Court, Bristol, for a capital lot, consisting of well-coloured Muscat of Alexandria and Black Hamburg Grapes, two Pines, a Melon, Noblesse Peaches, Elruge Nectarines, &c. The second prize lot, staged by Mr G. T. Miles, Wycombe Abbey, Bucks, was only slightly beaten, included good Gros Maroc and Muscat Grapes, and Pines. Four collections of nine kinds of fruits were staged, the first prize coming to Mr Edmonds, Bestwood Lodge, Notts, and his most noteworthy dishes were the Black Hamburg Grapes, Smooth Cayenne Pine, and Best-of-all Melon. Mr J. H. Clayton, Grimston Park, Tadcaster, was placed second in this class. Six exhibitors staged six kinds of fruits, the first prize going to Mr D. Wilson, Castle Hill, Devon. Collections of hardy fruits in twelve kinds were not extensively shown, and with the exception of those staged by Mr Haycock, Maidstone, were not of marked superiority.

In a well filled class for ten varieties of Grapes, one bunch of each, Mr Hunter, Lambton Castle, Durham, proved invincible. This exhibitor's bunches generally were very heavy, and in most instances the berries were large and well-coloured. The varieties were Gros Colmar, Barbarossa, Trebbiano, Muscat of Alexandria, Lady Downes, Aramon, Calabrian Raisin, Black Hamburg, Foster's Seedling, and Black Alicante. Mr M'Indoe followed with much smaller, but otherwise excellent examples. The third prize was awarded to Mr Hammond, Brayton Hall, Carlisle, for a collection which only wanted time to ripen properly. Out of fifteen collections of six kinds of Grapes, the best were those staged by Mr Elphinstone, Shipley Hall, Derby. His bunches were not remarkable for size, but the berries were set evenly, and large and perfectly coloured, notably the Gros Colmar, Madresfield Court, Alicante, and Muscat of Alexandria, and very good were the examples of Muscat Hamburg and Golden Queen. Mr J. Austen secured the second prize for a very creditable lot, and Mr Hammond was again third. Black Hamburgs were largely staged, there being twenty-two competitors in the class for two bunches. The first prize examples staged by Mr Boyd, Callender House, Falkirk, were perfect in every respect, and but slightly inferior were those which gained the second place for Mr Barker of Rock Ferry. Twenty exhibitors staged two bunches of Muscat of Alexandria—Mr Austen being first with, for the season, remarkably well-finished bunches, Mr J. Hudson, Gunnersbury House, Acton, following closely. In a good class Mr Boyd was first with Muscat Hamburg Grapes, and Mr W. Wallis, Kirkby Hall, York, second. Mr J. H. Goodacre staged well-finished examples of Madresfield Court, and was placed first in the class for that variety, Mr Roberts following closely. Mr W. Elphinstone staged grand bunches of Black Alicante—perfect in every respect, and was awarded the first prize; and very good were the second prize bunches staged by Mr Forbes, Derwent Lodge, Cockermouth. Mr Elphinstone was also first for two bunches of Gros Colmar, Mr Forbes being again second; both staging perfect examples. The best Lady Downes were staged by Mr W. Bannister, Cole House, Westbury-on-Tyne; and the first prizes for Duke of Buccleuch and Golden Champion Grapes were secured by Mr M'Indoe, the exhibits in each instance being of the best description. The second prizes in the two latter classes were well won by Mr J. Morton, Chorlton-cum-Hardy. Six competed for the prize offered for the best seedling Grape; a promising white variety, said to be the result of crossing Foster's Seedling and Muscat of Alexandria, staged by Mr Ollerhead, Wimbledon, received the award. The bunches staged in the two classes for heavy bunches were, as a rule, both remarkably

large and remarkably ugly. Mr Roberts, Tullamore, Ireland, secured the first prize for white varieties with a bunch of Trebbiano weighing 20lb. 3oz., and in the corresponding class for black varieties Mr Roberts was again first with a bunch of Gros Guillaume weighing 20lb. Mr Finigan, Hayton, and Mr Dickson, Arkleton, also showed well in these classes. Pines were not extensively shown, and did not include any sensational fruits. Mr M'Indoe staged the best six—the varieties being Smooth Cayenne, Charlotte Rothchild, and Ripley Queen. Mr D. Wilson had the two best Smooth Cayennes, each weighing 6lb. Several Queens were staged; the best by Mr Whitfield, Aigburth. In the class for any other variety, Mr Muir, Margam Park, staged a good fruit of Black Jamaica, and received the first prize.

Peaches and Nectarines were shown extensively, and in many instances were remarkably good. The premier collection of three dishes of Peaches, staged by Mr Hunter, Lambton, consisted of Bellegarde, Grosse Mignonne, and Early Miguonne—all of good size and very highly coloured. Mr Coleman was a close second. The latter was first for a dish of twelve Peaches with fine fruits, very highly coloured, of Bellegarde. Mr Hunter was again first for three varieties of Nectarines, the varieties being Lord Napier, Violette Hative, and Elruge. A fine dish of Lord Napier gained Mr Coleman the premier award for twelve Nectarines. Mr E. Bland, Cranbourne Court, Windsor; Mr J. Morton; Mr Gilbert, Burghley; Mr Ross, Welford Park, Newbury; and Mr Masters, High Legh Hall, all secured prizes in the different classes for Peaches and Nectarines. As a rule, the judges gave the preference to highly coloured examples, but such colourless varieties as Victoria and Prince of Wales in two instances secured the premier awards.

Apricots were shown in fair numbers, but none were particularly good, and the majority were really of inferior quality. Mr R. Gilbert staged the best twelve, and Mr Malcolm, Tarporley, the best six.

Melons, as often happens, were staged in great numbers, but the majority were of poor quality. Mr T. G. Miles staged the two best green-fleshed kinds, the varieties being Wycombe Hybrid and Golden Gem, and Mr Pratt the two best scarlet-fleshed—a seedling. Hero of Lockinge, staged by Mr Cordale, Worcester, was adjudged the best green-flesh, and Victory of Bristol, staged by Mr T. Bailey, Shardeloes, the best scarlet-flesh variety.

Mr Muir, Margam, was the only exhibitor of a collection of Lemons, Citrons, Oranges, &c. (open to all countries), and was most deservedly awarded the gold medal for a collection of eighteen varieties well grown.

Hardy fruits generally were extensively shown, and included good examples of many of the leading kinds. Mr Mason, Victoria Buildings, Manchester, staged a grand collection of fruit in the fruiterers' class, and easily secured the premier prize. The baskets of Duke of Buccleuch, Golden Champion, Black Hamburg, and Muscat of Alexandria Grapes in this collection were remarkably good, and all other kinds of fruits were fairly well represented. In the fruit class, the Bristol Chrysanthemum was the only horticultural society represented, and they were awarded a gold medal for a generally creditable display.

For the valuable special prizes offered by the General Horticultural Co. (J. Wills, manager), for a collection of twelve dishes of fruit, Mr W. Coleman and Mr J. H. Goodacre were the only competitors, both staging excellent produce, and were awarded the prizes in the order named. The same firm also offered prizes for twelve bunches of Grapes, six to be black and six white. Mr Hunter, Lambton, rather easily beat the other five competitors, his stands of Muscat of Alexandria, Trebbiano, Black Hamburgs, and Alicantes, being re-

markable on account of the great size of the bunches, and the large, even, and fairly well-finished berries. Mr Loudon, The Quinta, Salop, secured the second prize with well-grown produce.

The Veitch Memorial prizes were awarded to Mr Wilson, Castle Hill, Devon, for three heavy, handsome fruits of Smooth Cayenne Pines; to Mr Goodacre for ten kinds of English-grown fruit; to Mr J. Boyd, Falkirk, for three bunches of any black Grapes; and to Mr Raffil, Tredegar Park, for three bunches of white Grapes. Mr Boyd competed with Muscat Hamburg, which were perfect in every respect, and Mr Raffil won with remarkably good Muscat of Alexandria, the competition being close in both classes.

Before leaving the fruit classes, it ought to be mentioned how well many of the Grapes were brought from a great distance. Some of the premier prize bunches—notably those shown by Messrs Boyd, Elphinstone, and Goodacre—were fastened to boards only, no cotton-wool being employed. For black Grapes the stands were covered with clean white paper, and for white Grapes with pink paper. The bunches were fastened by the wood, attached as usual, and near the points a string was passed round each stem, through the boards, and tied behind. In this manner they travel well, show to the best advantage, and, what is very important, do not sweat so badly, and for this reason are comparatively of a greater marketable value at the close of a show.

There were numerous classes devoted to vegetables, in all of which the competition was very strong. Including special prizes, there were five classes for collections of vegetables, and these were all exceptionally well filled, and the produce generally was of good quality. The best of thirteen lots of twenty varieties was staged by Mr G. T. Miles, among which were good Rouen Leeks, Walker's Exhibition Onions, Tender and True Cucumbers, Green Globe Artichokes, Early Munich Turnips, and Stamfordian Tomatoes. Mr Muir staged an admirable collection, but slightly inferior; the third prize going to Mr J. Turk, Cheltenham. In the class for ten varieties, Mr J. Snowdon, Thirsk, occupied first position, staging among others very fine Giant White Celery, Snowdon's Nonsuch Peas, and Moore's Cream Marrows. Mr W. Iggulden, Marston, Somerset, was a good second, and Mr Crump, Blenheim, followed. For Messrs Sutton's prizes there were thirteen competitors with twelve dishes, Mr Wildsmith, Heckfield, being awarded the first prize for a collection certainly inferior to that which gained Mr Miles the second place. Mr Wildsmith had good Schoolmaster Potatoes, Improved Reading Onions, Exhibition Sprouts, and Snowball Turnips. About the same number competed for Messrs Dicksons' & Robinson's prizes, the best collection of twelve kinds being staged by Mr G. Summers, Mr O. Arbrell occupying second position. For the Messrs Webbs' prizes, the same number again competed. The best collection of six kinds was staged by Mr Crump, and Mr R. Milner secured the second prize. There were classes for single dishes of all kinds of vegetables, but these call for no particular mention. The best out of eleven collections of twenty-four varieties of Potatoes was staged by Mr Miller, Hampstead Park, Newbury; Mr D. Lumsden, Bloxholm Hall, followed; and the third prize was awarded to Mr W. Kerr, Dumfries. Mr Miller was also first for eighteen kinds, Mr M'Kinlay being placed second. There were about forty collections of twelve varieties of Potatoes staged, the best coming from Mr R. Gilbert, Burghley, Mr Wildsmith being placed second, and Mr Ross, Welford, Newbury, third. The judges in each instance gave the preference to medium-sized and generally even tubers.

Large specimen plants were not extensively shown, prizes being offered

more for collections arranged for effect, and new and rare kinds. Messrs E. Cole & Sons secured the premier prize for twenty specimen foliage and flowering plants, Mr Tudgey staging a collection but slightly inferior. The Dipladenias, Ixoras, Allamandas, Ericas, and Lapagerias, were noteworthy in these collections. The groups of plants arranged for effect were particularly attractive, both nurserymens' and amateurs' classes being well filled. In the former, five firms were represented, all meriting the prizes awarded, a fifth prize being given. The group arranged by Messrs R. P. Ker & Sons, which secured the premier award, was very tastefully arranged, and included many well-grown choice plants. Messrs E. Cole & Sons were awarded the second prize. In the amateurs' class Mr G. Smith, Stretford, secured premier honours for a very tasteful arrangement; Mr C. Paul, Bowdon, following very closely. Orchids were not extensively shown, and were not remarkably good. Mr B. S. Williams, Holloway, exhibited the best group in the nurserymens' class, his most noteworthy specimens being the *Oncidium macranthum*, *Saccolabium Blumei*, *Cattleya crispa*, *Lælia elegans Turnerii*, *Dendrobium Pierardi*, and *Vanda suavis*. Mr J. Hill, Temperley, staged the best group in the amateurs' class; Mr Perry, Penpole, Bristol, and Dr Ainsworth, Broughton, taking the remaining prizes. Crotons were quite a feature in the show, the many well-grown and comparatively novel varieties attracting much attention. Most conspicuous was the premier prize group, staged by Messrs Ireland & Thomson, Edinburgh. This included grand plants of *C. Princess of Wales*, *Etna*, *fasciatus*, *Weismanni*, *angustifolius*, *Disraeli*, *majesticus*, *interruptus aureus*, *pictus*, and *Queen Victoria*. Mr B. S. Williams and Mr Cypher followed with remarkably attractive groups. Messrs Ker & Sons' *Dracænas*, consisting of beautifully grown plants of *picta*, *Hendersoni*, *amabilis salmonea*, *Gladstonei*, *Bausei*, *speciosa*, *regina*, *recurva*, and *Goldieana*, secured that firm the premier prize; Mr B. S. Williams and Messrs Ireland & Thomson following with specimens but slightly inferior to the foregoing. The best Palms in the nurserymens' class, staged by Mr B. S. Williams, consisted of *Kentia australis*, *Geonoma Seemanni*, *Cocos Weddelliana*, *Chamærops Fortunei*, *C. humilis*, and *Kentia Belmoreana*; Messrs Cypher and James Dickson & Co. following with well-grown specimens. The principal exhibitors of Palms among amateurs were Messrs Lingard, Hammond, and Tudgey. Ferns were also extensively and creditably shown. Messrs B. S. Williams, R. P. Ker & Sons, and J. Cypher, were the principal exhibitors of new plants; the former being first for both twelve and six varieties, and also for a single plant in flower, staging in the latter instance *Angræcum amabile*, a very sweet-scented, neat-growing Orchid. In the corresponding class for a new fine-foliage plant not in commerce, Messrs Ireland & Thomson took first place with the remarkably showy *Croton Thomsonii*; Mr B. S. Williams following with *Asplenium horridum*. Messrs Veitch & Sons, Chelsea, also exhibited a considerable number of novelties, but not for competition, to several of which certificates were awarded. Three of the most generally attractive of these were the specimens of the hybrid *Rhododendron Duchess of Connaught*, *Ixora Westii*, and *Asparagus plumosus nanus*. Several certificates were also awarded to Mr B. S. Williams for new plants, and similar awards to Messrs Ireland & Thomson for *Croton Thomsonii*; and to Mr J. Anderson, for *Cattleya gigas superba*. For the Veitch Memorial prizes for single plants the competition was not very keen. The best specimen Orchid (not made up) was the *Saccolabium Blumei majus*, bearing two spikes of flowers, staged by Mr Roberts, Gunnersbury. A beautifully flowered specimen of *Dipladenia hybrida* won Mr Tudgey the prize for

the best stove-plant in flower; and the same exhibitor was also successful with an *Erica* as the best greenhouse plant in flower. In the former class F. Tagart, Esq., Bristol, staged a grandly flowered specimen of *Eucharis amazonica*, carrying upwards of one hundred spikes of blooms. Mr R. Tyldesley, Worsley, had the prize for best collection of hardy Ferns, and W. Brockbank, Didsbury, that for fifty herbaceous and Alpine plants.

Near to the exhibition house and tents were arranged the competing collections of Conifers and Japanese plants, and these were both attractive and instructive to the numerous visitors. Messrs J. Standish & Co., Ascot; John Waterer, Bagshot; Paul & Son, Cheshunt; and Caldwell & Sons, Knutsford, were the principal prize-winners in this section.

Among the miscellaneous exhibits the splendid group of *Dracænas* and other choice plants arranged by the General Horticultural Company was most conspicuous, both on account of the beauty of arrangement and the quality of the plants employed. Messrs Veitch, B. S. Williams, and Cutbush & Son, Highgate, all arranged very attractive groups of choice plants. MM. Chantrier frères, Mortefontaine, France, and Messrs Ireland & Thomson, contributed grand collections of *Crotons*; and from Messrs Paul & Son, Cheshunt, came a very pleasing group of Tea Roses in pots. Messrs Cannell & Sons staged a collection of cut flowers, such as *Verbenas*, *Asters*, *Pelargoniums*, and *Dahlias*; and from Messrs J. Dobbie & Co., Rothesay, Bute, came a fine collection of Pansy blooms. Messrs Fisher, Son, & Libray, Sheffield, exhibited greenhouse *Rhododendrons* and other choice plants; and Messrs Birkenhead, Sale, Manchester, a grand assortment of Ferns. In addition to the foregoing, there were classes for a great variety of cut-flowers, table-decorations, and bouquets, and prizes were also given for cut Roses by the National Rose Society and the National Carnation and Picotee Society. In every instance the competition was good, and the quality of the exhibits satisfactory.

Implements were largely exhibited, but the situation and weather completely marred this section. Gold medals were awarded Mr J. Bramham for his Allerton Priory boiler; to Messrs Richardson & Co., Darlington, for a greenhouse suitable for a smoky district; to Messrs Halliday & Co., Middleton, for a collection of boilers and houses; to Messrs Foster & Pearson for a greenhouse constructed on a light principle, &c. Messrs D. Low & Sons, Edinburgh and Manchester, put up several good substantial houses, as also did the Messrs M'Kenzie & Moncur, of Edinburgh and Glasgow; and there were many other exhibits deserving of mention, but which must, for reasons already given, be passed over.

A SOUTHERN CORRESPONDENT.



## THE CALEDONIAN HORTICULTURAL SOCIETY'S SHOW.

THIS event, which causes so much interest to many gardeners, was this year conspicuous for the even quality of the Grapes shown. None of the bunches were of a large size, but the general excellence of these as a whole was most noteworthy. Some of the cut-flowers were also of a high order of merit, while the vegetable tables were filled with examples of very fine culture indeed. The plants displayed a thinness which the massive tables filled by the Edinburgh nurserymen, and the single plants dotted about the market from the Royal Botanic Garden, could not prevent being noticeable. The weather on the first day was of that miserable dripping character we on

the east side of the island are fast becoming too familiar with : fortunately there occurred a break on the second day. A very large gathering of gardeners and others interested in horticultural pursuits were present the first day, amongst whom were notabilities from the South and from across the Channel.

As usual, the exhibition produce set up by nursery firms bulked largely. The Lawson Seed and Nursery Co. occupied the west end of the market as usual, this time with an oval group of stove and greenhouse plants very prettily arranged on the system of dotting tall plants amongst an undergrowth of those of smaller size. Messrs Ireland & Thomson again filled the westmost large group with a most effective group of plants, conspicuous amongst which were some of the Crotons with which the premier card was carried off from the Manchester International a fortnight previously. As at Manchester, such fine Crotons had not before been seen at Edinburgh. Two fine *Nepenthes* were also shown in this group, besides a very choice assortment of the newer and best popular stove and greenhouse plants. Four new Crotons were also shown, to each of which a first-class certificate was awarded : these were *C. Thomsonii*, which was first at Manchester in the class for the best new plant, *C. Duke of Buccleuch*, *C. Houldsworthii*, and *C. Whittonii*—all grand varieties, superbly grown and coloured. Messrs Downie & Laird's table was in the massive style common to the groups of this firm—extra-large Palms having the chief share in the get-up. Very attractive were the fine boxes of cut florist's flowers with which the front of one side of this table was filled. These included Dahlias of every section, French and African Marigolds, Pentstemons, Phloxes, and Violas, in the best and newest varieties. In the table next to this, Messrs T. Methven & Sons had a very varied display of plants suitable for table decoration, and a great variety of Ferns, some large Palms occupying the centre of the group. Messrs Dicksons & Co. filled the endmost table, having some grand Tree Ferns as their *pièce de résistance*. A very fine *Eucharis amazonica* was also noticeable ; while two large baskets filled with flowering plants of *Primula capitata* were worthy of attention. Collections of their Pinks for borders and cutting purposes were also shown : some of these are valuable additions. Close by, a table filled with medicinal and other interesting plants not commonly met with, had been furnished by Mr Sadler from the Royal Botanic Garden.

Turning now to the competition produce, we noted all the flowering plants as very good indeed—Mr Paterson's Heaths, when we consider the lateness of the season, being quite a feature. Mr Paul's plants were large and well bloomed ; and a fine *Lapageria rosea* was shown in the 2d-prize lot of two flowering plants. The foliage plants were not so fine as we have seen them. Ferns were fresh, but small ; the Orchids only a small competition, but containing some good plants—notably so, a good specimen of *Oncidium nemorum*, with four long spikes of its soft flowers. A good specimen of *Odontoglossum grande* was also noticeable. Two very fine flowers of *Cattleya gigas* were exhibited from Mr Smith, Brentham Park. The group of plants from Mr Paul had some nice flowering pieces of Orchids intermixed very effectively amongst foliage plants. *Vallotas* were a very rich display.

Amongst the cut-flowers, the Roses from Messrs Cocker & Son, Aberdeen, were very remarkable, many of the blooms being as fine as they are to be seen in summer. This firm also showed stands of Alfred Colomb, Marie Baumann, Comtesse d'Oxford, and La France, in grand order. Dahlias were a good show, even and fine in quality. Phloxes were also fine ; and very bright were the Geraniums. Amongst Asters, the first-prize quilled dozen were extra-



ordinarily fine examples of good culture. Hollyhock, Gladiolus, &c., were either poor in quality or nothing out of the common about them. Messrs Todd & Co., Maitland Street, had some bouquets, a wreath, &c.—beautiful examples of this kind of thing.

As already noted, the Grapes were of very high excellence; there were also a great many of them; and many of the competing lots were so very close as to make judging rather an unpleasant duty, while the rôle of the critic in consequence was a very easy one, and duly followed up by a large number of people who knew all the points before them, weak and strong alike. This is a very pleasant occupation, and at the same time that it enlarges one's faculties of observation, and is altogether a most beneficial manner of passing the time at a fruit show. It has, however, one drawback—I can only think of one at present—there is a difficulty that we poor reporters feel very much, and that is, we would also like to examine the fruit, in order to allow the large constituency of gardeners who cannot get to see the fruit for themselves to have at least some idea as to how it looks. Of course it doesn't matter at all that many ladies never get near the tables. Well, the great feature was the Grapes. M'Indoe's collections of fruits were highly meritorious, his Pears, Peaches, &c., being better than those of any other competitors; but in the class for eight sorts, the Broxmouth Grapes overweighed even the general high quality so noticeable throughout his collections. For eight bunches of Grapes, Mr M'Indoe was the only exhibitor; the sorts were Black Hamburg and Barbarossa, fine and good Gros Colmar, and Duke of Buccleuch. For four bunches, Mr Kirk, who made a sensation two or three years ago, was barely first, Mr M'Kinnon following very closely indeed. In the twelve-bunch class, the weight of the Broxmouth Grapes again proved overpowering, though the second lot was again very close. Especially fine were the Muscat of Alexandria, the Gros Colmars, the Alicantes, and Buckland Sweetwater in the first lot—Barbarossa, Trebbiano, and Duke of Buccleuch being the strong bunches in the other. In the classes for particular varieties, in many cases the first and second prize lots were of the closest, some grand examples of highly finished Grapes being shown. In the Black Hamburg, Muscat of Alexandria, Gros Colmar, Black Alicante, Lady Downes, Duke of Buccleuch, and Golden Champion classes, this was especially noticeable. We have seen much finer Pine-apples than were forward at this show; but Peaches, though not large in number, were extra fine. Much dissatisfaction was shown over the judging of these, large and fine-looking fruit being passed for that of a smaller size. Apricots were very fine indeed; and the first-prize collection of hardy fruit was a most notable one.

In the vegetable classes, the first-prize collection in gardeners' section was the only noteworthy lot; but in the classes for particular kinds, some grand examples of high-class culture were staged. In addition to the Crotons from Messrs Ireland & Thomson, which obtained first-class certificates, a Lobelia from Messrs Downie & Laird, named "Miss Duncan," had a like award; as also a new Heath from Mr Turnbull, Bothwell Castle, which is named Erica Thompsoni: this is a most floriferous variety, with rosy tube and white petal; the flowers are borne in round spikes.

The judges were:—Messrs Thomson, Clovenfords; John Methven, Blythswood; Charles Johnstone, Dalhousie; M'Kinnon, Scone Palace; Campbell, Merton Hall; Galloway, Minto; Lindsay, Botanic Gardens; Shearer, landscape-gardener, Edinburgh; M'Kenzie, Warriston; Souza, Tough; Anderson, Oxenford; and Grey, Eglington.

The following is the prize-list :—

## CLASS I.

*Fruit.*

Collection of Fruit, twelve sorts.—1 and 2, J. M'Indoe, Hutton Hall; 3, Mr M'Intyre, Innerleithen.

Collection of Fruit, eight sorts, excluding Pine Apples.—1, Mr M'Kelvie, gardener to the Duchess of Roxburghe; 2, J. M'Indoe; 3, Mr M'Intyre.

Eight bunches Grapes, four sorts.—1, J. M'Indoe; 3, Thomas Boyd, gardener to W. Forbes, Esq., Falkirk.

Four bunches Grapes, sorts.—1, A. Kirk, Alloa; 2, Geo. M'Kinnon, Melville Castle.

Twelve bunches Grapes, six black and six white (first prize by the Corporation of the City of Edinburgh).—1, Mr M'Kelvie, Dunbar; 2, J. M'Indoe, Guisboro'; 3, Mr A. Mackie, Darlington.

Two bunches Muscat Alexandria Grapes.—1, D. Calderhead, Wemyss Castle; 2, G. M'Kinnon.

Two bunches Black Hamburg Grapes.—1, A. Kirk; 2, T. Boyd.

Two bunches Mrs Pince Grapes.—1, M. Brodie, Galashiels; 2, A. M'Leod, Blind Asylum, Craigmillar.

One heaviest bunch of Grapes, black.—1, Ewan Cameron, Moffat; 2, J. Robertson, Stirling.

One bunch Muscat Alexandria Grapes.—1, D. Calderhead; 2, G. M'Kinnon.

One bunch Alnwick Seedling Grapes.—J. Robertson.

One bunch Black Hamburg Grapes.—1, A. Kirk; 2, T. Boyd.

One bunch Black Hamburg Grapes, for size of berry.—1, A. Kirk; 2, T. Boyd.

One bunch Black Alicante Grapes.—1, W. Collins, Walkerburn; 2, T. Boyd.

One bunch Lady Downes Grapes.—1, A. Kirk; 2, T. Boyd.

One bunch finest-flavoured White Grapes.—1, D. Calderhead; 2, D. Murray, Maybole.

One bunch finest-flavoured Black Grapes.—1, L. Dow, Newbyth; 2, T. Boyd.

One bunch Black Grapes, for finest bloom.—1, T. Boyd; 2, J. Carruthers, Corstorphine.

One bunch Gros Colmar Grapes.—1, Wm. Lees, Hillsbro' Castle, County Down; 2, J. M'Indoe.

One bunch Golden Champion Grapes.—J. M'Indoe.

One bunch Duke of Buccleuch Grapes.

—1, A. Scott, Carbery Towers; 2, A. Kirk.

One bunch Madresfield Court Grapes.—W. Kay, Milburn Tower.

Best bunch of any Grape not named in this Schedule.—1, J. Brimton, gardener to Sir A. Kinloch; 2, James Carruthers, gardener to A. B. Fleming, Esq.

One Queen Pine Apple.—J. M'Indoe.

One Smooth Cayenne Pine Apple.—1, D. Murray; 2, J. M'Indoe, Guisboro'; 3, Mr M'Intyre.

One Pine Apple, any other sort.—1, D. Murray; 2, J. M'Indoe, Guisboro'; 3, Mr M'Intyre.

One Melon, green fleshed.—1, W. Kay; 2, W. Allison, Monifeith.

One Melon, scarlet fleshed.—1, W. Fraser, Dunning; 2, D. Murray.

Twelve Figs.—1, J. Gordon, Niddrie; 2, J. Brunton, Drem.

Six Apricots.—1, G. M'Kinnon, Lasswade; 2, J. Brunton.

Twelve Plums, four sorts, three of each.—1, W. Henderson, Polmont; 2, J. Lamond, Alloa.

Twelve Peaches.—1, Ewan Cameron; 2, D. Calderhead.

Six Peaches, grown on open wall.—1, J. Brunton; 2, L. Dow, Prestonkirk.

Six Nectarines, two sorts.—1, J. M'Leod, Stirling; 2, W. Williamson, Tarvit.

Six Nectarines, grown on open wall.—1, Mr M'Lean, Maidstone; 2, J. Brunton.

Six Jargonelle Pears, fit for the table.—1, Andrew Lornie, Cockburnspath; 2, L. Dow.

Six Pears, two sorts, named, three of each (exclusive of Jargonelle), fit for table.—1, J. M'Indoe, Guisboro'; 2, Mr M'Lean.

A collection of Baking Apples, six sorts, named, three of each, ripe or unripe.—1, W. M'Kelvie; 2, Mr M'Lean.

Six Dessert Apples, fit for the table, two sorts, named, three of each.—1, J. M'Indoe; 2, Mr M'Lean.

One Pint of Gooseberries.—1, John Matheson, Lasswade; 2, James Corsar, Linlithgow.

One Pint of Red Currants.—1, James Brown, Crieff; 2, Jas. Corsar.

A collection of ten sorts of Hardy Fruits (all the fruit in this collection must be grown out of doors).—1, J. Brunton; 2, George Barrie, Salton Hall.

## CLASS II.—GARDENERS AND AMATEURS.\*

*Plants.*

Table of Plants, 20 feet by 5 feet.—1, A. Paul, Gilmore Place; 2, R. M. Reid, Edinburgh.

Six Stove or Greenhouse Plants, in flower.—1, J. Paterson, Millbank; 2, A. Paul.

Three Stove or Greenhouse Plants, in flower.—1, J. Paterson; 2, A. Paul.

Two Stove or Greenhouse Plants, in flower.—1, C. Macfarlane, Moredun; 2, J. Shearer, Merchiston.

Three Cape Heaths, of sorts.—1, J. Paterson; 2, C. Macfarlane.

Two Cape Heaths, pots not exceeding 9 inches.—J. Paterson.

Four Foliage Plants.—1, R. M. Reid; 2, R. Grieve, Falconhall.

Two Foliage Plants, pots not exceeding 9 inches.—1, J. Paterson; 2, G. M. Lure, Trinity Grove.

Six Plants for Table Decoration, 6-inch pots.—1, Mr M'Intyre; 2, S. Graham, Kilravock.

Two Dracaenas (colour).—1, S. Graham; 2, J. Robertson, Stirling.

Two Crotons.—1, R. M. Reid; 2, J. Paterson.

Four Palms.—1, S. Graham; 2, J. Paterson.

One Palm, specimen, excluding Cycads.—T. M'Donald, Grange.

Six Exotic Ferns, exclusive of Tree Ferns.—A. Paul.

Three Exotic Ferns, pots not exceeding 9 inches.—1, R. Johnston, Woolmet; 2, J. Cumming, Grange.

Two Toileas.—1, A. Anderson, Dalkeith; 2, R. Grieve.

One Adiantum Farleyense.—1, J. Curror, Eskbank; 2, S. Graham.

Four Adiantums, of sorts, excluding Farleyense.—1, J. Curror; 2, S. Graham.

Two Filmy Ferns (Trichomanes or Hymenophyllum).—A. Anderson.

Tree Fern, stem not less than 3 feet.—J. Curror.

Four British Ferns, distinct varieties.—A. Anderson.

Eight Dwarf British Ferns, distinct varieties (pots not exceeding 6 inches).—1, A. Anderson; 2, D. D. Arnot, Kirkcaldy; 3, J. Cumming, Grange.

Two pots or pans Lycopodium, different species.—1, S. Graham; 2, J. Cor-sar, Linlithgow; 3, J. Robertson, Stirling.

One Hydrangea.—1, A. Crichton, Corstorphine; 2, Thos. Bowman, Lasswade.

Two Orchids.—1, J. M'Leod, Stirling; 2, A. Paul.

One Orchid.—1, J. M'Leod; 2, J. Paterson, Millbank; 3, A. Paul.

Two Petunias.—1, James Black, East Calder; 2, R. Johnston.

Two pots Vallota purpurea.—1, Jas. Stewart, Corstorphine; 2, R. Johnston.

One pot Vallota purpurea.—1, John Leyden, Rosewell; 2, R. Grieve.

One pot Eucharis Amazonica.—1, John Paterson; 2, Jas. Stewart.

Three Tuberosus Rooted Begonias, named (open).—1, Wm. Penn, Liberton; 2, R. Johnston.

Two Fuchsias, of sorts.—1, Jas. Walker, Linlithgow; 2, James Bald, Canaan House.

Two Fuchsias, pots not exceeding 8 inches.—James Walker.

Two Cockscombs.—1, John Elliot, Bonnington; 2, S. Graham.

Two Balsams.—1, W. Dougal, Ferry Road; 2, R. M. Reid.

Three Zonale or Plain-leaved Geraniums, sorts, in pots not exceeding 9 inches, in bloom.—1, James Richardson, Prestoufield; 2, S. Graham; 3, J. Walker, Linlithgow.

Three Variegated Geraniums, of sorts, in bloom.—James Tweedie, Portobello.

Three Bronze Geraniums, of sorts, in bloom.—1, James Tweedie; 2, James Walker; 3, James Richardson.

Three pots Liliams, of sorts.—1, A. Paul; 2, S. Graham.

One pot Liliam auratum.—1, J. Paterson; 2, Colin M'Farlane, Moredun.

#### Cut Flowers.

Twelve cut Roses, of sorts.—1, Alex. Hill Gray, Dunkeld; 2, Jas. Stewart.

Twelve Gladioli, of sorts.—1, William Penn; 2, R. Grieve.

Six Gladioli, of sorts.—1, John Taylor, Inveresk; 2, Wm. Holm, Foxball.

Twelve Quilled Asters, of sorts.—1, Thos. Menzies; 2, John Wood, Ferry Road.

Twelve Chrysanthemum-flowered Asters, of sorts.—1, Thos. Menzies; 2, Wm. Penn.

Four Phloxes, of sorts.—1, Ewan Cameron, Moffat; 2, John Matheson, Lasswade; 3, J. Pearson, Corstorphine.

Five Spikes Hollyhocks, of sorts.—1, J. Pearson; 2, R. Johnston.

Twelve Hollyhock Blooms, of sorts.—R. Johnston.

Six Hollyhock Blooms, of sorts.—1, W. Henderson, Polmout; 2, J. Pearson.

Twelve Dahlia Blooms, of sorts.—1, James Walker, Linlithgow; 2, D. Lornie, Ratho; 3, Jas. Black.

Six Dahlia Blooms, of sorts.—1, James Black; 2, John Stewart, Catherine Bank.

Twelve Fancy Dahlia Blooms, sorts.—Jas. Black.

Six Fancy Dahlia Blooms, sorts.—1, John Stewart; 2, Jas. Walker.

Four East Lothian Intermediate Stocks, four sorts.—1, John Wood; 2, Charles Smith, Restalrig.

Twelve varieties of Zonale Geraniums, three trusses of each sort.—1, John Cumming, Edinburgh; 2, John Matheson, Lasswade.

Twelve Trusses of Verbenas, three of each, not less than six varieties.—1, Hugh Watson, Stirling; 2, John Stewart.

Centrepiece of Cut Flowers and Foliage for Dinner-Table Decoration.—George M'Lure, Trinity Grove.

One Hand Bouquet.—1, Thos. Bowman, Lasswade; 2, Geo. M'Lure.

## CLASS III.—NURSERYMEN.

Four Palms.—Downie & Laird, Edin.  
 Twenty-four Dahlia Blooms, of sorts.—  
 Downie & Laird.  
 Twelve Fancy Dahlia Blooms, of sorts.  
 —Downie & Laird.

Thirty Gladioli, not more than two of  
 a sort.—Downie & Laird.

Twenty-four Cut Roses.—1, Cocker &  
 Sons, Aberdeen; 2, W. H. Dickson, Bal-  
 mont.

## CLASS IV.—GARDENERS AND AMATEURS.

Collection of Vegetables, twelve sorts,  
 for market-gardeners only.—1, John  
 Milne, London Road; 2, Robert Black,  
 Liberton Mains.

Collection of Vegetables, twelve sorts,  
 excluding market-gardeners.—1, James  
 Brown, Crieff; 2, Gideon Potter, North  
 Berwick.

Two Cucumbers.—1, James Brown; 2,  
 J. Shearer, Craigroyston.

Four Cauliflowers.—1, J. Lamont,  
 Alloa; 2, James Brown.

Two Stalks Brussels Sprouts.—1, John  
 Robertson, Stirling; 2, A. Dunlop, Canaan  
 Lane.

Four Stalks Celery.—1, James Brown;  
 2, Gideon Potter.

Four Beetroots.—1, J. Richardson,  
 Prestonfield; 2, Jas. King, Gorebridge.

Six Leeks.—1, Mr M'Kelvie; 2, James  
 Brown.

Twelve Tomatoes.—1, Mr M'Kinnon,  
 Seone; 2, Mr M'Intyre.

Four Savoys.—1, A. M'Leod, Blind  
 Asylum; 2, Thomas Bowinaw, Lass-  
 wade.

Twelve Onions.—1, Wm. Williamson,  
 Tarvit; 2, Mr Murray, Maybole.

Two Pots of Parsley.—1, D. Marshall,  
 Saughton; 2, John Robertson.

Six Lettuce.—1, Thos. Bowman; 2,  
 Alex. Crichton, Corstorphine.

Twelve Sorts of Potatoes, twelve of  
 each (open to all).—1, Mr M'Kinnon;  
 2, Andrew Lornie, Cockburnspath; 3,  
 Gideon Potter.

Collection of Salads (open to all).—  
 Thos. Bowman.

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## Calendar.

## FORCING DEPARTMENT.

Pines.—Fruit that ripens this month should not be so freely watered as those that ripen in summer, especially should the weather be wet and sunless; and the atmosphere should also be less moist. Those that are swelling off should have a moist atmosphere, and be steadily supplied with manure and guano water alternately, sufficient to keep the soil moist, but not sloppy. Range the night-temperature for these at 70°, a few degrees more or less being of little moment, according as the weather may be colder or warmer. The bottom-heat should not exceed 90° nor fall below 85°; shut up every afternoon with sun-heat when it is available, so as to run the temperature up to 80° or 85° for a time, giving the plants a syringing about their collars and over the leaves, but missing the crowns. October is an excellent month for swelling-off Pines, for the houses can be shut up with a considerable

amount of sun-heat, without any risk of injury. Queens intended to start early into fruit will now be in a well-matured condition, and must be kept in a comparative state of rest for the next three months. Drop the temperature to 60° at night by the end of the month, and the bottom-heat should not be more than 75°. If the pots are plunged to the rim in moist tan, very little or no water will be required by the end of the month; but if plunged in a shallow layer of any material over hot-water pipes, watering will have to be carefully seen to, or the plants may suffer from over-dryness. Batches of pines to form a succession to these early Queens should be kept growing up to the end of the month, and should have a few degrees more heat and more moisture; but this must not be carried to anything like excess, or the plants will draw, now that the days are shortening and the light less in-

tense. Suckers potted in August and early part of September will now grow freely, and must be carefully ventilated and watered, to prevent a soft sappy growth. After the middle of the month the temperature should range from 60° to 65°, and air should be given when the heat touches 70°. The bottom-heat for these will do quite well at 80°. Should there be any fear of the largest suckers getting pot-bound by February, let such be shifted into 10-inch pots at once, and plunged thinly in a light pit near the glass, and they will make a nice batch for starting next July. Any strong suckers on plants now swelling-off fruits should be taken off, and potted in 6-inch pots. Drain the pots well, and use a light fibry loam. Now is a good time to collect soil for next season's potting.

**Vines.**—It is to be feared that many Vines in Scotland, owing to the very cold sunless summer, may not be so well ripened as they should be. Where such is the case they should be subjected to more or less fire-heat, and a circulation of air according to their condition. This of course applies to such Vines as the Grapes are all cut from. If not already attended to, every superfluous lateral should be taken off, so that light and air can have free access to the wood and main leaves while there is a chance of sunshine. All Grapes intended to keep through the winter should now be perfectly ripe, and if they are not so, the ripening should be assisted with fire-heat. Look over all Grapes that have been ripe for some time, at intervals of a few days, and remove every shrivelled, or mouldy berry as it appears. Keep everything about them dry, and ventilate freely, except in very damp weather. Vines planted this year, and that have grown strongly and been allowed to make a rambling lateral growth, should be slightly pruned to let light and air about all the growths that are likely to ripen properly under the influence of fire-heat and a free circulation of air. Vines from which Grapes are to be ripened early next year should be pruned as soon as the leaves drop, and should be prepared in the usual way for starting at the proper time. If any portion of their roots is in an outside border, let it

be covered up at once with dry litter, to conserve the natural heat that is in the soil. All mulchings of manure that have been laid on borders in the course of the season to nourish the crops should be removed early this month, and a dressing of bone-meal be forked into the surface of the border, which should lie uncovered to receive the sweetening influence of the air till the approach of frost. Every Vine-border should be so exposed for a period every year. If pot-Vines intended for early forcing have been standing outdoors, remove them to some place where they can be protected from heavy rains.

**Peaches.**—If new borders and fresh plantations of trees be intended, get everything in readiness for planting, as soon as the trees have shed their leaves. To produce fine Peach-trees and fruit, the soil should be a rather strong loam, 2 feet in depth and thoroughly drained, and having no manure added to it except some bones. Apply fire-heat to all Peach-trees that are not likely to ripen well before they shed their leaves, and syringe the leaves occasionally on fine days to prevent the spread of red-spider, which thrives so well on fire-heat. On the other hand, let earlier and well-ripened trees be kept cool and well aired. See that borders inside do not get dry. Any fruit yet to gather should be well exposed to light and air.

**Figs.**—Generally speaking, all Figs are gathered by the end of this month; but where any are to ripen they should have fire-heat applied, or they will not be good. All wood not required to furnish the tree properly should be removed at once; but when disbudding has been duly attended to, there will be very little that it is not necessary to retain. Early plants in pots should now be protected from excessive rains, and watch inside borders, keeping them in a medium state of moisture.

**Melons.**—Late crops will now require more assistance from fire-heat, and the temperature should be 70°, and when ripening, warmth and dryness of atmosphere are indispensable to the development of flavour; and

while the plants must not be allowed to suffer for want of water, it requires to be supplied in much less quantity. Melons ripening this month can be kept longer in good condition than in summer.

**Cucumbers.**—Keep the temperature a little over 70°. Give air early in the day, and shut early to husband sun-heat, and lessen the moisture in the soil and air as the days shorten, but avoid an arid state of the atmosphere. Where the roots are near to hot-water pipes, mulch the surface with some old mushroom-bed manure, and be careful that no check arises

from over-dryness. Stop young growing plants at every joint, and do not let the foliage become crowded nor the plants bear too freely until well established.

**Strawberries in Pots.**—These should now have thoroughly filled their pots with roots, and have strong prominent crowns. If very wet weather occurs for any length of time lay the pots on their sides, and should any of the plants be too late, remove them to cold frames and put glass over them, keeping them near the glass and freely aired, to get their growth more matured than could be in the open air.

#### KITCHEN-GARDEN.

THE season has now arrived when practical men turn their attention to renovation and improvement of their gardens. It is well to note the weak points, and find out the best remedies to strengthen such. If it is the absence of sound drainage, it may have attention at earliest convenience: this is too often looked upon as a remedy for evils which a proper system of deep cultivation would abolish. When land of a tenacious character is turned over shallow and careless, the crops, whatever they are, root quickly through this to the hard bottom, through which they cannot penetrate; rain rests there till it has had time to percolate into any crevice or crack which affords an outlet. When drought sets in, plants are then baked in the shallow surface, and either shrivel up or become the victims of mildew or vermin. It may be argued that the bottom is so barren that if it was turned to the surface nothing could exist in it but weeds. With such we have had to deal for a number of years, and now we never had better crops, and prepare the land by turning up a deep spade depth, and the crumbs to the surface—then the bottom is turned over as deep as a “grafting” tool can move it (this tool is something like a curved draining-spade); the bottom layer being thus prepared allows water to pass off quickly, and roots of plants are also safe from drought in dry seasons (such as we experienced here during last spring and early summer, when we

were *nine* or *ten* weeks with drying winds and total absence of a single shower). The bottom layer becomes enriched, and in course of time may be brought to the surface in small proportions to act as a purifier to the top layer of soil. Light surfaces may often be improved with an addition of heavy soil worked into them; and heavy land is of course improved by light sharp soil being mixed with it. Preparations for crops to be planted this month (such as Cabbage, Lettuce, Batavian Endive, or any other) should be thoroughly trenched, and the manure placed evenly under the top spit. In spring, when growth becomes active, the roots then run greedily downwards away from drought. Were this practice more general, there would be less experience of the evils of premature seeding of Cabbage. Space does not allow us to give instances of experiments we have tried, which have, in every case, proved the fallacy of shallow talk.

It is not uncommon at this season to see gardens belonging to the amateur class left in dishabille just as all crops ceased to produce, and weeds and decaying matter offending the eye in every direction. A special effort should be made to remove all that is unsightly and useless: it may be collected on any vacant space, covered with soil, and at the proper time can be turned into the trenches; or where there is a proper rubbish-heap (kept free from stones and sticks), all vegetable matter can be rotted and

returned to the garden as manure. Wood-ashes, road-scrappings, turparings, or such material mixed with this, are good for any kind of land. Preparation for Cabbage may be made now, and the plants, if plentiful, which were pricked out to become strong, may be planted a foot each way to give a supply in spring by cutting out every alternate plant for use, leaving a full crop 2 feet apart on the ground for main supply; dust with ashes, finely sifted, and mixed with soot or lime, over the whole surface of the ground and round the collars of the plants, as prevention of grubs, slugs, &c. A watering about twice with clear lime-water generally prevents the destruction of roots by grubs. All growing crops should be properly hoed, and any decaying leaves cleared off as soon as they are detected. Any crops requiring thinning should have timely attention. Spinach and Lettuce sown where they are to remain till they are used should be carefully thinned. The thinnings of both, planted carefully in suitable positions, make good succession to the earlier sowings. Plant plenty of Brown Cos Lettuce, All the Year Round, Brown Dutch, Hick's Hardy, or Hardy Hammersmith, and there is a likelihood of a plentiful supply at the proper time. On ridges, or by walls and hedges which give shelter from north and east, are suitable positions. Batavian Endive is very hardy, and when nicely blanched in spring is nutty and of most agreeable flavour. Endive should be somewhat thick on the ground where frames are to be placed over the crops; and those plants which are ready for use may be tied up to blanch, or have slates laid over them to exclude light and air. Asparagus-beds may be cleaned; if the "grass" is ripe it should be cut within a few inches of the surface of the soil. When the stems are extra strong and not well ripened, it is better to leave them above the soil, as they are liable, when cut close, to cause rotting at the crown. A covering with manure to the depth of 2 inches is beneficial as protection; but where the ground is low-lying and damp, coverings which are likely to hold water are dangerous to the plants in severe weather. Channels to carry off surface-water as quickly as possible may be made with much advan-

tage to the roots, and of course to next season's supply of "grass." Beet, Carrots, a few Parsnips for a short supply, Salsafy, Scorzonera, Chicory, and Dandelion roots may be lifted, put in pits in dry positions, or stored in cellars; but all of these roots may be kept in the ground covered with ashes or litter, to be dug as required. Many prefer Beet and Carrots fresh dug from the ground: this is a matter of taste. We know they do not keep well when dug up in full vigour of growth at top and bottom. Cauliflower may now be turning in plentifully, and can be lifted to a shed or behind a wall to be kept back. Sudden changes to frost must be watched, which would probably do much damage to Cauliflower turning into use, as well as other things. Cauliflower plants may be planted under hand-lights and other protection to stand the winter. A frame full of young plants now would be of much value in March if well cared for; but they should have all the light and air possible—only kept under the lights when the weather is very severe and when rains are very heavy. The shelter of a wall or hedge from north and east is always a good position for young plants to stand the winter.

The earthing-up of Celery is now an important matter, and pains should be taken to keep the hearts free from the soil; a slight tie with matting or some other material (which would soon waste after the earthing-up was done with) is advantageous. Leeks grown as Celery plants may be done in a similar manner. Onions should now be stored, if not already done—a quantity of the best which are wanted to keep till May should be selected. Those which are firm, solid, and extra small at necks are the best. They can be tied into bunches or to sticks, and hung up in an open, thoroughly dry shed. Plenty of dry cool air is what suits them. If spread on floors they should be kept thin and free from any refuse. Winter Onions should be well hoed, but not to interfere with their roots. Weeds or litter should have no place among the crop. Parsley should be trimmed slightly, if not done in August and September. "Rogues" (as market-men call the coarse worthless kinds) should be pulled out, in order that the plants may be stiff

in growth and well hardened to stand against severe frost. Potato-lifting should be finished as early as circumstances will allow. They keep always well in Potato-pits, placed where water will not harbour about them. Dry airy shelves suit well for stock to be saved for planting. They should be separated from those which are for domestic use. Vegetable forcing will have already commenced in well-appointed gardens. French Beans coming into flower should have liberal supplies of air and all the light possible. Plant successions every fortnight, always being guided by the demand and means to grow them: heat about 60° at night suits them, with a rise of sun-heat. Seakale and Rhubarb may now be placed in heat,

the former kept close from air. Asparagus may be lifted when ready and placed on a bed or warm leaves about 70° to 80°, and covered with light rich soil, watered when dry, and when the produce is in full growth give plenty of light and air. Carrots may again be sown in frames when they are wanted young. They do best in light sandy loam. They must not be coddled for want of air. Mushrooms may be abundant now. They require little attention at this season out of doors, further than a soft covering of litter: make beds often, using good manure not exhausted. Tomatoes in bearing under glass may be treated as those outside: allow them plenty of light and air.

M. T.

### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

SUBSCRIBER.—1. *Asplenium demorphum*; 2. *Pteris longifolia*; 3. Cannot recognise; 4. *Lycopodium* or *Selaginella Wildenova*; 5. *Blechnum spicant*; 6. *Rheedia glaucescens*; 7. a *Cystis*, but not being in bloom cannot say which; 8. *Centradenia rosea*; 9. *Pteris tricolor*; 10. *Adiantum cuneatum*.

### ERRATA.

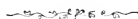
In our report of the Stirling Show, Mr Daniel Kennedy informs us that he, and not Mr Liddell, was first for Black Currants.

Mr Ferguson, Blackford Park, Edinburgh, informs us that his late brother planted the large vine at Speddock in 1840, so that it is not so old as represented in our September issue.



T H E  
G A R D E N E R.

NOVEMBER 1881.



LOW TEMPERATURES FOR MUSCAT GRAPES.



IN last month's 'Gardener' Mr Simpson takes exception to an incidental remark of ours, in the August number, on setting Muscat Grapes. He characterises our remark as "exceptional and damaging testimony" against his advocacy of setting Muscats at a temperature of 50°. We want, in the first place, to assure Mr Simpson that we have not the most faint desire to rob him of any credit that may belong to him for the advocacy of this or any other practice. If our practice and experience, and the results thereof, have been different from Mr Simpson's, we cannot very well help that; and our practice in several other matters connected with Grape-growing is not in accordance with Mr Simpson's teachings.

The setting of Muscats is certainly a question of experience, but it is something more,—it is a physiological question as well. And if Mr Simpson expects us to believe that his successful setting of Muscats is the direct result of a night-temperature of 50°, we must believe it on the faith of his, and in spite of our own, experience and observation.

Whether intentionally or not, Mr Simpson does not say to what degree he runs up the heat of his Muscat-house for the greater portion of the twenty-four hours with fire and sun heat. We suspect that the setting of his Muscats, as in the case of other growers, is dependent on having their pollen developed by the higher temperature and drier air of the day, and not by the damp air and temperature of 50° at night, for it is contrary to facts and physiology to think that it can be otherwise. We here appeal to the rank and file of those who have been most successful in producing really good Muscat Grapes, if it is not when the temperature is 70° to 75°, and not very damp, that Muscat

pollen appears in most abundance, and that the berries set best. Perhaps, when we know all, it will be found that Mr Simpson thus runs up the heat of his vinery for the better half of the day; and if we are correct in our supposition, then the relationship of  $50^{\circ}$  to the setting of his Muscats will appear in its true light.

It has been our experience in a long practice under divers circumstances, that Muscats have, without an exception that we can remember, set best when they have been subject to a high temperature for the greater part of the twenty-four hours. Not only so, but they have always set best at the hottest end of the vinery and nearest the pipes, as in the case of J. W. B., related in the 'Gardener' of last month. It would be interesting to know how Mr Simpson manages always to get his temperature down to  $50^{\circ}$  after a warm day and the application of fire-heat in May. We cannot do it, practising much farther north. We presume, from the condition of his Grapes about the middle of September, that his Vines are not more advanced than in bloom in May.

Not to go any further back in our experience, we had a house of Muscats in bloom last May, when the weather was exceptionally cold and sunless,—circumstances under which we think it best to force more gently. Those at the warm end of the house set perfectly, while three rods at the exposed gable and cold end set so very imperfectly that there were not sufficient impregnated berries to make up the bunches. Will Mr Simpson explain the reason of this? The Vines were the same variety, and all their circumstances exactly the same, except that the one was in a very much colder atmosphere than the other when in bloom. What is the opinion of other Muscat-growers?

We do not controvert the fact, that it is best for plants to treat them to a lower temperature at night than by day. Nature leads the way in this very forcibly; and it has been practised and written about as long back as we can remember—forty years at least. But nature does not teach us that it is the damp cold air of night that develops the pollen, and is directly to be credited with the setting process. We learned this quite forty years since from Dr Lindley: "It will be found that no pollen is scattered in cold weather, but in a sunny, dry, warm morning the atmosphere surrounding plants is, in the impregnating season, filled with grains of pollen discharged by the anthers. In wet weather the anthers are not sufficiently dried to shrivel and discharge their contents," &c. Because of this there is nothing the Vine-growers of France dread more than a wet, cold, sunless time when their Vines are in bloom; for the bunches, instead of flowering properly and developing pollen, do what the Vine-growers call "run." De-caisne refers to this fact in his work on botany, when treating of physiology. It has long been well recognised that when the bunches of Grapes have a tendency to be "wiry" and "run," that the best way of checking this tendency is to keep them rather warmer and drier instead of colder and damper. We have advocated compara-

tively low night-temperature in hothouses a good many years ago, but have never yet seen cause to alter our opinion or practice in setting Muscats, and are as convinced that a rather high temperature for the greater part of the twenty-four hours when the Vines are in bloom secures the best set, as we are of anything connected with the practice of horticulture.

All theory and practice are best tested by results ; and unless better examples of Muscats are exhibited as grown on the very low temperature system than are produced under higher temperatures, the advocates of a warmer temperature can well afford at least to wait.

More than thirty years ago we have seen splendid Muscat Grapes ripened in August, and cut from the Vines plump and fresh on the 16th of March. And these Vines, in spite of some very rough treatment, are fine Vines at this date. We have for years in succession started Muscats in February, ripened them to an unusually high colour before the end of July, and cut them without a wrinkle from the Vines in the end of February.

It is our opinion and conviction, founded on long practice and observation, that to make October, or even the end of September, the finishing time of Grapes, and more especially Muscats, is one of the greatest mistakes possible. Grapes, and especially Muscats, ripened so late, cannot possibly be of such fine quality nor keep so well as when ripened earlier under the influence of more sun. We once had a Lady Downes Vine at the warm end of a Black Hamburg house, where the fruit of the latter was ripened for using in July. The Lady Downes in question ripened thoroughly in August, and the Grapes always kept longer without signs of shrivelling and decay, and were better flavoured than others ripened a month or six weeks later. And we appeal to successful Grape-growers if Muscats do not always keep the longest in good condition, and are in every point better, that ripen and colour perfectly before the middle of September. Few Grapes keep better than perfectly ripened Muscats. Whoever attempts to ripen Muscats that are green and unripe at the middle of September, must be in a very favoured locality indeed if they accomplish their task without a considerable expenditure of coal. Is this not so, ye Johnstons, M'Kelvies, Hunters, and Hammonds, and many others besides ?



## T O M A T O E S.

It has been said that it pays better to grow Tomatoes and Cabbages than Grapes. Whatever may be said about the Cabbages, I have a strong impression that Tomatoes are at least a more certain and remunerative crop, while they require only a tithe of the preparation and care. That Tomatoes continue to grow every day in popularity and in demand throughout the country, there can be no doubt, for the

demand appears only to be limited by the supply. Large quantities are imported from France during the summer, but they are not of such good quality as our home-grown fruit, and do not fetch such good prices.

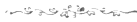
We grow Tomatoes here rather extensively, there being a demand for them in the house all the year round if they are to be had ; and an account of the results of the culture of a few plants, and the return in the shape of fruit which they have yielded, may interest your readers. We usually have a supply of fruit all the season through, or nearly ; but this season we had none from January to April—about the end of the latter month ; and it is an account of the production of our plants from that time till now, 6th October, that I propose to give.

The earliest batch of plants was sown in January, and potted in 12-inch pots firmly, and placed against the back-wall of one of the fruit-houses. The second batch was sown in March, potted in 10-inch pots, and placed in a similar position as soon as room could be found for them. The two lots together amount to sixty plants, and occupy a wall-space 55 feet long and about 12 feet high, being set in two rows, one above the other. During the whole season we have supplied the house demand from these plants, sending large quantities to London twice a-week during the season ; but as these have only been entered as “ baskets ” or “ dishes,” I cannot tell the weight, but it has been very considerable. The last week in May we began disposing of surplus fruit to a fruiterer in the nearest town, to whom, up to this date, we have sold 413 lb. Up till 5th June we got 1s. 6d. per lb. for all we could send ; from that date till 2d August, 1s., and afterwards 9d. and 6d., but the price will go up again soon. The total amount received for the whole is £15, 7s. 11d., and it will probably reach £20, for the plants are still growing and bearing heavily. We usually grow the common red, which is the most productive we know. The plants have been potted in rough loam and old mushroom-dung, and have received plenty of strong liquid-manure every day. I sold all the fruit to one man, and could not half nor quarter supply him. We could have disposed of them by the ton in two or three towns round about if we had had them, and they pay both the grower and the retailer. In order to grow the Tomato profitably it must be done well, like other things ; but what the plants need most are abundance of light, a suitable temperature, and plenty of food. Very little attention otherwise is needed. Bands of string are run along the wall, to which the plants are tied, rough-and-ready fashion, and they are allowed to grow as much as they will. In pots they do not require much pruning. Planted out, I have had them more than 12 feet high, but they did not bear better than plants half that height in pots, which take up just half the room. They do uncommonly well in common wooden frames, but they should be heated, for the sake of getting the plants forward in spring, and into a bearing state as soon

as possible. In such frames they do just as well as on a wall, if the branches are trained over a layer of old Pea-sticks, or something of that kind. A house or pit, that could be built for perhaps £100, I estimate, would produce nigh upon £100 worth of fruit in the season, and one man could attend to a number of such houses. One year I saw a number of plants in a nursery near Manchester, that were being prepared for winter forcing, as the price expected then was 2s. 6d. per lb. ; but the most profitable season to grow them is during spring, summer, and autumn : during the dark days of winter they do not bear abundantly enough to pay.

J. S. W.

[There can be no doubt that many who are now marketing second and third rate Grapes would make more money by devoting their glass to Tomatoes, which are only beginning to be relished, for it is only really first-class Grapes that pay now ; and Tomatoes are so much more easily managed, that where first-class Grapes cannot be grown, almost any one, as J. S. W. says, can produce good crops of Tomatoes.—ED.]



#### LYCASTE SKINNERII.

WHERE really refined flowers are in request, it is found that it “ pays ” to grow a good many kinds of Orchids. Masses of *Dendrobium nobile*, *Ceologyne cristata*, *Lycaste Skinnerii*, and a great many more, produce flowers in quantities of an extremely valuable kind during winter when flowers of any kind are scarce and most appreciated ; and not only so, but those of most kinds will last for a very long time compared with others. Roses, *Eucharis*, *Lily of the Valley*, &c., may be as beautiful and as acceptable as the Orchids named, indeed, must be ; but how very fugitive they are compared with *Lycaste Skinnerii*, or *Dendrobium nobile*, the flowers of which last for weeks and even months ! Even the old *Cypripedium insigne* is by no means to be despised ; and then, how long the bloom of it lasts in perfection ! We have known them put into glasses, kept there for a week or two, thrown out among other waste flowers, gathered out of the dust-bin, kept a fortnight, sent in again, and last another fortnight ! But for the bad usage they got there is no reason why they should not have lasted a month longer than they did.

Few Orchid flowers, or flowers of anything else, keep better or longer than the great waxy flowers of the glorious *Lycaste Skinnerii*, and few are more easily grown. The plants are cheap : a dozen of nice healthy ones of ordinary kinds may be had for £4 or £5, which will be worth £50 or £60 in the space of a dozen years, if well managed. Then the pure white kinds are to be had for from £5 to £50 each, and in good hands these will prove a really good investment ; for, when growing freely, they every now and again, at by no means unreason-

able periods, double their number of "leads," and, of course, their value. So, while reaping a rich harvest of sumptuous flowers, abundant enough to pay for labour, coal, and house-room, the original sum will be still there and acquiring interest. Of how many plants could this be said? Labour, coal, interest in money invested, and all, generally find an annual deposit in the dunghill in the case of nine-tenths of the plants grown for furnishing cut-flowers. "The end thereof" is worth considering.

*Lycaste Skinnerii* grows best in a cool Orchid-house—that is, a house kept just a little warmer in cold weather than an ordinary greenhouse. In summer, at least during hot clear weather, a greenhouse would be too hot and the air too dry. The air for this and all cool Orchids must be moist. In the absence of a regularly appointed Orchid-house, a temperate fernery, such as exists about many places, large and small, will do very well. The plant will even do in a stove, but it does not flourish there as in a cooler house.

Many writers recommend fibry peat for growing it in—we recommend clean fresh sphagnum and charcoal only. Having fairly tried both, we have made up our minds that so long as clean fresh sphagnum is to be had, not a particle of peat will ever be used again by us for *Lycaste Skinnerii*.

It is generally over-potted—but most Orchids are. A six-inch pot is big enough for a strong plant with three or even four seeds, although many growers would put such a plant into at least an eight-inch one. It is a great mistake. Orchids never thrive so well as when the pots in which they grow are crowded with roots. This is especially true of those that require to be kept constantly moist, and *Lycaste Skinnerii* is decidedly thirsty.

In potting plants of the size we have named, six-inch pots should have about an inch and a half of broken charcoal put into the bottom for drainage. The rest of the pot is to be filled with charcoal and fresh moss (half-and-half) and roots. Through this the water will rush, and everything will be kept clean and sweet. Cleanness and sweetness in the soil and in the air are the two main features necessary in Orchid growing. Happy is the man whose circumstances allow him to secure these points!

In turning plants out of the old pots—an operation which should never be done when they are thriving and the potting material sweet, even although it should be *all* roots—take care not to tear off the points of the growing roots, and leave them sticking to the sides of the old pots. After it is out, carefully wash away all earthy and decaying matter, and cut clean away any dead roots. In re-potting, do not crush the remaining roots all into one corner, but arrange them regularly among the new material; nor crush the sphagnum into wet lumps either, but press the whole *together* pretty firmly. If too loose, it will hold too much water and turn sour. Have the whole a little

higher in the pot than it is ultimately to be ; and, in finishing off, work the whole down pretty solidly. Finish with short growing sphagnum, and keep it growing by occasional dewings until fairly established. Dead moss covered with filthy slime looks bad, and kills the roots as they push from the base of the bulbs, which should stand an inch or more above the rim of the pot and just clear of the moss. When the moss is growing the roots enter it readily, and thrive in it. Potting should be done just as the young growths appear from the base of the old bulbs in spring.

After potting, the material in the pots must be kept just moist and no more, until it is fairly occupied with roots ; then water may be liberally given. After one-third of the whole material in the pot is roots, healthy and hungry, give once a-week a little very weak manure-water, and your plants will make up great grand bulbs, throw at least half-a-dozen flowers each, break double ; and your Orchid-growing friends who believe in peat, big pots, and only clear water, will declare you have *grand varieties*.

Scale sometimes attempts the colonisation of the leaves. Soapy water and a sponge will exterminate it. In hot weather a dash with the syringe will do good ; but try when the air outside is dry to keep that inside moist by sprinkling plenty of water about three times a-day. Shade from bright sun, and never let the plants get dry. The "drying-off" of cool Orchids, as sometimes practised, is ruinous.

A. H., H.



#### N O T E S.

A GOOD *Dendrobium* just now in flower is *D. formosum giganteum*, with its great ivory-white flowers almost lily-like in size and purity, the only bit of colour being a broad blotch of orange-yellow on the lip. I saw this in first-rate condition at Loxford Hall the other day, the plants being grown in wood baskets, suspended from the roof of a warm Orchid-house. The great blossoms are valuable for cutting, and if left upon the parent plant in a suitable atmosphere they will endure for a month or six weeks quite fresh and perfect. *D. chrysotis*, another good kind, is quite distinct, bearing five to nine golden-yellow flowers on a drooping spike, the elegantly fringed lip being a great ornament to the flower.

*Vanda cœrulea* is one of the choice and popular Orchids now imported by the hundred every year ; and yet how rarely is a really good and perfectly healthy plant to be met with in our collections ! It flowers very freely if it has been grown well. The difficulty in this matter is to induce free and healthy growth. It is one of the hill Orchids of India, which will endure a great range of temperature. I find a warm *Cattleya*-house suits it best, being particular to leave a ventilator quite

near to the plants open night and day, except in the most severe weather. If potted, the compost of charcoal, crocks, and sphagnum cannot be too loose and open; but I find it succeeds best upon a shallow raft of hard thorn or elder-wood. It delights to twine its great thick roots on timber, or to shoot them out into the genial moist atmosphere.

There has been a good deal written, at one time or other, concerning the "resting" and "drying off" of orchidaceous plants, and there are some species which will not succeed for long unless so treated. *Pleiones* and *Calanthes* are examples; but there is a large proportion of species that do not require—even although they may withstand—a period of absolute repose. It is more to the point to grow Orchids in small, light, span-roofed houses, where they may occupy positions near to the glass, and so obtain full advantage of sunlight and air. Plants so grown flower freely without any of that "resting" or "ripening" process to which the Orchid-growers of the past attached so much mystery. Give Orchids plenty of sunlight, air, and moisture, especially atmospheric moisture, and abundance of flowers will be the result.

Of good hardy flowers for October there is no scarcity. The best just now are *Primula capitata*, bearing dense purple flower-heads on long stalks. *Rudbeckia Newmanni* is producing its black-eyed, golden, daisy-like flowers in abundance; so also is the purple-flowered *Senecio pulcher*. *Tritomas* contrast boldly with the silvery plumes of Pampas-grass and late-planted *Lilium auratum*s, and specimens are still gay and showy. *Eryngium amethystinum* is still effective; so also are single *Dahlias* and *Michaelmas Daisies* (*Asters*). *Aster laevis* is one of the best now, forming a dense mass of nearly blue flowers, each the size of a shilling. How comes it that the golden *Jasminum nudicaule* is flowering thus early? (Oct. 11th.) Summer-flowering *Chrysanthemums* are yet gay. Of all perennial Sunflowers, the finest is *Helianthus multiflorus simplex maximus* (Parker), a noble plant now bearing flowers 4 to 6 inches in diameter, and of a fine golden colour.

I was at Hampton Court the other day with some friends, and while admiring the best portions of the carpet-bedding very much, I could not help regretting the fact that hardy flowers are so wretchedly poor there. And yet, in but few other gardens I just now remember are hardy flowers more appropriate than at Hampton—an old English residence, and one of the few palaces at which somewhat of the old-fashioned pleasance still remains. The sunken gardens on the route to the old "penny wonder" (I mean the Vine, not the maze) were doubtless once enlivened with the Daffodils, Carnations, Rockets, Bears' Ears, and other old English flowers, of which Parkinson speaks so knowingly and so lovingly in his 'Paradise.' He would be a wise man in his



time who, possessing an old-fashioned garden like that at Hampton Court, could rise to the occasion, and fill it well and boldly with equally interesting and appropriate old-fashioned hardy flowers.

*Anthurium Andreanum* in reality is, after all, a far finer and more effective plant than either drawings or descriptions have yet led us to believe. I saw many plants of it in brilliant array of many spathes some few days ago, and shall not forget the sight. Originally discovered by M. Triana, the honour of introducing it alive to Europe for the first time remains to Mr Ed. Andre. The brilliancy of the sculptured spathe as seen in the sunlight is wonderful, quite putting Schertzer's plant into the shade, while its spathes endure for ten or twelve weeks in perfection. In "another place" I saw a marvellous variety of this plant amongst a mass of Orchids in bloom. The effect of it was wonderful, its scarlet effulgence heightened by contrast with the great snowy flowers of *Dendrobium formosum giganteum*, *Odontoglossum Alexandræ*, and the drooping sprays of *Oncidium Rogersi*, and other choice species.

Second only in value to the pearly *Eucharis* are *Pancratium fragrans* and *rotatum*, and their near ally *Hymenocallis macrostephana*. All are most valuable for choice white flowers during the autumnal months, and when once well established, no plants can possibly be easier to cultivate and bloom. Of the same class and culture is *Urceolina pendula*, with its gracefully drooping golden bells, and just now very freely produced. So much for the stove. For the conservatory or greenhouse few plants can rival the old and well-known *Valotta purpurea* when well grown. The great secret with all bulbous plants of this class is to grow them on until the pots are filled with bulbs and roots, after which time the plants may be judiciously assisted when growing by an occasional allowance of liquid manure, or a handful or two of soot, guano, and bone-meal, well mixed together with a little potting soil.

A plant introduced years ago with a great flourish of big trumpets is now very rarely seen. I allude to the fruiting Myrtle, *Eugenia ugni*. It produces its black-currant-like fruits very freely; and by some its Strawberry-like flavour, blended with a Pine-apple-like perfume, is much admired. It is well worth a place in a cool conservatory, and may be grown in the open air during the summer months.

*Calceolaria bicolor* is a most effective old species when well grown. I saw it in a cool greenhouse the other day at Mr Joad's of Wimbledon, trained up a rafter, and admired its masses of yellow and white flowers. The plant was growing in a deep border of light loamy soil. The annual *C. chelidonoides* is, I find, much admired, although a weed on our

sandy borders. It grows freely every year from self-sown seeds, and forms a nice companion to similarly habited *Linarias*, especially for *C. maroccana*, to which it is an effective contrast.

One of the finest of fruiting shrubs I have seen this season is the old *Euonymus latifolius*, the broad-leaved Spindle-tree. *Cratægus coccineus* has also been very fine. Hollies are everywhere laden with berries, yellow and red; while one of the old Yew-trees at Hampton was literally all aglow with berries. I saw a bush of the old "Tea-tree," *Lycium barbarum*, the other day, bearing long racemes of vivid scarlet berries—rather a novelty in its way, but most effective, as I can testify. One of the best of all fruiting shrubs when seen in perfection, as sometimes near London, is the common blue Passion-flower (*P. cærulea*). It blooms splendidly here, but we cannot get it to fruit. Perhaps the age of the plants has something to do with the question, or cross-fertilisation may be to some extent necessary. Its drooping egg-shaped fruits are so showy that it is worth a little extra trouble in order to be sure of having them.



#### ALLAMANDAS FOR AUTUMN AND WINTER.

SELDOM are these plants grown for a display of their rich golden flowers during the declining months of autumn and winter. Generally they are to be seen in great profusion through the summer months, when flower-shows abound, and are therefore largely cultivated by exhibitors of flowering plants. These growers, in the majority of cases, have their plants in good condition; but in many gardens where plants are not grown for exhibition purposes, it is difficult to find much attention paid to Allamandas—in fact they are not generally well cultivated. However profusely flowered and beautiful they may appear when trained upon balloon trellises and staged for exhibition, they cannot compete, when thus grown and trained, either for effectiveness or beauty, with those grown as climbers under the roof of a plant-stove. When well grown in this position, they by far surpass any other plant I have ever seen employed for the same purpose.

If the house in which Allamandas are grown is rather lofty, so much the better, as the plants can be allowed to hang some of their shoots down from the wire-work to which they are trained, and thus present a more natural effect. If the house is not sufficiently lofty to allow the growths to suspend from the roof, they will not look stiff if trained to upright wires. The flower-shoots will grow fully 2 feet in length and hang beneath the roof, thus presenting a natural rather than a stiff appearance. Those who have never seen the roof of a house literally covered with *A. Wardleyana* (*Hendersonii*) cannot form any idea of the gorgeous and pleasing effect they produce.

Only a poor conception can be formed of the capabilities of this plant to produce a striking picture, when grown and trained upon a 4 or 5 feet trellis.

Allamandas bloom fully eight months out of the twelve, and a solitary plant, if well and judiciously grown, will produce flowers over that period of time. With about three plants, started at different times, it is not difficult to obtain a supply all the year round. If a plant commences flowering in May, it will go on producing blooms until after Christmas; and if started a month or two later, it will of course flower until February or March. One important point to be considered is—those plants intended to bloom through the dark days of winter should not be allowed to commence blooming too early in the season. They appear to become exhausted in producing quantities of flowers in much less time during the sunless days of our winter than is the case during summer; and those that wish to achieve success should make provision for this.

Some may suppose the flowers of Allamandas are of but little service for cutting, except the entire stem bearing the flowers is severed from the plant; but they are invaluable, especially during autumn and winter. Here the single flowers only are removed, with no wood attached, and we pack hundreds in course of the season, and find they travel well. For low dishes or vases, these flowers are graced with a few fronds of Maidenhair Fern, intermixed with a few sprays of any other flower that will contrast well and rise out lightly from the ground of yellow.

Allamandas are easily propagated by means of cuttings at any season of the year when young growing shoots can be obtained. If rooted at once, a good and early start can be made the following year. They should be inserted singly in small pots, and if plunged into bottom-heat will quickly throw out a number of roots. When the roots reach the sides of the pots they should be transferred into others, 6 inches in diameter, and the one shoot allowed to extend until it reaches the height where the roof commences. The young shoot should then be pinched, in order to cause it to make two, which should be allowed to extend in an upright direction until the end of the season. They must be transferred into larger pots as they require it, until placed in 10-inch ones, which are large enough for the first year. The young plants will, if properly attended to, produce a few flowers during the season, and make plants as strong as ordinary pot-Vines will do in a season from eyes.

When the wood is well ripened, the plants must be brought to a standstill and rested for a time, and then cut back, leaving each shoot fully a yard in length. The shoots should be laid horizontally at the base of the roof, after placing the plants in 12-inch pots. By this means the shoots left will break growths from nearly every eye, which should be trained upright, except the extreme shoot at either end,

which should be allowed to run in a horizontal direction as far as it is thought prudent to prune the plant back to the following year. If run about a yard on each side, and then allowed to go upright, the foundation is laid the second season for a plant to furnish a space of four yards of roof. The plants can be extended on this principle until they fill the whole of one side of the house, or as far as it is necessary to extend them. I filled the side of a span-roofed house, 40 feet long, with three plants, the third season from striking the cuttings. Two plants now occupy the space on each side of the house: one would have covered it before now, but two are preferable if a continuous supply of bloom is required. One plant can be retarded while the other is pushed forward. By this system the house will not present such a grand display as if the whole was literally covered with bloom at one time. This is a matter for individual cultivators to determine, according to their taste and circumstances.

The soil most suitable for Allamandas is rich loam, with a seventh of manure or small bone-dust, and sufficient sand to make the whole porous; they require a rich soil to grow them well. In potting, the pots should be well drained; the drainage being covered with a layer of rotten manure before placing in any of the compost, which must be pressed firmly into the pots. Allamandas require potting as firm as it is possible, which causes the wood to be short-jointed, and the quantity of bloom greater than if loosely potted. When the plants are young, and are being grown on, they can be potted from time to time without reducing the old ball. But when in pots sufficiently large, and it is not necessary to increase the size, the ball can be reduced to one-half, and placed back again into the same size of pot. When placing plants in the same pots, sufficient room is left for a good mulching of cow or other manure, when the pots are well filled with roots. This assists the plants greatly, and the roots quickly lay hold of it. It is wonderful what a large amount of growth Allamandas will make in a 20-inch pot. This size would be large enough for a plant to grow in to cover the side of a house 40 feet long, and have a distance to travel of 16 feet or more up the roof of the house, and produce thousands of large blooms.

While growing, these plants require liberal supplies of water. At first, after potting especially, when the roots have been considerably reduced, they must be carefully watered, giving more as they develop in growth. When they have to cover such a large space as alluded to above, they will require, during hot weather, water at least three times a-day. When the pots are full of roots, and have been top-dressed, manure-water must be freely given every time the plants are watered, or the blooms soon diminish in size. Soot-water every alternate watering is very beneficial to them: not only does it keep the foliage a fine dark hue, but adds brilliancy to the flowers. Water must gradually be withheld as the season for resting the plants ad-

vances, and while at rest they need no water. After resting, the balls must be thoroughly soaked in tepid water in a tank, and be allowed to drain well before potting.

In bringing Allamandas to rest, the wood is generally well ripened at the bottom if pruned as I shall describe. When the plants have finished blooming and have been sparingly watered for about a week, they are allowed to go dry until the foliage flags, then a little water is given, but not sufficient to thoroughly soak them. If they are well checked at the first attempt they are soon brought to rest, and no harm results from the sudden change if the wood is quite ripe. After this, sufficient water only is given to keep the wood from shrivelling. The plants are then partially pruned back, cutting away all the unripe wood; no more water being given until the balls are soaked ready for potting. Allamandas do not require such a long rest as many suppose; six or eight weeks are ample, and the plants are ready for starting again.

The system of pruning I adopt is to treat Allamandas like Vines, after the foundation is laid to cover the required space. The plants are cut back to one or two eyes, and when pruned have only two rods, similar in every respect to two Vine-rods pruned on the short-spur system. The spurs can be as near or as far apart as cultivators wish. At one time I trained a shoot up every wire, which was about 6 inches apart; but this shaded the house too much for the other plants growing beneath. The growths are now trained nearly 18 inches apart, and the flowers are much finer than when I trained up more shoots.

Shade is beneficial to these plants for a few hours during very hot weather; the flowers last longer and retain a brighter colour.

Insects never attack my plants; but Allamandas are liable to be attacked by a small yellow thrip, which is easily eradicated by freely using the syringe.

When treated as described—both as to rest, pruning, and starting sufficiently late—no plants are more easily bloomed profusely during autumn, winter, and spring.

WM. BARDNEY.



## HINTS FOR AMATEURS.

### HARDY FRUITS.

Most cultivators prefer this season for the planting of fruit-trees and bushes, and where it could not be performed by the end of October the sooner it is in hand the better. It is well when one can go to the nursery and pick out their own; they see what they want, and can choose it, and in most cases they get the same. Clean, healthy, young trees we prefer to those stunted and cut back often: maiden trees, in the hands of those who can train them, answer all purposes well. Cut-

ting in severely young trees, without any real object in view, is a practice which should be one of the past. We have often covered walls with trees which had none of their leaders cut back, except when they were growing grossly in summer: they were then stopped, and perhaps the three or four laterals thrown out would be left to fill up the space. Proper restriction at the roots (except in the case of large orchard-trees) is far more preferable than cutting in branches. Where planting is to be done, have the ground well trenched; place brickbats or stones immediately under the tree, to prevent roots running downwards. When roots get away from the influence of sun and air they soon lead the tree to barrenness. Cut off any bruised or mutilated roots clean; lay all flat out, separating the fibres as much as possible; work among them some nice fresh loam, then fill all up, gently tread, and place mulching neatly over the surface. Tie up the branches lightly to the walls or fences to keep them safe from wind, and allow them to remain unfastened permanently till the soil sinks to its minimum level: much mischief is often done to the bark by being in a hurry in tying up the branches to the walls. In orchards and open spaces staking securely is of primary importance.

It is well (as we have formerly hinted) to learn something of the kinds of fruits doing well in the localities where planting is to be done: planting collections instead of selections often leads to disappointment. Fruits do not always do well in every soil and locality. Even in localities, influences of soil and other circumstances change character as well as success. Pruning of bushes, Apples, Plums, Cherries, and Pears, may be done as soon as the leaves are off. Pyramid Apples and Pears, if well stopped and thinned during the summer months, require little now, further than regulating what is intended for spurs. There are two styles of Pyramids: one having all the fruiting spurs on the outside of the tree, and the inside filled up with the strong permanent wood; the other has all the branches spurred from top to bottom, outside and inside. Whichever plan is preferred, the safest method is by restriction at the roots, that the spurs should be made to bristle over every part of the tree. Look out for canker, and where it may be seen let the tree be lifted and replanted, keeping the roots up, and well mulched. Plums do with much the same treatment as Apples and Pears, also Cherries, except Morellos, which do best with thinning them, and leaving the wood full length; but means, by lifting or root restriction, should be used to prevent gross growth—short, stiff, spur-like wood is always fruitful. The thinning of orchard trees or standards of moderate growth may be done as early as time will allow. We have had such trees from the nurseries, which never had a knife on them, planted with the shoots full length. The following year these growths were knotted all over with spurs—fruit-bearing then becomes certain. The same principle is adopted with Pears, Plums, Cherries, &c., on walls as when grown as standards. Timely and skilful treat-

ment in summer is half the battle ; absence of crowding, and healthy, well-developed foliage, are points which are of importance. The best system of training we do not know, as all ever we tried (other things being equal) were attended by same results. Training may be done as soon as opportunities afford : with fans the centre may be kept open, and cut further back than the others, as side-shoots are not likely to grow so strong as those which are more upright ; evenness of growth must be studied if the tree is to be handsome and to cover the wall profitably. Horizontal training is simple, and suits every tree well—Pears and Peaches have been with us specially fine on trees trained thus—not that we suppose training itself had anything to do with it, but this we know, that the work on the trees required less than half the labour of fan-trained trees. Upright or perpendicular training can be done with two shoots, one taken right and the other left at bottom—say a foot from the ground—and the upright shoots all start from these at about 9 inches or 1 foot apart. I have frequently trained seven or nine shoots on fans into perpendicular trees, which answered capitally. We have had Peaches, Figs, and Cherries do well by this training, but taste is the chief matter in this. Whatever system is adopted it should be done well. Now is a good time to clear trees from moss, and whitewash them with lime. Renovating old trees by clearing away the old soil, and mulching them with good cow-manure, is a practice which will pay itself in course of time. Dwarfed trees, which are a mass of fruiting spurs, may have the same treatment as that advised for old trees. Rasps may be shortened and tied to their stakes, or arched over ; a good mulching is advantageous to them, also to established Gooseberries and Currants after they are pruned. These may be spurred, cutting out some old branches every year, to be replaced by young growths ; keep centres open, and leave the upright growths. Black Currants may be regularly thinned all over, avoiding crowding the shoots ; top any which may be growing out of bounds. Suckers from all fruit-trees and bushes should be cleared off closely : they ruin the trees and bushes in course of time.

#### ORCHARD-HOUSE.

In this structure trees will be at rest. If they are in pots they can be packed closely at one end, and the space used for protection for vegetables, such as Endive, Broccoli, Parsley, for use during severe weather, &c. If such space is not required the trees may be trimmed, cutting out all useless wood and any dead spurs. Put drainage right, and paint the trees with soft-soap and sulphur mixed, or Gishurst's Compound. If scale has appeared, a thorough washing of the parts may be necessary : surfacing of the pots may be left later, as the trees would not get the benefit of it in their present condition. Any transplanting or root-lifting of trees planted out not yet attended to, may be done as early as possible. Walls may be whitewashed ; painting

can be done when weather is dry. We prefer doing the inside of such houses when foliage is gone, and the outside in spring, except where lights can be taken off altogether. In such cases the trees in pots can be taken outside and plunged in ashes.

#### FLOWER-GARDEN.

Dahlias, Cannas, and other plants in danger of frost may be lifted and placed in dry quarters free from frost. They can be gone over some wet day and cleaned. If it is desirable to leave these in the ground, means (by coverings of ashes or litter) should be taken to prevent injury by frost. When Dahlias have been left in the ground they come up with extra strength, and can be treated as if they were herbaceous plants.

Finish bulb-planting and other spring bedding-plants. Protect plants on walls, such as Myrtles, Fuchsias, &c., which are not really hardy—one cannot forget the frost of last season, and how many were caught napping. Fern, Spruce branches placed over a little straw, or straw mats, are some of the useful means adopted as protection. Bedding-plants should be looked over frequently; avoid making their roots sodden, but intense dryness is also an evil that should be avoided. Pansies and Calceolarias, not made into cuttings where such are wanted, may have attention without delay—a cool dry pit suits both of these well. We often (in fact more or less every year) put Pansies on an open border, but those which can have protection in extra severe weather are best at planting-time. Rose-planting may now have attention: deeply trenched and well manured ground suits Roses. If they are budded, or grafted close to the roots of the stocks (which is best), the junction should be buried when planted, and the whole well mulched with farmyard manure. Turfing, gravelling walks, destruction of weeds in lawns, turning walks, collecting leaves, and repairing box or other edgings, are some of the items for consideration at this season; and the sooner they have attention the better. Tree and shrub planting may be pushed forward without delay. Thinning of trees may have attention at any time in the winter months; as the neglect of this means early ruin of shrubs and trees. Stake well—or use ropes forming triangles round the stems of the trees, employing cloth or haybands to protect the bark.

#### PLANT-HOUSES.

At this season plenty of flowers are to be had; the Chrysanthemums being at their best, also Salvias of sorts; *Lobelia cardinalis*, which has been grown in pots for decorative purposes under glass, *Habrothamnus*, Tea Roses, Tree Carnations, Winter Heaths, Camellias forced in early season, Eupatoriums, Roman Hyacinths, Vallotas, Violets in pots, Primulas, Coreas, some others. Where there is a mixture of such plants, it is well, if possible, to place those which will hurt



by crowding near the ventilators — such as Heaths or other hardwoods. Use fire-heat to expel damp, and keep out frost should it come; but at all times treat this as a necessary evil. Avoid cold cutting winds; keep all surfaces and foliage clean in the show-house; see that no plants are water-logged, and if the soil is hollow round the collars it should be filled up, and the surface raised slightly next the collars. Cinerarias, Calceolarias, and Primulas coming forward for future decoration should be near the glass, have plenty of light, and be judiciously aired and watered. Pelargoniums should not have damp about them; they are liable to spot. All bulbs should be potted, and placed under tan or clean ashes till they spring an inch or so; then take them to light, giving plenty of air. Most kinds, especially Tulips and Hyacinths, can be forced in batches as required. Get plenty of shrubs and other plants into gentle warmth and moisture, to keep up succession of flowers. Stove-plants, which have been previously referred to, will now be well forward, and should not be allowed to remain in damp manure-pits. They are all valuable objects for decoration during the short dark days, and ought to have the best of attention. The general work in stoves differs little from last month.

M. T.

## GREENHOUSE PLANTS.

### NO. VIII.—THE ACACIA.

A GREAT number of species belonging to this genus are known to botanists. Several are natives of tropical regions; but those found growing in the more temperate parts of Australia are, from a horticultural point of view, the most valuable, and it is of them that we would speak in this paper. Those Australian species with which the writer is acquainted are all extremely handsome plants, both as regards their habit or style of growth, and the graceful foliage they bear. The foliage of some species, as, for instance, that of *A. dealbata*, vies in graceful beauty with the fronds of most kinds of *Adiantums* or *Maidenhair Fern*. Young plants of *A. dealbata*, of from 1 to 3 feet high, are very useful and appropriate for room decoration. Another species, with fern-like foliage, and equally suitable for the same purpose, is *A. lophantha*. This latter species is a stronger grower, and coarser in all its parts than the former. The two, however, have a striking resemblance (especially their flowers) to each other.

*A. pubescens*, like the two former species, is furnished with bipinnate leaves, and is as desirable a plant to cultivate. All the Australian species have yellow-coloured flowers—some being of an intense golden colour, while others are of a pale lemon or canary colour. Their shape differs somewhat on different species: for instance, the flowers of *A. armata* appear like little golden balls springing from the

axils of the leaves, while those of most other species resemble miniature lemon-coloured bottle-brushes.

The various species of *Acacia* to which we are at present referring are free-growing, easily managed plants; and seeing that this is the case, and that they produce their flowers freely during the winter and spring months in this country, it is somewhat strange that so few of them are to be met with in general cultivation, especially when we remember that in addition to their free-flowering habit they are clothed, at least several of them, with very ornamental foliage that renders them at all seasons, whether in bloom or otherwise, attractive objects in whatever position they are placed.

A large healthy bush of *A. armata* when in full bloom during the winter months is a very telling plant for conservatory decoration, especially if arranged in combination with stately Palms such as *Kentia Australis* or *Seafortha elegans*. Then *A. Drummondii* when in flower is a real gem, and fit to occupy a place in any position where flowering plants are admissible. This species is of a more slender and twiggy growth than any of the others that we have mentioned; and if the cultivator keeps it in good health, and free from red-spider and other insect pests or enemies, it will not fail to reward him with an ample crop of flowers for his trouble and attention.

Another species, *A. Riccanna*, deserves to be specially mentioned. Its style of growth is distinct from that of any of the species mentioned. The branches, foliage, and flowers of this plant assume a drooping position, that imparts to it a very pleasing and interesting appearance at all seasons of the year. It succeeds admirably under pot-culture, although I have heard the reverse stated; and when planted out in a prepared border, it is excellent for training on the rafters of large conservatories or other cool glass structures of large dimensions.

There are several other species that deserve to be mentioned, but those already named are sufficient to direct attention to the at present partially neglected genus *Acacia*, and I will now add a few notes of a cultural kind.

*Propagation.*—*Acacias* may be increased by cuttings, layers, or by grafting. By seeds, however, is the quickest and best method of propagating them. Seeds of most kinds can be obtained at a cheap rate from any respectable house in the seed trade. If good, they germinate quickly at any season of the year if placed in a bottom-heat of from  $60^{\circ}$  to  $70^{\circ}$ . The best time, however, to sow them is in the months of March and April. Before the seeds are sown it is advisable to soak them for twelve or fourteen hours in water; and if the water, at the time they are put into it, is at a temperature of  $100^{\circ}$ , no harm but good will follow.

The seeds should be covered about half an inch with the compost, which should consist of sandy loam, and be pressed firmly on to them.

As soon as they are sown, give a good watering through a fine-rosed watering-pot, and place the pots or pans containing them in a bottom-heat as above indicated, and cover them with a bell-glass. In a short time the young plants will appear, and as soon as they are fit to handle, pot them separately into small pots, draining the latter in a proper way, and using a compost similar to that in which the seeds were sown. When the young plants have got their first shift from the seed-pan, give them a good watering, and place them near to the glass in a frame or pit, keeping the latter moist and the plants shaded until their roots have taken hold of the fresh soil, which will be in a few days. The shading should then be removed, and except in the case of very bright sunshine, it need not be again applied. A constant supply of fresh air should play about the plants during the summer and autumn, and they should not at any season be allowed to suffer for want of water at their roots.

If Acacias at any time get over dry at the roots, the foliage on the lower parts of the plants turns yellow and falls off, thereby destroying their beauty. Repotting should take place the first year as often as the plants fill their pots with roots. It is not, however, desirable to continue the process after the first week of September; and by this time, if all has got on right, many of the plants raised from seed in the spring will be of a useful size for taking part in the general decoration of the establishment.

The second and future years once will be often enough to repot the plants, and this should be done early in spring. When repotting large plants of Acacias, use for a compost the best sandy loam procurable, adding thereto at the time a good sprinkling of bone-meal. Supply good drainage, and make the fresh compost firm in the pots when the plants are repotted. An occasional application of manure-water during the summer season to the roots is beneficial to Acacias, especially if they have their pots filled with roots, which is generally the case when the plants are large. During the summer season give them a thorough washing occasionally with the syringe or water-engine. This will keep red-spider and thrip under subjection, and otherwise be of benefit to the plants.

If green-fly appear, fumigate in the usual way; and if brown-scale or mealy-bug infest the plants, use the latter for fuel, and set about raising a fresh stock of plants from seed.

J. HAMMOND.



### THE FLOWER-GARDEN.—A REVIEW, WITH SUGGESTIONS.

IN those gardens where the old-fashioned style of bedding alone is carried out, the season just past will have been a rather disappointing one. In our own case we planted out extra-strong flowering plants of

Geraniums and other semi-tender bedders the first week of June, in weather which, for its intense heat, had not been reached for many years previously; and on the 10th of that month had frost which cut down *Tropæolums* and damaged dwarf *Ageratum*s; and from then till now, we cannot report having experienced any summer weather. The behaviour of *Coleus*, *Alternantheras*, *Zeas*, and other tender plants, put out at end of June, might very properly be characterised as a continual state of uncertainty whether they should brave it out or succumb at once. *Coleus* have had to be twice planted, and finally to be replaced by a hardier substitute. Up till the memorable week of the Edinburgh Review, the beds and borders were, notwithstanding the cold weather, as satisfactory as could be desired: *Calceolarias* had been a mass of bloom for three months, *Geranium*s and others effective for two, beds of mixed *Geranium*s and *Violas* from the day the former had been planted out. Since that time no tender-flowering plant has been effective, with the exception of dwarf *Ageratum*, which only gives in to frost. *Calceolarias* have been, perhaps, quite gay enough, and the *Geranium*s we use for flowering alone (only seven beds) have been about half this latter time without flower; but when kept clean, and the withered trusses removed, it is wonderful how two or three days of dry weather brightens them up again. The beds and borders planted with leaf-plants are quite as effective now as they have been throughout the summer, and these alone would be a good foil to the slight enforcement of greenery we have been obliged to put up with. For hardy flowering plants this has been a good autumn: in addition to the regular autumn bloomers, quantities of those whose usual flowering season is early summer again coming into flower now. Such very effective plants as *Pentstemons* and *Phloxes* have continued without cessation, and are still throwing up fresh flowering shoots. Double *Pyrethrums*, too, are flowering more freely than I have ever before had them do the second time. *Dahlias* are quite a host in themselves. *Carnations* and *Picotees* have continued to throw up successions of flowers. *Tritomas* are just now in their most flaming dress, early-flowering *Chrysanthemums* at their best, and the pretty pink *Sedum spectabile* in its finest colour. We have two 9-foot borders surrounded with grass, planted down the centre with *Tritomas*, round which is run a band of white and red *Dahlias*, planted alternately. A 2-foot band of *Sedum spectabile* comes next the *Dahlias*, and an edging of variegated *Dactyllis* next the grass. Looked at fifty or one hundred yards off, I don't know that it would be easy to match this border at this season. Rougher in outline, but also telling, is a border backed by a terrace wall. The plants here are mixed, and consist of *Tritomas*, Single *Dahlias*, mostly all white, *Salvia fulgens* and *patens*, with the reversion of *Phloxes* and *Delphiniums*, which had their duty to perform earlier in the season as the main back plants; and in front of these, patches, closely together, of

white Picotee and Duke of Wellington Carnation, *Chrysanthemum* "Precocité," and "Alexander Pêle," Pentstemons, Antirrhinums, Marigolds, *Gladiolus brenchlyensis*, and *Oenothera Lamarekiana* planted well to the front, are the plants which lend a character to this border. Every half-foot of ground in a border like the above requires to be filled to have effect, and every plant used for the purpose must be selected to tell its tale. No other style of planting mixed borders will ever do for gardeners to take in hand. In the kitchen-garden, again, where the borders adjoining the principal walk are kept for flowers, though nothing can be more suitable than hardy plants, still, if a long continued and late display of flowers is wanted, only a few kinds must be employed to give effect. Of course we can do without the amount of flower in this garden which we must have in the flower-garden proper, and so admit the best hardy flowers; and by a selection of plants prominently introduced, which it is known will give effect at certain times, still have a sufficient amount of flower when it may be required. I think, also, that at this season much more brightness might be obtained in gardens, were this class of flowers more used for filling detached beds. For instance, there is nothing to rival *Sedum spectabile* for a pink bed just now; *Chrysanthemum* "Precocité," again, cannot be equalled in the brilliancy of its yellow flowers when massed; and *Tritoma uvaria* is simply unapproachable for effect; while with *Phloxes*, *Antirrhinums*, Japanese *Anemones*, *Aster longifolius formosus*, *A. amellus*, and *Salvia patens*, quieter beds can be indulged in. But with these, as well as with ordinary bedding plants, I think it a mistake to dispense with edgings. Beds of all kinds, and borders as well, without an edging, at least show a want of finish which I do not like. If, for instance, we plant a bed of the *Chrysanthemum* above-named in a bed cut out in grass, and instead of filling to the edge with the same flower, we run a 9-inch ring of *Santolina incana* round as an edging, and inside that a band of *Sedum spectabile*, we at once obtain a foil to the main flower, which improves its effect, at the same time that any harshness in the colouring is counteracted, and the eye obtains a more pleasing impression from the shading which it unconsciously feels in passing from this particular colour to another. Where flowers are required late, it is certainly worth while, every way, to introduce some of all of the above-named plants. They nearly all require high cultivation—all are decidedly the better for it. In seasons when *Geraniums* and others of that class are in disgrace, these will be found to shine so much the more. It is well worth every means being taken to continue a display of bright flowers as late into the closing year as possible, as the shorter and darker the days, the brighter look the flowers. Try what you like and what you can, nothing better fitted for this purpose than these can be found. I often feel how inadequate one's pen is beside the flowers themselves in pressing their claims to attention. Repeatedly

people come here, see some arrangements they like, or some particular class of flowers, and forthwith go and cultivate them for themselves. In writing, you want entirely these living illustrations to enforce what you know your readers would otherwise be glad to follow ; and one cannot help feeling that, in consequence, their labour may be in a great measure in vain.

Allow me to point out, in closing, that the article which Mr Hinds furnished in last month's issue on "Subtropicals" is very local in its range. We are warmer here than a great portion of Yorkshire and the most northern English counties are, and only one year out of seven have we found *Ricinus* make a satisfactory growth. Cannas and Balsams are of no use whatever ; Variegated Maize does in good seasons. I imagine the extreme south of England has been kept exclusively in view when he writes of these covering 6 feet of ground in as many weeks. And so with hardy plants, the picture is most certainly over-coloured. In local instances Mr Hinds's experience may be, doubtless, all against these, but we do not find a good selection of these at all a bad thing to have ; and I rather imagine most of the "too, too" writing about these has been dropped for the past twelve or eighteen months. Hardy plants have a place to fill in gardens, and they are unquestionably filling it, quietly, and without the extinction of other forms of vegetation being ostracised, as one might have expected from the "flare up" there was about them for a few years.

R. P. BROTHERSTON.

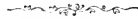
## NOTES ON DECORATIVE GREENHOUSE PLANTS.

### THE ERIOSTEMON.

THE *Eriostemons* are all natives of New Holland, and are among the finest and best of our hard-wooded greenhouse plants. They are mostly compact-growing evergreen shrubs, and are very free-flowering. The flower-sprays are admirably adapted for arranging in vases. When of the proper size, they make capital dinner-table plants, and a good well-grown specimen is a very telling object on the exhibition-table. They are purely greenhouse plants, and if a proper selection of varieties be made, may be had in flower from February till October : such kinds as *E. neriifolius* and *densifolius*, coming into bloom in February ; *E. buxifolius* and *E. linariifolius* bloom from March till June ; *E. myoporoides* from May till September, and *E. cuspidatus* from May till October. These are among the best of the genus. They should be grown in good fibry peat, with a little turfy loam and a good proportion of sharp sand incorporated with it. They will not stand much artificial heat, and they should be kept moderately dry during winter, as a damp atmosphere or over-watering is very injurious to them.

They are increased by cuttings of the young shoots, which should be slipped off with a heel, about the end of March or during April. The pots to receive the cuttings should be well drained, and half filled with soil from the potting-bench, and then filled up with pure silver sand. After giving a watering through a fine-rosed pot to settle the sand, proceed to put in the cuttings, water again, and cover with a bell-glass, then plunge the pot in a mild hotbed until the cuttings strike root. As soon as they have fairly rooted, they must then be potted off singly into small pots, and replunged in the hotbed until they root afresh into the new soil, when they may be taken out of the plunging material, and either set on the surface or on a shelf near the glass. Care must be taken that they do not suffer from want of water in this young state. They must be shifted on into larger pots as they require it; and in potting, the soil should be rammed pretty firmly into the pots and round about the ball, so that the water may not escape too readily through the fresh soil, and the ball become too dry in consequence. They will require to be pinched occasionally when young, to get them into shape, and to make a good foundation at first, after which they will not give much trouble in the way of training, save a partial cutting back of rampant shoots now and again. They stand the knife well, so that should they at any time become too big, there need be no hesitation in cutting them pretty hard back, as they will break away again freely. When the early-flowering varieties have ceased flowering, and as soon as the weather permits, they may be set out of doors, in a sheltered sunny position, to mature their growth, as on this depends very much their flowering freely next season. A temperature during winter of from 45° to 50° will suit them well. They are not much troubled with insects, but are occasionally attacked by scale, and a kind of smut which blackens the stems and leaves, rendering them unsightly. This must be overcome with brushing and syringing with warm soapy water, or any of the hundred and one nostrums for killing scale, &c. As simple a remedy as any for brown-scale, is to dip the plant in water heated to 140° Fahr. : this will effectually kill all the scale, without doing harm to the plant.

J. G., W.



## FRUIT - CULTURE.

### PLUMS AND CHERRIES.

BEING very much alike in their nature and requirements, we have placed the Plum and the Cherry under one heading. Much of what we have said on the root and top cultivation of Apples and Pears applies to these fruits, and need not therefore be repeated. In one particular Plums differ from Apples and Pears—they are invariably grafted or budded on the Plum-stock. Mr Rivers tried the Sloe, but he does not seem to have secured particularly favourable results, as he does not advise the use of it as a stock, “except as an experi-

ment." We have "experimented" with Sloe-stocks, but although bud and grafts "took" easily enough, we never could secure a satisfactory after-growth—indeed the plants would not grow at all after the first year. However, dwarf Plums are easily secured by the ordinary process of lifting and root-pruning. This, when repeated several times, results in roots like wigs; and when this happens, it is necessary to thin out the matted roots, for otherwise it is almost impossible to introduce new soil among them. Indeed, if this be not done, little check will be given to the trees; so when small trees are wanted, the thinning of the roots becomes doubly necessary.

Another peculiarity about Plums is that some of the kinds may be raised from seed. Damsons and Greengages come tolerably true from seed; but good forms should always be propagated by budding, for slight differences generally occur, which in a generation or two become great ones. This is proved by the many inferior Greengages and Damsons to be met with. At the same time improvements sometimes occur, so that raising these varieties of Plums from seed becomes very interesting. Generally, however, we advise the beginner to purchase budded trees.

The finer dessert Plums require to be planted against walls facing south or south-west. This is especially necessary in Scotland, and in the northern counties of England. Fan or cordon training is the only mode of training which we think suitable for Plums on walls. We may observe that the fruit-bearing spurs are apt to get very long, so that it is well to keep them from running too far out from the wall. Some kinds are very apt to get bare of spurs altogether; and to keep the wall well supplied with bearing-wood, young shoots should be laid in, to supply the places of the older branches as they become bare.

The appended list of Plums has been selected from a collection which grew north of the Forth, so it may be regarded as suitable for northern localities. Southern growers may add such other kinds as are found to do well in their own localities. In favourable districts, many of the kinds which we here recommend to be planted against sheltered walls facing the sun, may thrive in the open garden. The climate must settle the question.

#### *For Walls.*

*Early Rivers.*—The earliest; a medium-sized fruit, and only second quality; but the tree is an abundant bearer, and the fruit ripens with the later Gooseberries; it is thus particularly valuable. *Greengage.*—Thoroughly well known, and well deserving of a place. *Jefferson's.*—One of the best, so far as regards quality, and when treated to a sunny sheltered wall, a good bearer. *Kirke's.*—Another excellent kind, well worth a favoured spot when room can be afforded. *Washington.*—A first-class fruit, and a good bearer on a good wall. *Reine Claude de Baray.*—Also first-class. *Coe's Golden Drop.*—One of the very best; may be kept after it is ripe for some time. *Victoria.*—Although not the finest in flavour, it is yet so very good, and so certain and prolific a bearer, that, had we only room for one Plum, it would most decidedly be Victoria that would be planted.

#### *For the Open Air.*

*Victoria.*—Only in good localities in the north. *Mitchelson's* and *Damson.*—When only room can be afforded for one tree on walls, let it be Victoria. If two, let the second also be Victoria or Early Rivers. If there is only room for one in the open, the common Damson should get the place, as it is the har-



diest, the freest bearer, and its fruit is generally useful. When more room can be afforded on the walls or in the open, the others may be confidently added.

#### CHERRIES

are not often grown by amateurs with very small gardens; yet there is good reason for recommending that one or more trees should be planted. We import Cherries, and they are to be had cheaply; but they are, unlike the imported Apples, very inferior to what we can raise ourselves. For placing against a gable or other portion of the house, what more useful and ornamental than a Cherry-tree! In spring, the sheets of snow-white blossom which they produce enchant us; and when the hot days of summer come, the luscious fruit assuages our thirst with juices wholesome and cooling. What better gift could one give to a sick friend or loved child?

Their cultivation is simple. The tree will thrive in any not too heavy garden-soil. Two feet of it on a dry bottom is sufficient. Fan-training is best, and to secure a moderate fruitful growth, root lifting and pruning should be resorted to, just as advised for the Apple. It is not a good plan to lift and cut back strong roots some years old, for they are very apt to run far away and become bare; and cutting hard back is almost sure to result in paralysis, if not death. To make sure of having the roots well in hand without any risk, proper care should be taken of them from the first. Cherries in good soil grow rapidly, sometimes too much so; so it is good for them to be lifted and to get their roots regulated a bit. Once in every two or three years will be sufficient. When the space to be covered is large and the subsoil very good, they may be left alone at the root; but, generally speaking, it is much better to get them into good condition from the first.

Excepting Morellos, they should be pinched and pruned on the same principle as Apples. Some of the kinds are apt to throw out occasional shoots, strong enough to swallow up the resources of the whole tree. Plums often do the same. When these shoots are not wanted, they should be rubbed off at once; but when suited for filling a bare place, they ought to be pinched after they have grown a foot, and the resulting shoots pinched again. This will check the tendency to steal their neighbours' means.

When there is room for only one tree, by all means let that tree be *May Duke*. All things considered it is the best, and will thrive in any position, unless that is very much exposed. The fruit is always finer, however, on south aspects.

The next one we recommend is the *Morello*, and this is a cooking Cherry. Its main recommendation is, that it fruits profusely in the very worst of aspects—due north. If there are any dwarf walls facing north or east, the most profitable things the owners of very small gardens could plant to cover them are black and red Currants—especially black ones—for they actually do better in such positions than anywhere else. But if there is a high wall—too high for Currants to cover—then a deep border should be made, and a *Morello* Cherry-tree planted. They are best on the common Cherry-stock for a high wall; but if for dwarf walls, they are better on the *Mahaleb*. Whether small or tall trees are grown, the management of the top is the same, and differs altogether from what is suitable for the *May Duke*. Apples, Pears, Plums, and *May Duke* Cherries should all be trained, pinched, and pruned on the same principle. *Morellos*, black Currants, and Peach-trees—we ought to add Apricots and Gooseberries—bear their best fruit on last season's wood. Therefore we ought to retain enough of young wood all over the plants of these

fruits, to bear a sufficient crop of fruit. To insure this, the pinching and pruning must be conducted on a somewhat different principle. Instead of pinching in all the summer growths to a leaf or two, as advised for Apples, &c., each shoot should be allowed to produce two or three others, to be laid in parallel with the main branches. Only those which would unduly crowd the others should be pinched; and we may observe that those which grow straight out from the wall should be rubbed off altogether after they have grown an inch or so, and the others be pinched to two or three leaves. Generally speaking, the shoots which are to be retained should all proceed from the upper side of the branch from which they spring. When laid in from both sides, it is impossible to have all the shoots on the tree pointing from a common centre; and when they do not, the tree never looks well. Gardeners get this properly impressed on them the first time they try their hand at the nailing of trees; but amateur gardeners generally ignore it, and the result is, branches innumerable, not crossing perhaps, but pointing across, each other's path, which causes a slovenly and distressing appearance to persons of an orderly mind, and leads to confusion worse confounded by-and-by, to say nothing of the unnauling and renauling which it necessitates. It is necessary, therefore, to lay in perfectly straight all branches pointing regularly outwards. It is as easy to nail a branch straight as crooked, and when they are all straight the distances at which they are apart are very easily regulated. When crooked it is an impossibility, for then the branches are here widely apart, and there close together, which means waste of wall-space at some places, and at others the waste caused by over-crowding. Attention to this is necessary for all trees, but it is doubly so in the case of Morello Cherry-trees. We need not, therefore, apologise for entering these remarks here.

In pruning Morello Cherry-trees, a constant cutting back and thinning out of old branches is required, to make room for the young wood which is being continually laid in. Even when the trees are young this cutting back must take place, otherwise the bottoms of the trees will get bare, and only the upper portion will be suitably furnished. To secure a proper supply of this young wood, whole branches may need cutting back. When this is done, the neighbouring branches should be spread out, to cover the vacant space until young wood has been trained up. Then the neighbouring branches should be cut in their turn, and this should go on continually. In order to keep trees well furnished with healthy wood, it is often necessary to cut out or back main branches.

Peach-trees should be trained on the same principle, and therefore we think we had better say something of Peach-trees here, although placing the Peach after the Cherry may seem a curious arrangement. For amateurs in northern localities the arrangement is right enough, for Peach-trees are to them less valuable than Morellos.

#### PEACHES AND NECTARINES.

We do not recommend amateurs in northern localities to plant Peach-trees in their gardens, for they very seldom prove satisfactory unless they are under glass. It would be somewhat out of place, in addressing ourselves to amateurs with small gardens, to speak of their cultivation in Peach-houses; but as this may fall into the hands of persons favourably situated in the matter of climate who may wish to grow a few Peaches, we shall give cultural directions which may be of service to persons unacquainted with their wants.

The warmest places on the walls should be accorded to Peaches, for want of heat is the reason why they fail in most seasons, as the wood does not ripen well, and therefore the trees are perpetually subjected to curl, or mildew, or blister, or some other troublesome disease, which often spoils, and sometimes destroys, trees in the open air.

A good border of deep soil is another necessity; for a heavy soil on a wet bottom, or a very thin soil on a gravelly bottom, does not suit them at all. If necessary, drain the borders thoroughly, and deepen the soil to 2 feet. If it is heavy, lighten it by replacing it altogether, or mixing in light soil or other lightening material. If very light, add heavy soil, if it can at all be got. The soil ought to be moderately rich, but not enriched by rank manure, for such induces a growth not easily ripened, and this is the main thing to avoid. A little hot-lime is a good thing to mix with the soil; and for manure, a moderate dressing of inch bones should be given.

Peach-trees are budded for the most part on Plum-stocks; and of course the roots can be managed in the same way as Plums. It is very desirable to keep the roots fibry and near the warm surface, for on this a good deal depends—in fact it often constitutes the difference between failure and success.

Training should be done as we have advised for Morello Cherries. Disbudding generally takes the place of pinching in this case. Disbudding is just rubbing off the buds, when they have grown an inch, which would furnish shoots in places where they would not be wanted. It is a simple process, and easily learnt, and although some do not practise it, all our best gardeners do. In the case of young trees, which have not filled their places, cutting out is not proper; and, when young strong shoots are to be disbudded, it may be necessary to leave two or three buds to develop, instead of only one or two. But outdoor trees should be prevented, by lifting and root-pruning if need be, from making wood over a foot long; for short sturdy growths are always more fruitful and healthy than strong, sappy, half-ripened ones. The case is somewhat different under glass.

When pinching is properly done, winter-pruning is reduced to a minimum, and, when the wood is well ripened and short, only consists of cutting out the old wood. Such shoots as we have said are best should not be pruned back at all, although some people do it. Ill-ripened shoots, which have got spoilt by winter's frost, should be cut back to sound wood. In doing this, care should be taken to cut to a growing bud, for most of the buds on good wood will be flowered over. These are round and plump, and often in pairs; and when this is the case, there is sure to be a narrow-pointed wood-bud between them. Cut to this. The pruning and fastening of the shoots may be left over till March; for then it will be seen what wood needs pruning off, and no mistake can be made among the buds, for the flower ones will be showing pink.

The blossoms when open, and the fruit when newly set, are often destroyed by spring frosts. These same spring frosts are, in many districts, almost all that makes fruit uncertain. Many plans are taken to ward these off, but the only really successful ones are glass roofs and hot-water pipes. Still, a frost of only a night's duration may be defied, if the trees are covered with some protecting material. Common fish-nets, such as are used for protecting the autumn fruits from the birds, when doubled and put on a foot or two clear of the trees, are often quite enough. Frigi-domo and other nettings are even better; and for small trees, mats, packsheets, &c., may be quite sufficient. If the frost is keen and the trees exposed to wind, and if it lasts for some days, these often prove ineffectual, and sometimes as bad as the frost; for

a heavy covering which excludes the light, weakens the fertilising powers of the sexual portions of the blossom, so that they fail.

The fruit requires to be gathered by hand, and just before it is ready to fall. When it falls, even although into a net, or on moss, it is somewhat spoilt. Peach-fruits won't keep—a few hours only serve to spoil them; and, like Strawberries, they are never so good as just when gathered and eaten.

Peaches, Cherries, and Plums are often attacked by different species of aphides or green-fly. Smart syringings of soapy water, at intervals of a few days, if persisted in, will soon rid the trees of these pests. In hot summers red-spider proves troublesome on hot soils. The same cure will suffice for it, if the water is directed forcibly against the under sides of the leaves. Occasionally scale proves a trouble on the Peaches. We never saw it out of doors, but we have the highest authority—the editor of this Magazine—for saying that paraffin-oil, mixed with 100 times its own bulk of water, and syringed on the trees when they are bare of flower, is a perfect cure. After the application has been on the trees for some hours it should be syringed off with hot water; for if the application has been too strong, or has not been properly mixed with the water, it might do mischief. First one syringeful discharged into the vessel containing the mixture, and then the next on to the trees alternately, will keep the oil and water mixed in due proportion.

When the previous summer has been warm and the spring favourable, it often happens that too many fruits set, and when these are not thinned, they are inferior, and the trees made unfit to bear a crop the year following. When the fruit has fairly set, manifestly inferior ones should be rubbed off, and afterwards only one left to each one-foot length shoot. Longer growths on vigorous trees may bear two or even three, but more means poor fruit. Nectarines are just Peaches, but have smooth instead of downy skins. Some writers range them as different species, but they are not.

*Hales's Early*—an American kind—is the earliest really good kind, and is therefore likely to do well in the open air. At Chiswick it ripens among the first days of August. Early York is also a good early sort, suitable for outdoor culture. In warm districts, even in Scotland, Grosse Mignonne, and Early Grosse Mignonne, do fairly well in favourable seasons. We have also seen Royal George, Kensington, Bellegarde, and Vanguard do well in Scotland.

Among Nectarines Lord Napier is one of the best, as it is free and early, and of good flavour. Elruge, Balgowan, and Violette are also trustworthy kinds.

#### APRICOTS.

Much of what we have said of Plums and Peaches applies to Apricots. Like Peaches, they are not recommended to those whose gardens are in northern or cold localities. They are rather too tender for any but warm climates and sunny walls. In this they must be placed with Peaches, although they are hardier, if anything. The same kind of soil which we have recommended for Peaches will suit them. Fan-training is the best form in which to train them. Most of the kinds should be pruned, pinched, and trained in the same way as Plums. Like Plums, they form fruit-spurs on the two and three years' old wood; and although by careful pruning and pinching older wood may, like Plums, be kept furnished with bearing spurs, still, like many Plums, old branches are apt to get bare; and it is therefore wise to be always training up young branches, to take the place of older ones as they get bare. Young shoots when pinched in, in the way recommended for Apples and Pears, form stubby spurs which produce fruit freely; and when these spurs are well

managed, they may be kept compact and close to the branches and wall for years. When they get long and straggling it is time to replace them; for although spurs which stand far out may produce fruit, yet fruit which is far from the wall is always inferior to that close to it; and in late localities, in cold seasons, it often does not ripen at all. In warm localities this result is not so much to be feared; but even in favoured districts, the fruit which is close to the wall is always finest.

*Moor Park* Apricot differs from the others in that it bears chiefly on the year-old wood in the same way that Peaches do. It should therefore be trained, pruned, and disbudded in the same way as Peaches. Spurs formed by pinching in superfluous shoots also bear freely. It is said there are two varieties of the *Moor Park* Apricot, one much inferior to the other. The best variety is considered the best Apricot grown, but *Breda* and *Brussels* are hardier. *Hemskirk* is also good.

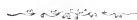
Like Peaches and Nectarines, Apricots are generally budded on Plum-stocks, and therefore lifting and root-pruning, when that is necessary, should be done in the same way in all three cases. It may be observed here of all these fruits, that lifting and root-pruning should only be done to moderate a too strong growth, which means a great profusion of shoots and leaves, but little or no fruit, and that little of an inferior kind. Sometimes lifting only, without root-pruning, is needed. It is essential to keep tree-roots fibry and near the surface, for reasons which we have before stated. However necessary lifting and root-pruning may be, and very often is, especially in cold localities, it would be worse than folly to lift and root-prune a tree that was making short sturdy growths and forming fruit-buds freely. In our papers on the Apple, we have shown how to keep roots near the surface by mulching, how to assist trees when bearing, and how to check them when, through having their blossoms destroyed, and thus being barren, they run into shoots merely. To all the trees which we have referred these directions apply equally, and therefore we need not repeat them. We have tried to enforce the principles which should govern beginners, and have also given such details as we thought necessary. But only practice can make perfection, and only observation teach all that is necessary to success. Practice needs to be somewhat varied, according to soil, climate, and other things. In the warm sunny south, especially on deep soils, trees may grow strongly, and yet, by being thoroughly ripened, bear fine crops of excellent fruit.

In the cold north, especially in wet localities, a much more restricted growth is required, for trees which grow strongly very often fail to produce fruit at all. In hot dry localities, deep soils, into which roots may sink for sustenance when the surface is parched and dry, may be absolutely necessary in order to secure success. When the climate is cold and the rainfall great, the roots cannot be too near the surface, otherwise the sap drawn out of the cold undersoil may so keep down the temperature of the trees that blossom-buds never form, or if they do, the fruit never ripens. When fruit-growers understand all this, and the capabilities of their own garden and climate and soil, they will know how to vary their practice to secure success. With the best of skill and the profoundest knowledge, northern gardeners can never produce results equal to those in the more favoured south; but the possession and application of these to barren fruit-trees may produce results which may astonish those who have laboured in vain, simply for want of the knowledge of those principles which we have endeavoured to explain, or for want of opportunity to apply them.

Before closing this chapter, we may add a few remarks on pruning, which apply to all trees. In making cuts, be sure to make them clean and short. In cutting out a branch always cut close to the cleft, and if the branch is so thick as to necessitate the use of the saw, always take care to smooth the surface with a sharp knife. In cutting young shoots, always cut to a wood-bud, and about an eighth of an inch above it, and be sure to cut to buds which point in the direction in which it is wished to make the resulting shoots grow. Make all cuts slanting, at about an angle of  $45^\circ$ , with the faces of the cuts pointing downwards wherever possible. In all cases cuts should be so made that no rain can possibly lodge on them.

Finally, the soil about all trees should be made *very* firm, especially underneath the roots. A loose soil favours the production of long sappy roots, with their concomitant of long sappy shoots. Loose soil holds too much water; a firm one is always drier. Wet soil is sure to be cold, for water requires more heat to warm it than dry soil, and as firm soil is always drier, it is sure to be warmer. For stone-fruits especially, the soil should be *very* firm indeed.

A. H., H.



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

NO. X.

*Peaches and Nectarines.*—Outdoor crops of these having been unusually good, both in quantity and quality—at all events in the southern and midland counties of England—the demand for young trees will inevitably be extraordinary. Many of us were beginning to despair of success again crowning our efforts; but those who fortunately have continued to replace their debilitated old specimens with healthy youngsters, have this season been rewarded as their perseverance deserved. The winter of 1879-80 was remarkably destructive among Peach and Nectarine trees; the old trees especially, with their impaired vitality and badly ripened growths, being most extensively killed. The younger trees escaping comparatively uninjured, subsequently formed excellent growth, and this being well ripened, was uninjured during the past severe winter—hence the above result.

To a certain extent we are independent of the outdoor Peach and Nectarine crops, and, as a consequence, no thorough attempt has been made to replace the fine specimens that only a short time since occupied our walls. This being so, I propose to write upon what has been accomplished by others, notably Mr Goodacre at Elvaston Castle Gardens, near Derby, and Mr W. Taylor, Longleat, Wilts. The success of the former is the most remarkable, owing to the unfavourable position of the garden—being almost on a level with the river Derwent, rendering it almost impossible to drain; and when it is stated that the soil is a heavy retentive clayey loam, it will be readily conceded that in such a garden it must be “Peach-growing under difficulties.” Yet here is to be seen a long and high south wall, beautifully

furnished with standard and dwarf trees, trained in the old-fashioned fan system, which at the time of my visit (end of August) were heavily cropped with ripening fruit. It would be useless to plant trees in such a soil as this, and on the ordinary level, consequently the whole of the border, to a depth of about 30 inches and 10 feet wide, was thrown out, a drain laid from each tree to the main pipe, over these being spread a layer of stones, clinkers, &c., and as much fresh turf as could be procured, worked in with the best of the old soil and mortar-rubbish. This brought the back of the border when settled to about 18 inches above the ordinary level; and as the trees when established were freely mulched with manure, and no vegetables permitted on the Peach border, the roots are easily kept near to the surface, as they should be.

At Longleat, also, an unusual difficulty is experienced with Peach and Nectarine culture, but this is not apparent to a superficial observer. Mr Taylor has nothing to complain of with regard to elevation; but he appears to have a soil to deal with that is very unsuitable to the Peach. This is composed principally of a strong clayey loam, without the slightest trace of lime—a remarkable fact, seeing how abundant the latter is in the district. Whether this affects the longevity of the trees I am unable to say. One thing is certain, their life is a “short one;” and it is equally certain, under Mr Taylor’s management, it is a “merry one.” His method of training, as recently described in the pages of the ‘Journal of Horticulture,’ is original, and decidedly worthy of general imitation. In the first place, he commences with maiden or unformed plants, giving the preference to those that have formed a well-ripened growth about a yard long. When received in November, they are planted 4 feet apart, and uprightly against a south wall. To continue in his own words, and which I cannot do better than copy verbatim: “The knife is not to be used at all the first winter, unless it is to cut off a small side-shoot or two which may be formed; but this is not really necessary, and I generally leave them on and tack them to a wall. When the plants have made growths 2 or 3 inches long in spring, which they will do in abundance, some of these must be selected along each side of the stem, at intervals of about 9 or 10 inches, which must be carefully looked after and trained outwards, with about the same slope as the roof of a slated house; the other shoots, where crowded, may be carefully thinned by taking some of them off close to the stem, but leaving as many as there is room for to clothe the stem and assist circulation, merely stopping them to four or five leaves. The second year will see the wall nearly covered, and bearing a few fruits; while the third, should the season be favourable, will bring a full crop, and every other tree will require removal.” He further remarks, he has a “good length of wall in this happy condition,” and confesses to being “not a little proud of it;” and with good reason, for heavier crops of highly coloured fruits I have not seen, whether under glass or on the

open wall. The only protection used in spring was a board-coping a foot wide, and ordinary fish-nets—this proving sufficient to ward off what is popularly, if erroneously, termed 9° of frost.

No doubt the introduction of earlier kinds of Peaches and Nectarines has had a stimulating effect upon their culture in the open air, as these seldom fail to ripen, however unfavourable the season may be. Of Peaches, the earliest is Rivers's Early Beatrice; this being closely followed by a superior variety—Early Louise; and two other excellent early sorts are Early Rivers and Hales's Early, provided, however, the latter is procured true to name. Grosse Mignonne probably would not succeed in northern districts, but I have had it remarkably good under that name, and synonyms such as Padley's Early Purple, Neal's Early Purple, and Royal Kensington, both in the midland and southern counties. Noblesse has succeeded well in many districts this season, and the handsome Bellegarde has been exceptionally fine, and should be included in every collection. Of later varieties Barrington and Walburton Admirable are, I believe, unsurpassed. Sea Eagle, in a friend's garden near here, the soil of which is remarkably light and chalky, and therefore unsuited to Peach-culture, was very prolific and good, and is strongly recommended.

The list of Nectarines, though short, yet includes several excellent varieties. Of these Lord Napier, a comparatively early variety, raised by Mr Rivers, has won golden opinions in all directions on account of its earliness, productiveness, large size, and good quality of fruit. Hunt's Tawny, Pitmaston Orange, Balgowan, and Downton, have all at different times proved very profitable with me, and not always under favourable circumstances.

In late unfavourable districts the preference should be given to south walls for Peaches and Nectarines; but in warmer districts, and on light soils, they frequently succeed admirably on west and even east walls. Some of the best crops I have yet secured in the open were from an east wall in an exposed garden in Shropshire. The precaution, however, was taken to keep the roots well supplied with moisture, and the frigi-domo blinds down when easterly winds prevailed early in the season. On a south-east wall here they have hitherto proved a complete failure; but I shall unhesitatingly "try my hand" with them in the same position.

W. IGGULDEN.



#### CHRYSANTHEMUMS FOR THE CONSERVATORY.

By the time these notes are in print, many conservatories will be beginning to look gay with Chrysanthemums, and in most cases it will have been found that they come so easily into bloom, that their owners and cultivators may be inclined to think little or nothing of interest can be said about them. So far as their general culture goes, it is certainly very easy—so easy, that I am of opinion far more attention



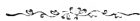
is paid to it, in numerous instances, than there is any occasion for, or than is good for their appearance. With many, *Chrysanthemum*-growing is looked on as a much greater concern than growing fruit-trees; and the attention bestowed on training, thinning, and disbudding *Chrysanthemums*, is double that given to fruit-trees. If all this rendered them good, useful conservatory plants, the matter would be easily understood, and its general application recommended; but as a rule, all the training they get only tends to make them more unnatural-looking, and more unfit to be what they ought—and that is, the most useful of all conservatory plants at this season. Size of bloom is the first and only consideration with many. Anything or everything will be done to secure this. From the first, the greatest care will be taken that the main stems are not stopped or retarded in any way. If they can be induced to grow to 5 or 6 feet, it is considered something wonderful, and as near perfection as possible has been attained; but the training does not stop here. As soon as ever the buds are visible they are all thinned off to two or three, and in some cases only one is left. Then the great bloom which so much has been done to produce opens, and it is neither an ornament in the conservatory nor useful in a cut state, at least sufficient numbers cannot be had to make them useful. This and other equally useless practices are what is termed specimen-*Chrysanthemum* growing; but to the great majority of cultivators the systems have nothing to recommend them, and should be avoided, however highly the results may be pictured. To our mind, the real conservatory *Chrysanthemum* is a low-growing, natural-like spreading bush, which may be placed on a side shelf, or centre bed, or anywhere on the ground-level, and still retain its individual attraction, the rich clusters of bloom being looked down on, and not stared up at. Chiefly for want of water and nourishment in summer and autumn, many *Chrysanthemums* lose all their bottom leaves, and the bare stems become rather prominent to view. This does not improve their appearance when in the conservatory, unless there are some long-growing bushy plants placed in front of them; and their appearance in this way is worse still when a large number of stakes are used to support the stems. Frequently these are so numerous, that the stakes are more bulky than anything else; but fine ornamental *Chrysanthemum* plants may be grown for conservatory decoration without any stakes. At the present time our *Chrysanthemums* are just showing bud. They are mostly growing in 8-inch pots, each potful being composed of about a score of shoots from 12 to 36 inches in height. These have been grown, well exposed to light on all sides and plenty of sun, since last spring, and every shoot is so robust that it is self-supporting, which does away with the use and time of staking altogether; and the plants when in bloom are very pleasing, as, at the end of every shoot, fine-sized blooms come out in massive clusters. These plants are used here and there in the conservatory, and a single row of them, over 300

feet in length, is placed along the front of the orange-house; and in both ways the effect is infinitely better than we ever saw or could get with trained plants and thinned-out flowers, attention to both of which we consider loss of time, and no gain in any other way. To secure dwarf bushy plants of the kind we indicate, the cuttings may be taken off and rooted in February or March; and as soon as they have begun to grow freely and make roots in single pots, stopping should commence.

Keeping the plants dwarf at first, and securing a good base of young shoots close to the bottom, is the best way of beginning to get the most useful of all forms of the Chrysanthemum. The shoots may require stopping oftener than once or twice; but they should be allowed to grow up from the middle or end of July onwards. From then until they flower, it is of the utmost importance that they are never allowed to feel the want of moisture at the root. Being allowed to become over-dry once or twice, or repeatedly, as is often the case, interferes greatly with the healthy appearance of the plant, and it has also a tendency to diminish the size of the blooms. A free growth and unchecked development are what give the best results, and reasonable attention will always insure this. At the present time, as Chrysanthemums are now our staple flower, there is little danger of their being neglected; but it is not so much when they are just coming into flower that special and constant attention is wanted to make up for other or previous omissions. If well grown up to the time the flower-buds form, they will, in a sense, take care of themselves afterwards, and open their flowers freely and fully. Still, when in small pots, and these well filled with roots, the soil and manure used at potting-time may be nearly exhausted; manure-water may then be given with advantage two or three times weekly. Although very hardy, Chrysanthemum flowers are very liable to damp or decay prematurely if the atmosphere about them is close, cold, and humid; and when it is desired that they should last good to Christmas or further on, conditions of the kind must be avoided. Chrysanthemums, especially before they come into bloom, will bear much frost without injury; and when they are wanted late, there need be no great hurry to get them under cover in autumn. Some of the earliest-flowering ones may be taken in about the middle of October or so, but the late ones should be left out as long as ever the blooms are not liable to suffer. This plan will give a longer succession of bloom than trying to keep them back after they are in full flower. Where many plants are grown, it is seldom all are wanted for cuttings, one of each kind generally being sufficient to supply a stock; and it is well to look better after these plants than the others. When done flowering they should not be put suddenly out in the cold, or behind a hedge, or any such place, but they should have the protection of a cold frame and a glass light at least. For the old plants, plenty of light and air on all favourable occasions will insure a sup-

ply of robust healthy cuttings; and a good deal depends on getting a fair start with them. Sickly, half-starved cuttings, or those which have been drawn up in a dark close place, are never satisfactory. The general culture of this useful plant is so well known, that little more need be said about it. Cuttings root in a close cool frame, but quicker with the help of a little bottom-heat; but the latter should never be used longer than just to produce roots. They may be rooted in groups in 6-inch pots, or singly in small ones—the latter is the best plan—and from these they may be shifted at once into their blooming pots. The compost should always be rich and rough, and drainage secure. Plunging the pots in summer in ashes, sawdust, or ordinary soil, prevents them from suffering so much for want of water where there is any danger of their being stunted in this; but above all things to avoid in successful Chrysanthemum culture, imperfect and insufficient watering is the greatest.

J. MUIR.



#### THE GRAPE-VINE DISCUSSION.

As a gardener who has worked Grapes on the low night-temperature system, you will perhaps allow me to say something on the subject, as opened up by Mr Simpson in last month's 'Gardener.' I have before now stated my opinion on this system in the 'Gardener;' and without saying that it is the best system for the production of the very highest class Grapes, I have taken up this position, that good family Grapes can be produced thus—at the lowest possible expenditure in labour, fuel, and wear of vineries; at the same time, the Vines stand heavy cropping better, and will last longer than under high-steaming temperatures. When I restate that our vineries are not damped down, nor the Vines at any time syringed, something like the saving of labour over the old system will be at once apparent. As regards saving of fuel, that will go without saying; and as to the saving in the wear of vineries, when it is understood that at no time is the atmosphere of the houses in a saturated condition, or the houses shut up, that also will be apparent enough; while as regards the improvement in Vines, that of course has to be tried and proved to be believed. The moot point, which has divided certain growers, has been as to the setting of the berries in low night-temperatures. I am inclined to believe that, other circumstances being right, a few degrees either way does not matter at this period; though at the same time I can fully endorse what was stated in the August issue, that "Muscats worked low at the blooming period were not set at all—stoneless or seedless, in fact." This is just what we find in our old Muscats. The bunches are full, but at least fifty per cent of the berries are without seeds. Whether they would stone if set in a higher temperature I do not say, but I hope to find how young Vines behave under both conditions of temperature.

And now let me say that I do not think the system as pursued by Mr Simpson one that will be followed by gardeners. Like many more gardeners, I had an opportunity of seeing some of the Grapes produced by Mr Simpson under his system at the Edinburgh Show in September, and nothing stronger could have been adduced as condemnatory of the system than these Grapes. It is to be presumed that these were the very best examples of Grape-culture which Mr Simpson could find to send. I do not know how the exhibition Grapes were grown, as, of course, they might all have been produced in low night-temperatures, or, on the other hand, under orthodox conditions; but any way, the Wortley Grapes were inferior in all respects to those staged for prizes. Instead of cutting any berries out, in one or two of the sorts it would have improved them to have produced a few more berries to fill them up with. The Show was held in the second week of September, and the Grapes were then unripe. Mr Simpson states they "are in flower early in the year." If so, how are they managed that they were unripe at the above date? I contrive to get ours in flower in May, and ripe before September is out. It would take us to fire pretty hard to get such Grapes as those under discussion ripe at the end of October, and then they would not have the flavour of Grapes ripened earlier. That the Vines had been too late in being ripened the previous season, was quite apparent from the loose make-up of some of the specimens. Mr Simpson states in a contemporary that he has had letters asking for advice as to how to proceed under the system he advocates, these Grapes having convinced the writers that it was better than the old system. I make bold to state my belief that no gardener who knows a good bunch of Grapes has asked for advice. Had I seen these examples eight years ago, I am afraid I might still have been indulging in high night-temperatures. When Grapes have got the colour on fairly, they require a high temperature to ripen them properly, and, what is of as much consequence, to ripen the wood of the Vines as well. Fuel saved at the expense of the Vines and the Grapes is a kind of retrenchment which does not pay.

It may be a matter of some amusement to those of your readers who do not read the 'Journal of Horticulture,' to know that the writer to whom Mr Simpson refers was taken to task by a gentleman in another paper, for stating that he "cropped his Vine-caness regularly at the rate of from 30 lb. to 50 lb. to the rod," and asked therein to furnish his name, and the whereabouts he contrived to obtain such incredible results. It is generally understood that the gentleman who adduces the testimony of this writer in support of his system of low night-temperature in the 'Gardener' for October is also the one who thus discredits that writer's statement in another paper a month earlier. But more strange still is this fact, that, in the 'Journal of Horticulture' for October 6th, this same writer, who had seen Mr Simpson's Grapes at Edinburgh, condemns Mr Simpson's "position;"

tells him very candidly "his Grapes were green," and asks him "how he ripens them?" considers "neither the system of people who burn coals at night," nor the system of Mr Simpson, who must burn "coals late in autumn" to be "right;" and then states—"We know some have tried low night-temperatures, and have ultimately abandoned them for the reasons we have given"!

I may say that I think the "few cardinal points" noted in the article on Vines in the August number are quite to the point. Nobody could fail to produce good Grapes under the conditions there stated, the question of "setting" aside altogether. With regard to the dressing of bone-meal therein recommended, I may state that last autumn I worked into our borders a manure composed of superphosphate nitre and plaster of Paris mixed with bone-meal, and repeated the dressing in summer. I have never had Grapes coloured better than this year, and attribute that greatly to the potash contained in the nitre. Our borders are never watered without the addition of some enriching manure. I give high temperatures neither by day nor night. As the vineries are neither "damped down" nor "shut up," it is rarely that 85° is exceeded as the maximum temperature. If red-spider appears, it can always be traced to a fault in the management. In our case, a moist atmosphere or a dry one has nothing whatever to do with it. Were we to employ hot pipes to bring along the Grapes, these conditions might be absurd; under the treatment we give our Vines, we find them necessary and wise.

R. P. BROTHERSTON.

#### AUTUMN TREATMENT OF GLADIOLUS.

EVERYWHERE we now hear of the deterioration of this beautiful autumn flower, and of unsuccessful attempts to get it to grow year after year without buying a fresh stock of bulbs. This state of things is most unfortunate, as bought bulbs cannot in every case be induced to grow. This spring, for instance, some fourteen out of fifty bulbs I purchased are still lying as they were planted, without making a sign of life.

Though I have before told in the 'Gardener' of the treatment I find successful with the Gladiolus, I think the subject will bear repetition. My plan is to wait till warm weather—about the end of April—before planting, and to plant in highly cultivated ground: it is impossible to cultivate too highly. Then, in a season like the present, it is an absolute necessity that the young bulbs should be artificially ripened, as they will not ripen if left in the ground. Some of the earlier sorts, as Didon and Shakespeare, may, but the great majority will not. The only plan, therefore, is to lift the plants as entire as possible, securing a ball of soil round the roots, and placing them in vineries or plant-houses to finish: those which have not flowered at this date may be lifted, the ball of soil crammed into a pot, and the flowers allowed to open in

greenhouses or conservatories. It has been chronicled that lifting *Gladiolus* and ripening them under glass is of no use: I do not suppose it is when the plants are merely pulled up and laid in bunches on the borders. Such treatment may benefit ripened bulbs, but not those which are in full growth. I am confident, from my own experience, that any one having late *Gladiolus* will, by lifting them as above directed and placing them in an airy structure until ripened, and the succeeding season letting the sun have some effect before planting, find that it is not altogether such an uncertain flower as it has got the character of.

R. P. BROTHERSTON.

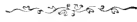
### DISBUDDING CHRYSANTHEMUMS.

A WRITER in the August number of the 'Gardener,' and whose communication I have not been able to notice sooner, professing to quote from a contemporary, says it was asserted early in the year by a cultivator that the finest *Chrysanthemum* flowers were "invariably produced upon the terminal bud." I apprehend from the remarks of your correspondent that I am the party referred to, although he has misrepresented my statements in regard to the subject. What I did was to offer a challenge to *Chrysanthemum*-growers to controvert, by ocular demonstration, a statement which I here reproduce. Your correspondent could have accepted the challenge then and there, and there would have been an opportunity by this time of deciding the matter, but for reasons best known to himself he did not accept it. Speaking from memory chiefly, what I stated elsewhere was this: *A Chrysanthemum plant which is grown on in a healthy manner, as regards culture—the shoots being thinned out in the ordinary way, and otherwise attended to, but not pinched or meddled with after the foundation of the plant has been formed—almost invariably produces its best and largest flowers at the tops of the shoots, sometimes there being only one terminal flower, and sometimes two or three.* This is what happens in the case of a *Chrysanthemum* shoot that is allowed to complete its growth, and flower in a natural manner; and I asked experienced growers to controvert my statement by producing a shoot or a plant that behaved otherwise,—but no one has done so yet. But if your correspondent, Mr Hinds, is as anxious to get to the truth of the matter as he professes to be, let him prove by practical illustration that I am wrong.

In speaking of *Chrysanthemum* buds, I do not mean those abortive buds that sometimes show themselves in July or a little later, and never come to anything, and are never expected to do; but I mean the buds that actually do produce the first flowers on a naturally developed shoot, and at the right season. The issue raised is a plain and simple one, and if your correspondent can put aside irrelevant points for the time

being, and answer me directly, some progress will have been gained, and this discussion will be more instructive and satisfactory to your readers. If it can be proved that the terminal flowers are the best, naturally, of course, it follows that they will also become the best in the hands of the cultivator who grows them for exhibition or any other purpose. It stands to reason that the bud which is in a position to receive the direct force from the roots will be the first and the best—and that is the position which a top bud of a Chrysanthemum plant occupies. There are numbers of plants of a similar habit that behave in the same manner—the Strawberry, for example, the first flowers on a scape of which are always the best. Chrysanthemums will soon be in flower; let Mr Hinds send a plant—root and top all intact—that has been grown as I suggested, and let the Editor decide who is right in the matter. I will do this if needful, but prefer to give my opponent the chance.

THE AUTHOR OF THE ARTICLE IN A CONTEMPORARY.

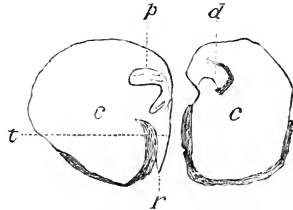


## BOTANY FOR GARDENERS.

NO. X.—SEEDS (*continued*).

To watch the growth of various seeds is an extremely interesting study, and one of which I am very fond. I often grow some Peas and Beans on a very damp cloth or wet moss: the latter is best, as it retains moisture much longer than the former. It must not, of course, be supposed that they will continue to grow very long, as they will simply do so until the radicle and plumule are about a quarter to half an inch long. A better plan still is to grow them in a light soil and examine them every week, when you cannot fail to notice the elongation of the radicle, &c.

To give the reader a better idea of the inner structure of the cotyledons, and also bud of the future plant, here is a little sketch of an embryo of the Pea, minus its skin, and opened carefully. *cc* represents the cotyledons or seed-lobes; *t*, common axis, whence both radicle and plumule proceed, which is united by a short petiole; *p*, plumule; *r*, radicle; and *d*, a small aperture in which rested the bud.



We may reasonably infer that, before the radicle is capable of obtaining its own food, it is supplied to it from the cotyledons; the radicle, as it increases in size, sinks into the earth, assumes the form of a root, and becomes not only its own food-supplier, but that of the

future plant. Even at this period, after the radicle has become a perfect root, the plant, as Sennebier ascertained by experiment, ceases to germinate if the cotyledons be cut off. They are still, then, absolutely necessary for the vegetation of the plant. The cotyledons now assume the appearance of leaves, and appear above the ground, forming what are called cotyledon-leaves of the plant. After this the plumule gradually increases in size, rises out of the earth, and expands itself into branches and leaves. The cotyledon-leaves soon after this drop off and decay.

As it does not appear that there is any communication between the cotyledons and the plumule, we must infer that the nourishment that the plumule obtains must pass into it from the radicle; and accordingly, we see that the plumule does not begin to vegetate until some time after the radicle has made a little progress. Since the plant ceases to vegetate, even after the radicle has been converted into a root, if the cotyledons be removed before the plumule is developed, it follows that the radicle is insufficient of itself to carry on the processes of vegetation, and that the cotyledons still continue to perform a part—and that is, they prepare food for the nourishment of the plant. When the young plant assumes the form of cotyledon-leaves, it is very evident that the nourishment, which was originally laid up in them for the support of the embryo plant, is exhausted, yet they still continue as necessary as ever. They must therefore receive the nourishment which is imbibed by the roots: they must produce some changes on it—render it suitable for the purposes of vegetation—and then send it back again to be transmitted to the plumule. After a plumule has acquired a certain size, which must at least be a line, if the cotyledons be cut off, the plant, both Bonnet and Sennebier ascertained by experiments, does not cease to vegetate, but it continues always a mere pigmy—its size when compared with that of a plant whose cotyledons are allowed to remain, being only as 2 to 7. When the plumule has expanded completely into leaves, the cotyledons may be removed without injuring the plant, and they very soon die of themselves. It appears, then, that this new office of the cotyledons is afterwards performed by that part of the plant which is above ground. For a fuller explanation, and various modes of germination, see the 'Gardener' of September 1880, page 414.

The embryo is usually solitary in the seed, but occasionally there are two or several.

When several embryos are produced within a single seed, it sometimes happens that two of these embryos grow together, in which case a production analogous to animal dicephalous monsters is formed.

The number of cotyledons varies from one to several; commonly two, in which case they are mostly opposite: *E.g.* Pea, Bean, &c.

W. ROBERTS.

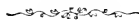
(*To be continued.*)



## KALOSANTHES COCCINEA.

ALLOW me to add my testimony to that of Mr Hammond's as to the value of the *Kalosanthes* as a decorative plant. I endorse all he has said in its favour, and agree with him as to the simplicity of its culture. Last August (1880) I put some cuttings in exactly as described by Mr Hammond with good results, each plant producing a fine strong head of flowers in June following, and proved very useful. I, however, had much better results from plants that were propagated in the beginning of May of the same year, as not only did the main shoots bloom, but the side shoots also. The way that we treat them is as follows: As soon as the plants show bloom, all the shoots that are not going to flower are taken off and inserted in 3 or 4 inch pots—5 cuttings in a pot. When well rooted they are shifted into 5 or 6 inch pots, and kept in a close frame till well established. By the end of June they are hardened off, and plunged in ashes in the full sun, along with winter-blooming Geraniums, and receive the same attention, except that they require less liberal waterings. Our little plants for next year's bloom are still plunged out of doors (8th Sept.), and each plant shows from four to six side shoots, the strongest of which will produce bloom as well as the leading shoot. Thus, with five plants in a pot you may depend on from fifteen to twenty heads of bloom. When taken indoors they are placed near the glass, along with Pelargoniums, and receive the same treatment as they do, till they come into bloom. In Sussex we have more sun and less rain than in Cumberland. In wet localities it would not be advisable to plunge them out, but grow in a frame close to the glass, and with plenty of air.

R. INGLIS.



## APPLES, &amp;c.

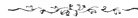
It is probable there are not many gardens in this country in which there may be varieties of American Apples. It was a matter of considerable interest to ourselves when, about five years ago, a dozen medium standard trees were sent root-and-branch packed in a box; and notwithstanding the long voyage, the roots were in excellent condition. They were forthwith planted in a suitable situation, with good maiden loam about the roots. Unfortunately there has scarcely been a favourable fruit season from then until now; but even this season, when, generally speaking, the Apple crop is abundant, there is no fruit on any of the American varieties. But what I have thought would be considered interesting, and instructive likewise, is the fact that a graft of the American variety which I put two years ago upon a dwarf standard tree (var. *Lady's Finger*) has three beautiful Apples upon it, and the appearance of the graft, which is very vigorous upon the stock, is most conspicuous. What may be learned from this fact is, that while

American varieties may be too tender to stand our severe winters, yet by engrafting them upon hardy stocks of varieties grown in this country, success is likely to be the result.

Now a note or two regarding a plant which for about seventeen years I have grown here in the greenhouse: the name of it is *Coleus orientalis*. It flowers and seeds most profusely. I saved some seed last year, and thought by sowing it early in spring in heat, and getting it pricked out in the same way as *Verbena venosa* or *Lobelia speciosa* is done, it would be in readiness for the bedding-out season. I am very much pleased with the experiment, for it has succeeded admirably this season, which cannot be regarded as a highly favourable one for flowers, any more than it has hitherto been for the corn crop. To those who do not know it, or may not have seen it, I will try and describe it as well as I can. It is exceedingly dwarf and compact in its habit of growth, with broad foliage of a lively green, throwing up in the centre a strong robust spike from which issue several lateral spikes. In colour it is of a bright yellow, much more so than *Golden Gem Calceolaria*. It commences flowering at the base, and continues flowering up to the termination of the spike. As a pot plant it requires staking, but as a bedding-out plant this is not necessary.

Just one other note and I have done for the present. *Vallota purpurea* is deservedly a popular pot plant, but sometimes it is over-potted. I have about a dozen 9-inch pots, in each of which there are three bulbs or plants: they have not got a shift for two years, and they could not possibly have flowered finer, as they are in great perfection of bloom and foliage at the present time, but they like good feeding, which they get with soot and dovecot manure in liquid form.

H. ROSE.



#### THE VARIETIES OF *CALANTHE VEITCHII*.

WE do not know how many varieties there are in cultivation of this fine and most useful winter-flowering Orchid; but there are, at least, two varieties, and one of them is very much superior to the other. It is more robust in its growth, and in colour much more brilliant. The pale and inferior variety is easily known, even by the shape of the bulbs, every one of which has the peculiarity of being very much contracted just about its middle—so much so, in fact, that it is very easily broken through. Growers who happen to have only this fiddle-shaped variety should try and procure the other, for it is much finer. We had a considerable number of the inferior kind at one time—indeed the major part of our stock was of it—but have entirely discarded it, and grow only the darker variety, that has no contraction in its bulbs.

### DRUMLANRIG GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.

THE circling year having once more brought us round to the opening of another session, the following short report of the last one is presented in accordance with the annual custom. The attendance, which is one of the best criterions of a society's prosperity, was exceedingly good; and the same remark applies to the papers that were read. The discussions, as usual, were the most lively portion of the proceedings, and the manner in which they were engaged in showed the importance which the members attach to being fully posted up in the subjects. The Association is now in the tenth year of its existence—a fact which speaks for itself, and one which ought to gladden the hearts of the most sanguine of its originators. The following is a list of the subjects which engaged the attention of the members during the session: Eradication of Garden Insects; Protection of Wall-Fruits; Formation of Character; Certain Trades and Professions as Causes of Disease; Cultivation of the Cyclamen; Cultivation of the Azalea; Progress in Australia; The Pansy; Cultivation of the Strawberry; The Conservatory; Temperance; Forcing of the Fig; Government by Party; Does Civilisation necessitate Demoralisation? Food; Potato Disease; Cultivation of the Balsam; Cultivation of the Bouvardia; Movements of Plants; Garden-walks; Hardy Plants for Walls; Cultivation of the Raspberry; Pruning of outdoor Fruit-trees; The Camellia; "Man's Inhumanity to Man;" Hotbeds and their Uses; Cultivation of the Orange; Window-Plants, and their Injuriousness to Health.

SECRETARY.

### DUNDEE HORTICULTURAL ASSOCIATION.

THE usual monthly meeting of this Association was held in the Templar Hall, Reform Street, on Friday evening the 7th ult. In the absence of the president, Mr J. D. Ker, Douglasfield, was called upon to preside. A paper on "The Rhododendron" was read by Mr Robert Clark, Scotsraig Gardens. He opened his subject by giving some details of the rise and progress of the Rhododendron since it was introduced in the year 1656. The species introduced at this period was that known as *hirsutum*, which, for nearly one hundred years afterwards, was the only representative of the genus to be found in Britain. After glancing at a few of the most notable introductions and hybrids of late years, Mr Clark then spoke at some length on the native haunt of the Rhododendron. With a few exceptions they were clearly plants that loved the mountain air, being found in far the greatest variety, beauty, and profusion in the higher altitudes of mountainous districts. The Rhododendron too, it was shown, is naturally a moisture-loving plant, growing most abundantly in the damp rocky defiles of mountain-ranges; or, when their position was less favourable for root-moisture, the atmosphere was generally found to be damp, and the climate generally more humid. The character of the soil next claimed Mr Clark's attention. Peat, he said, seemed to meet the natural requirements of the plant more than any other kind of soil; and this, he thought, showed the Rhododendron to be a "vegetarian," delighting in a vegetable diet. Loam or other soils, however, would also grow Rhododendrons to considerable perfection, if they were well treated in other respects. A few remarks on the

general treatment of Rhododendrons brought Mr Clark's most interesting paper to a close.

Mr James Laird, Monifieth Nurseries, then read a paper on "Transplanting." In taking up his subject, Mr Laird referred to natural, varied, and curious means for insuring the distribution of plants, in the first place by seed-sowing. In this the wind played an important part. The feathered songsters of our fields and woods also did much to mix and spread the vegetation of our globe. Much of their food consisted of seeds which in many instances escaped injury in the process of digestion, and were often deposited in districts far remote from their original position. Transplanting was an artificial means of distributing plants at an advanced stage of their growth, so as to suit the requirements and taste of each individual operator. Mr Laird then spoke of the various devices used to assist in the removal of large and bulky trees, and mentioned some instances of enormous specimens being transported to great distances with the greatest success. He then passed on to the more practical part of his subject, and treated at some length of the proper seasons for transplanting, making some reference to the various arguments in favour of both spring and autumn planting. His own opinion was, that spring planting in the case of evergreens, and autumn planting in the case of deciduous subjects, was perhaps the safest system. He had to admit, however, that much good argument had been used in favour of the reverse course. The preparation of the tree before removal, and the mode of carrying out the operation, were then referred to, with which, and other valuable hints, Mr Laird concluded his paper. A lively discussion followed.

Hearty votes of thanks were awarded the readers; and a like compliment being paid to the chairman, the meeting closed.

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## Calendar.

### FORCING DEPARTMENT.

**Pines.**—As a rule it is not desirable to keep Pine plants that are expected to make a vigorous growth next season in an active growing condition after the beginning of this month. Early autumn-potted suckers will now be well rooted, and if kept moist and warm would grow freely, but it is much better to keep them quiet—resting them without stinting through the dull months of winter. The night temperature should not exceed 60°, and when it is cold or windy a few degrees lower will be better. If the bottom-heat ranges between 75° and 80° it will be high enough. Keep them just moist at the roots; avoid the extremes of dryness and moisture. The atmosphere should be dry rather than otherwise, without being parching. Recently potted suckers should have 5° more top and bottom heat till

well rooted, when the above treatment should be applied to them also. If any strong suckers have been shifted last month with the intention of their being fruited next autumn, these should be kept growing gently all winter, provided they are in light structures and near the glass. Give all young stock more or less air every day, and see that none of the plants are under a drip, or the soil will become soured, and they will suffer in consequence. All plants of Queens intended to start into fruit soon after the turn of the day should be kept at 60° at night: these should be kept rather drier at the root than suckers, and with a bottom-heat of about 80°. Those that are intended to start later, to form a succession to the earliest Queens, must not be allowed to become very dry, or they may get a

check, and start before they are wanted. All plants swelling-off fruit must be kept steadily moist at the root, with a moist atmosphere and temperature of  $70^{\circ}$ , and a bottom-heat of  $90^{\circ}$ . Sprinkle the floors and surface of the bed on fine dry afternoons, but do not wet the foliage after this season. As soon as large fruits especially begin to change colour, keep the soil drier by degrees till it is almost quite dry, when the fruit is quite ripe; for if kept very moist, large fruits are apt to begin decaying at the core as soon as they ripen. Ripe Pines can now be kept for a month or more in a cool dry room.

**Vines.**—Ripe Grapes are more subject to mould and decay in November than any other month, and every precaution must be taken to prevent it. Keep the night temperature as near  $50^{\circ}$  as possible, and on all fine days give a free circulation of air, making fires if necessary to expel the damp. Keep the front ventilators closed during fogs, but open the top ones a little, keeping sufficient heat in the pipes to prevent stagnation. Look to every bunch at least twice weekly, and remove every bad berry. Do not allow a pot-plant in the viney that requires water, and see that no decaying leaves on leaf-stalks are allowed to hang on the Vines. Prune all Vines that have cast their leaves, and if there has been any red-spider on them during the season of growth, remove all loose bark and scrub the Vines with a hardish brush and soapy water; then dress with Gishurst's Compound at the rate of 10 oz. to the gallon of water. Where ripe Grapes are required from pot-Vines in April, the Vines should now be placed in the house where they are to be forced, and all put in readiness in connection with it for starting them next month. If they can be placed so that they may have a gentle bottom-heat, it will be a great help in getting them to start into growth; and if placed on a bed of soil into which they can root through the bottom of the pots after active growth is commenced, they will derive much benefit from it. There are now so many Grapes that can be kept in good condition both on the Vines and in Grape-rooms, that it is not necessary nor desirable to start permanent Vines

till the end of December. The outside borders of these should now be well covered with dry fern or straw. It is presumed that the surface of the borders of all early vineries have been properly cared for as directed in former Calendars. If any of the summer top-dressings are still on borders of later Vines they should be removed now, and all inert soil that may be immediately underneath them. Lay on a few inches of fresh loam and a good dressing of bone-meal, and fork it into the surface of the border; then lay on five or six inches of farmyard manure, and a sprinkling of dry litter over all to keep frost out of the border. Examine the main drains that carry water away from the foundation of borders, and see that there is a free water-way. Complete all necessary alterations in heating, painting, and repairs while Vines are dormant. Where new Vine-borders are to be made, and the soil for such is not yet collected, lose no time in attending to it, and if possible protect it from rains till it is put into the border. A rather strong loam lying on a thoroughly drained bottom gives the most satisfactory crops of Grapes for a length of time, and the mere turf from light sandy soils is the least satisfactory.

**Peaches.**—All trees intended to be started next month should be pruned and tied at once. After they are pruned, and the wood and glass all cleansed, syringe the trees with paraffin and water, at the rate of a wine-glassful of the former to a gallon of the latter, and in five minutes after syringe with clean water. We find this the most thorough preventive of green-fly in the early stages of growth. Remove all the surface-soil from the borders, and treat as directed for Vine-borders, and water the inside border if at all dry. The leaves will now be off all the mid-season trees, and as soon as convenient prune and otherwise put these in starting order. The late trees will now be nearly leafless, and if the leaves are not adhering firmly to the trees they may be brushed off. See that no part of inside borders are allowed to get dry. Let all young trees be planted without delay.

**Figs.**—Prune and tie as soon as all the leaves are fallen. This, of course,

refers to late trees, for the early ones are leafless long ago. Like all other fruit-trees, Figs are often tied in too thickly, and this evil should be avoided. Remove the surface-soil of inside and restricted borders quite down to the roots, and cover them with some fresh loam with which horse-droppings and bone-meal is liberally mixed. Keep plants and pots cool and airy all through this month, but see that they are not allowed to become over-dry at the roots.

**Cucumbers.**—The nights are now long and the days sunless, conditions which are very trying to Cucumbers. When cold, keep the heat at

65°; when mild, 70° at night, with a rise of 8° or so by day. Water at the root must be more sparingly applied, and the air kept drier. Give a little air every day, and keep young growths regularly stopped and the leaves from getting crowded. Do not allow them to bear too many Cucumbers at once, or it will weaken them.

**Strawberries in Pots.**—These should now be plunged in cold frames, or placed in orchard-houses or any cool airy place where severe frosts cannot reach them, or many of the pots may get broken. See that they are never allowed to become dry, nor so placed that worms get into the pots.

### KITCHEN - GARDEN.

WHERE forcing of vegetables is a matter of importance, the work in this department will soon become general. We never could see much to boast of by having a mere item of any class of forced produce for the sake of saying that such had been on the table. Those who have good Seakale and Rhubarb at Christmas are perhaps the wisest so far as economy is concerned. In places where there is abundance of means, it is merely a work of labour to get plenty of Asparagus, Seakale, Rhubarb, Chicory, Mushrooms, young Carrots, forced Potatoes in pots or planted out in pits, Radishes, and French Beans. French Beans are more difficult to supply in January than now. Those planted out in frames and pits, and protected from severe weather, may not be out of bearing yet; but where fire-heat cannot be applied to keep out damp, it is a difficult matter to keep them fruiting after November sets in. Those who have preserved quantities in salt are best off; and much labour, expense, and anxiety are avoided. Where there are means to grow French Beans they may be started at once in small pots—size is not very important—with three to five beans in each, and allowed to grow a few inches high in a heat of 55° to 60° (more with sun), with due proportions of air and plenty of light; and potted into 7-inch pots or a size larger, they will do well, and make an excellent change with other vegetables during winter. Every two or three weeks a

number of pots may be started as succession crops. When placed on warm tan or leaves (in which soot and lime have been mixed to eradicate slugs), they grow freely, and are not so liable to thrip or red-spider. When in flower, much care is necessary to get them to set freely. Sion House, Osborns, Williams, and Newington Wonder, are among the most productive kinds which we know of. Asparagus may be lifted carefully and placed thickly together on a bed of warm leaves; cover with a few inches of light soil, water with tepid water, keep close till it is well up, and give air as it increases in size. Beware of too much heat to burn the roots, and if kept too warm and close overhead the produce will be tasteless. Seakale, where early ripened and ready for forcing, may be started at any time. A quantity of roots dug up carefully and placed in darkness anywhere, with a temperature of 55° to 65°, will start and come into use in good time. Pots placed over crowns in the old-fashioned way, with warm leaves and litter, answer well for bringing it forward. Some like Seakale forced in this way so much, that they will allow no other method to be put into practice for forcing it. Overheating of the forcing material must be guarded against. Rhubarb may be forced anywhere; it requires no blanching, and may be brought forward by the aid of a box placed in a kitchen or cellar. In vineries, under stages of plant-houses, manure-heated frames, and pits,

are some of the means applied to force this useful esculent. Chicory is forced similar to Seakale, but requiring little heat: it must be well blanched. Mushrooms should be plentiful now where there are means to grow them. Horse-manure partially dried and beaten firmly into a bed about a foot deep, spawned, and covered with loam about 2 inches thick over the surface, will give good mushrooms in the course of a month or six weeks. When the bed shows signs of dryness, water moderately with tepid water. Mushrooms do best in an even temperature from 50° to 60°, but we have known them do well in a temperature down often from 35° to 40° at night. Young Carrots sown in September will soon be fit to draw. Thin them out as they are required for use. Those in the borders may have ashes or old tan placed among them, leaving the tops standing clear. A frame with a gentle bottom-heat, on which has been placed 6 or 8 inches of soil, may be sown with Short Horn or Early Nantes. The seed may be sprinkled in drills in the usual way, and covered with fine soil. Potatoes, early ripened, may be placed in heat on moss turves, in boxes on soil, or otherwise, to sprout for early planting. A gentle bottom-heat (say 55° or less), over which is placed some good soil (turfy loam and leaf-mould answers well), and the tubers which have been well matured, planted, and covered lightly at first, may turn in well early in the season. They require all the light and air possible, frost and rain only being excluded; tubers, placed singly in 7 or 8 inch pots, half filled with soil, may be put on the way to grow. They (the pots) may be earthed up with soil as the Potato-tops make progress. Potatoes planted in July to give "new" tubers may be protected with a frame to keep the tops growing as long as they are of use to the tubers. When they are killed down suddenly by frost, the Potatoes are watery and tasteless. There is a false value put on many items of this character, which is unwarrantable. Peas in frames and pits, whether planted out or in pots, require all the air possible; to attempt to drive them forward with much heat is simply labour in vain. Radishes grow easily in light soil, placed over gentle warmth,

under the protection of a frame; they do not stand much forcing. Lettuce and Endive may be carefully lifted with good roots, and placed thickly into pits ready for use. Endive may be kept close and shaded with mats to blanch it; slates or boards placed over it answer the purpose fairly. Frames in which are young Cauliflower for early use may have abundance of air and light; drenching rain should be kept out. Plants under hand-lights on ridges must not be coddled, otherwise failure may be expected. Tomatoes in pots, or planted out, must be kept near the glass, allowed to bear moderately, and when in full fruit, with plenty of roots in the pots, liquid manure may be given clear and pure. Mustard and Cress may be sown in boxes as often as required; two or three successions ought to be on the way; give plenty of air when the produce is getting ready for use. Thread Onions are grown in a similar manner, but they will not stand heat when they are well through the soil. We need hardly add that forcing of all kinds of vegetables should be treated according to nature as much as possible, except those which are blanched, and they will not be good if grown in an impure atmosphere.

Digging and trenching up vacant ground to the action of frost may be done as circumstances will allow, but in well-appointed gardens there is little vacant ground at this season. In old gardens a little subsoil brought to the surface and mixed with the old well-manured soil, may be of great benefit in giving fresh life to the ground; light sandy soil brought up among strong clay land is very useful in freshening it, and the same with heavy soil brought to a light surface. Manure may be wheeled where required, laid in ridges, and covered with soil till it is used, which saves its virtues, and prevents unsightliness in the garden. Asparagus not already cleaned and dressed for the winter may have attention as early as possible. Peas and Beans may be sown on warm borders. The seed sown on the surface, in rows, and covered with fine soil, is a good plan; but on damp cold soil this practice seldom succeeds. The use of frames for protection of February and March sowings suits most places. Protect Artichokes

with litter round the collars of the plants. Coal-ashes answers the purpose by throwing off damp and excluding frost. Have litter in readiness to protect Celery, if severe weather should set in; damp harboured among the plants rots them quickly. The covering of litter should not remain on the Celery after a thaw sets in. Cauliflower and Broccoli turning in may be lifted to pits, outhouses, or sheds, to save them from severe frost. Broccoli growing strong and long in the stocks, may be heeled over with the heads to the north. Some have much confidence in this old practice, others have none; on very wet heavy land we do not think the practice very satisfactory. Spinach and Turnips may be further thinned if they require it. Keep them free of weeds,

and have the surface of the soil well hoed when weather is dry. Repairing of walks, where such exist, may have attention, and fresh gravel given where it is required. Draining may have attention. Turning of manure heaps, collecting soil and leaves, may be labour well spent. Repair or re-plant Box edgings where necessary. All renovations may be advanced at this season when weather will allow.

Renew herb ground, if required, by trenching and replanting the roots. Lift Mint, Taragon, and other herbs for forcing if wanted. Seeds may be looked over and cleaned during inclement weather, and roots examined. Have a store of roots in reserve against frosty weather.

M. T.

### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

J. B.—We do not think the plan you speak of would stamp out the Potato-disease. The spores would still be here, we fear for a much longer time—a few years.

T. F.—Sea Eagle and Barrington.

A. B.—There is no doubt the deplorable state of your Grapes is caused by the roots being injured by stagnant water.

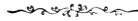
J. G.—Certainly not.





THE  
GARDENER.

DECEMBER 1881.



NOTES.



PEAKING for a moment of André's new scarlet Anthurium, alluded to in my "Notes" of the November number of the 'Gardener,' I forgot to say that it was at Mr Bull's nursery where I saw this plant so fine. Such an impression did its big spathes and great velvety green leaves make upon me, that I specially took my wife to see them,—she, while not unmindful of other duties, being—as all gardeners' wives should ever be—deeply interested in plants and flowers. I think, if I were M. André, I should make a special pilgrimage from Paris to Chelsea to see my foundling; for of all men there are few who have more interest and affection for a plant than has the man who collected it, or introduced it for the first time into Europe. What a blaze that plant will make amongst the white-flowered Orchids when more plentiful,—when the little guinea and two guinea plants now so numerous become strongly established! And yet another word on the potentialities of the thing. "A little bird whispered to me" of the "lots of seed" hanging on the spadices of this Anthurium in another place, adding maliciously, "I'll not say with what they were fertilised." Naughty, tantalising little bird! May your softest perch be a furze bush, and I hope the servant may give you buckwheat-chaff instead of hemp-seed for your supper! Even then may "no song no supper" be your lot until the crack of doom, bad birdie!

Of all the notes in the last number of the 'Gardener,' none could possibly be more interesting, or more to the point, than that on page 524, referring to *Calanthe Veitchii*, and its pale and dark varieties.

Here we have both forms, and I can corroborate the facts of the case ; as also does Mr H. Knight (in 'Gard. Chron.,' Nov. 5, p. 594), now of Greenlands, Henley-on-Thames. Facts of such practical import are especially useful at the present time—indeed at all times—seeing that a good variety is as easily and as cheaply grown as a bad one, the ultimate results being in every way superior ; *i.e.*, one thus by good selection obtains what one may fairly call a heavy additional interest upon the same amount of capital.

The late Provost Russel's collection of Orchids seems to have been formed on similar lines—best varieties only being retained. And of all the collections of cultivated Orchids I ever saw, his, as originally formed at Mayfield, near Falkirk, was by far the best in point of culture.

Of all Orchids now in flower, there are but few that can in any way equal the old double-sheathed *Cattleya labiata*, which generally with us puts in its appearance about the first week in November. This is of course the true old "autumnal flowering" variety,—as superior to all other *Cattleyas* of the *labiata* and *Warneri* sections, as is the true *Cypripedium Maulei* to our old and ever-welcome friend, *C. insigne*. Our *Cattleya labiata*, with four enormous rich rose-petalled flowers on each of its stout spikes, is now the gem of our little collection—an excellent form of the Tiger *Odontoglot*, *Odontoglossum grande*, serving as a remarkable contrast with it in point of colour.

Now that selection is the rule, here is a short list of *Cattleyas* worth having : *Cattleya Exoniensis*, *C. labiata* (true), *C. Mendelii*, *C. Dowiana*, *C. aurea*, and *C. gigas*. Strong pieces of these obtained now, and well grown for ten years, or even less than that term, would yield a good return on capital and labour if then sold. Orchids are to-day more plentiful than ever, and yet at no period in the history of their cultivation did really sound specimens of good varieties fetch more money when disposed of.

Looking over some wonderful dried specimens of big Pitcher-plants (*Nepenthes*) some time ago in an "upper room" in the Chelsea nurseries of Messrs Veitch, I was not very much surprised when one gentleman present exclaimed, "Why, dear me, the day of really fine Pitcher-plants is yet to come!" And such, without a doubt, is the fact of the matter. It is not every one who goes into that "upper room." I suppose a blank cheque, all signed and delivered, would not get some people within fifty yards of the stairs, charmed they never so wisely. Ah, my friend, a wonderful place is that "upper room," with its little bales of what Schlieden playfully called "hay for the botanical asses ;" its clusters of big pitchers, of marvellous size and form, to which here and there hang in rustic caligraphy, in black pencil or ink, on curious sun-stained paper, the description of

colour and habitat, as given by the hand of the collector who plucked them from marsh or mountain-side.

“Oh! but I say, isn't this a wopper?” (the speaker being a Cambridge man accounts for the classical and expressive language.) The “wopper” in question was a pitcher of N. Rajah—the giant Pitcher-plant of Kina Balu or “Chinese Widow Mountain” in Borneo. And certainly that pitcher “was big,” as the American said when he heard of a 40-foot conger-eel from a “go-to-meetin' Injun.” Anent that “upper room,” I was once talking with a man who has reaped many honours and rewards as an artist, but whose heart, instead of being “in the Highlands” or “over the water,” is generally in his garden. “Of all men, I envy only one,” said he, “and that is Mr Harry Veitch.” “And why Mr Veitch?” I asked. “Why! do you say? and you a lover of plants! Why! why, because with his something like a dozen collectors raking the ends of the world for him, his mails of letters and specimens, the hopes and discoveries of these enthusiasts must be delightful. Talk of the gardening papers, forsooth! why, with that man's letters before me, I would not execute a commission for the biggest and richest cotton man I ever saw until I had read every line of them!”

I hope, now that this same *Nepenthes Rajah* has appeared in public, and has “won his spurs” in the shape of a first-class certificate from the Royal Horticultural Society, that we may see him more often in private. I am inclined to think that it will grow best in a basket of fresh loam fibre and well-washed granite grit, with *not too much* sphagnum growing above. My plant, kindly presented by the owner of the “upper room,” did not grow half so well during the recent hot summer weather; but when chilly nights came, he shot away another larger leaf or two, in a temperature and atmosphere where *Odontoglots* and *Masdevallias* do well. And yet one must be careful during winter, when cold houses run down so rapidly sometimes; but in summer a cool, moist, and moderately airy house seems to suit it well. A very slight shading from direct sunlight is essential.

All growers of the “Queen of Autumn,” otherwise known as the *Chrysanthemum*, will now reap the results of their labour for the past eight or ten months. Of white kinds, Mrs G. Rundle and Elaine are now (Nov. 9) fairly in bloom, the latter being especially valuable as a good pure white flower for bouquets and other decorative uses. The finest whites for late use are Fair Maid of Guernsey, Ethel, Snowdrop, Fleur de Marie, and Empress of India. Even beneath sunny walls White Queen and St Mary are yet very lovely, and afford good blooms for the flower-basket. Of yellows, Mrs Dixon (golden) and George Glenny (sulphur)—both sportive relations of Mrs Rundle—are good. Mr Brunlees is a good Indian red; Angelina a good bronze or amber; Mr Bunn also a fine yellow. And to contrast with the white and gold

kinds, there are few of the more highly coloured red or ruby-tinted varieties that surpass Dr Sharpe as an early flower, although *Progne* beats it in colour later in the season, and has, moreover, a delicate perfume. Anent Dr Sharpe, I wish to say how much it resembles the coloured plate in Curtis's 'Botanical Magazine,' vol. x. p. 327, there called *C. indicum*—perhaps wrongly so, since *C. indicum* seems to have belonged to the small-flowered race, or Pomponne kinds. This plate and our Dr Sharpe are identical (both showing a fair double crimson-purple flower with quilled florets)—rather interesting, seeing that the plate in the 'Magazine' was published as long ago as 1796. This curious coincidence is suggestive. Has this old variety lived through all the cultural vicissitudes of nearly a century? Or has it been recently "raised" over again from seed, and sent out as "new" by some modern grower? In other words, who was the raiser, sponsor, or distributor of Dr Sharpe—who "sent him out?"

When in London a few weeks ago, I visited Messrs Low's Clapton nursery, and there saw such a collection of Orchids as "made my mouth water,"—if I may be permitted to use so expressive and familiar a quotation. The Phalænopsis house, a low span-roofed structure of large area, is crowded with—I was going to say £5 Bank of England notes, but I mean with what is pretty much the same thing after all—established plants of Phalænopsis in the most sturdy health and vigour of growth and flower-spikes. Taken in the mass, *P. Schilleriana* is most largely represented. Would that the genial Orchid-loving old consul could just now peep in at Clapton to see his namesake in such healthy profusion! How his thoughts would travel back to the time when a tiny plant opened its spike of two flowers in his collection at Hamburg for the first time! There are also the varieties *casta*, and *leucorrhada*; even a plant or two of *Veitchii* has bloomed in this batch, and the variation of leaf, outline, and markings is so diverse that one irresistibly longs for a cheque-book or a supply of the aforesaid Bank of England paper, so that a few of the most "taking" specimens might be ours.

*P. amabilis* is another kind largely represented, together with other species less common. To attempt to describe these plants is useless; and speaking from experience, I advise all Orchid-growers, amateurs or otherwise, to accept Mr Low's published invitation to go and see for themselves. Of other Orchids the following may be especially noted as being represented in quantity. Of *Odontoglossum Alexandræ* and *O. Pescatorei* I am afraid to say how many thousands I saw here: to say that several large houses are entirely filled with its bulbs in all stages of growth is but little more satisfactory. As near as I can judge, however, and supposing that the plant was hardy in our climate, (as it pretty nearly is), there are now as many at the Clapton nursery

as would plant two acres of land at a foot apart every way ; or say in round numbers, close upon 100,000 ! I may be wrong, of course. I hope I am partly so, and that Mr Low has sold half of them since I saw them. *Lælia purpurata*, *Zygopetalum maxillare*, *Cattleya Trianiæ*, *C. Mendelli*, *C. Dowiana*, *C. dolosa*, and other kinds, were also there in batches ; not “little bits,” but fine healthy masses, with latent force enough in the great fat pseudo-bulbs to make specimens of them in good hands. Of *Dendrobium heterocarpum* var. *philippinense* I saw a long side stage filled with hundreds of plants, the whole facing a bank of delicate primrose-coloured flowers. *Cypripedium Stonei*, and the still more rare *C. lævigatum*, *Aerides Leea-num*, *A. suavissimum*, *A. quinquevulnerum*, and many other kinds too numerous to name, were all there in fine condition.

Of neat and pretty little trailing-plants for a window or cool greenhouse, I have one now in my mind's eye (and, thanks to Mr Moore of Glasnevin Gardens, in the greenhouse also), that is of all things to be desired. I allude to the “blue-flowered Shamrock,” (anent which English name I am confident, having had it direct from the maker thereof), or as it is known of the botanist, *Parochætus communis*. For the benefit of those who do not know the plant under either of the above names, I will liken it in habit to a plant of white Clover, also supposing that instead of the bossy heads of many white flowers, only one blossom is produced at each axil of the creeping stem, and that one blossom of the size and colour of that of the “Chick Pea” or Chickling Vetch, yeleft *Lathyrus sativus* in y<sup>e</sup> Latin, as opposed to the vulgar tongue. Now small blue Sweet-Pea-like flowers borne on slender stalks 2 or 3 inches high above a Clover-like tuft of trefoil leaves, is, as I take it, a great, if somewhat old-fashioned rarity ; and as such I hereby most heartily commend it to all who care for plants of interest apart from bold colour effects. I also give due notice to Mr Ware of Tottenham (the Hall-Farm nursery of that place), “so that he may be able to serve to such as may desire to have the same.”

The writer of these notes hereby confesses to a love for what he considers one of the fairest beauties of a good spring garden. In plain words, he alludes to his fondness for Anemones of all kinds—*A. alpina*, *sulphurea*, *fulgens*, *purpurea*, *blanda*, *Robinsoniana* ; and last, but not least, the common garden Anemone, single and double, “delighteth him beyond all measure,” as Parkinson (or is it Gerarde?) says of them. I allude to them as fair in the spring time ; but a good fairy (of which there are yet many in Ireland) brought to me on Friday, the 4th day of November last, a bunch of double and semi-double garden Anemones such as I, during half a lifetime affectionately spent in gardens, have rarely seen equalled even in the spring. They were grown on the Hill of Howth, a sunny spot on the warm side

of Dublin Bay. Some of the flowers were nearly 4 inches across, and all but as double as a good *Ranunculus*, each rosette being borne aloft on a stout stalk nearly a foot in height,—the elegant frill of bracts below the blossom adding a befitting garniture of greenery beneath the flower. In colour they varied from purple, rose, lilac, magenta, crimson, scarlet, through all the more delicate shades of pink, rose, and salmon, into nearly pure white. Some kinds had broadly cupped and others had narrow lance-shaped petals, but all were bright and beautiful, quite putting to shame some of our highest coloured *Chrysanthemums* with which I compared them. On first seeing them, I mistook them for artificial flowers cleverly made and artistically stained with the most vivid of coal-tar or aniline dyes. “Oh, shades of Judson!” thought I on further examination; “why, old Dame Nature can beat thee hollow; ah! and in November too.” Then after enjoying my excitement, the good fairy, yeleft for the nonce St Brigid, told me how I might grow these lovely blossoms for myself,—the secret being, to obtain good seed and to sow it early in autumn, taking great care to place a thick layer of cow-manure a few inches below the surface of the bed upon which the seeds are to be sown. Another point is not to cover the seeds too thickly with earth; and again, during hot summer weather, waterings of cow-manure water strengthen the young growing plants amazingly. A strong point in growing these flowers from seed is never to allow the seedlings to suffer any check whatever, but to grow them on strongly and quickly up to the flowering stage.



### HINTS FOR AMATEURS.

#### HARDY FRUITS.

THE planting of all kinds of fruit-trees is safer where the work is completed, all mulched, and made secure against wind: many are not ready to plant before this season, and others prefer leaving it to spring; but we have a strong objection, for many reasons, to planting fruit-trees or shrubs between December and February. What is known as winter pruning is the removal of the useless growths, crowded spurs, and old bearing wood, to admit of laying in fresh. As much as possible of this work may have been done in summer and autumn pruning. Cut close to a wood-bud, and leave nothing to die back, where crowding threatens. The worst formed branches or shoots should be removed. The wounds should be cut smooth. With standards (especially large orchard-trees), upright branches left, crossing ones cut clean out, and centres open, is the summary of the pruning of such trees. With the limited space of gardens, specially of the small amateur class, the work is of a different character, and upright bush or pyramid-formed trees are best: where they have been kept to size and form by keeping the roots within bounds, and in a mass of fibre, the pruning is a very light operation. The branches are then in a mass of fruit-spurs, and a little shortening of current year's growths, removing worn-out spurs, and clearing off anything that is dead, are the chief wants of such trees. Mulching them may be of great advantage.

Where any show signs of canker, or shoots dying back, it is certain that they are in unhealthy soil. The feeders may have penetrated into a depth far from heat and air, and are perishing. Bringing them up to the surface, spreading them out nicely into fresh soil, covering 6 inches, and mulching with manure, will do much towards restoring them, and keeping them healthy and fruitful. If brickbats, stones, or concrete are used to prevent the roots from going downwards at planting, much labour may be saved in future. We have lifted a wall of Apricots, Plums, and Cherries this autumn; and under them were placed a quantity of broken brick, lime-rubbish, and turfy soil on the top of it. All are well covered with clean loam, and mulched to keep out frost and drought. Such trees ought to go on for many years without showing any signs of gross barren wood; and such wood on Apricots is at all times in danger of dying off. The Apricot is one of the hardiest trees known, and one which requires most fresh air; but when the roots get into soil such as is well known to be foreign to them—cold wet clay, for example—"dying off" may be seen at any time. We often have remarked that they may be met with doing well year after year with no skilled training, but then the roots are where they have their natural food, and make up for a deal of neglect otherwise. By all means train as elegantly and skilfully as possible. While doing the one thing, see that the primary requirements (that of the roots) are not neglected. Firm, rocky soil, with a fair amount of lime in it, is very suitable to Apricots; in fact, all stone-fruits do well in such soil. All bush-fruits may be pruned and mulched with good manure. Where there are signs of exhaustion in the bushes, they should be lifted and planted in good soil well enriched. Gooseberries do well with such a change. When pruning bush-fruits it is well to remove a few of the older branches every year, and introduce a number of young ones. The plants are then always in vigour, and fit for their work. It is of much importance to trees to scrape moss or other vegetation from their bark, and a good washing of lime, and some soot to darken it, applied to destroy insects. A good dressing of rich soil and manure may be given after old inert soil is removed. The draining of orchards or gardens for benefiting fruit-trees should have attention at earliest convenience. Do no work of this kind without a just reason: to do it at random is worse than useless.

#### FLOWER-GARDEN.

Climbers on walls and wire-work should be regulated, and what training is required may be done without delay. It would be difficult to state how all plants should be pruned, but as a general principle, none should be allowed to become crowded or matted. Some kinds, such as Jasmines, do well when spurred; others cannot be touched with the knife to be of any service, except the whole of the old shoots are cut out and replaced with young ones; but to leave them alone is to allow them to run wild and become worthless. It is better to fix nails to remain permanently, and tie the branches to them, than to use shreds, and be driving nails often. Wires to train climbers to are the most economical, and always most sightly.

The planting of Crocus, Tulips, Hyacinths, Narcissus, Jonquils, Scillas, and other bulbs, should be finished as early as possible; and all plants considered in danger of being injured by frost should be protected by Ferns or fine coal-ashes. Old tan is useful for the purpose. Clean, trim, and replant herbaceous plants not already done. Those which have been marked early in the

season to have their positions changed may now be attended to. A herbaceous border to be effective must be arranged with consummate care. Dwarf kinds smothered up by tall growers—scattering roots through the ground when digging is going on—allowing them to unduly monopolise space,—are some of the evils *not* uncommon in the management of herbaceous borders. If they have become much deranged, it is best to lift all the plants, arrange them in order on spare ground, trench and manure the border in which they are to be planted, and place them in their position, with plenty of space between each.

Herbaceous plants look well in groups arranged on carpets of Sedum, or some other dwarf covering to the soil. Beds edged with such plants as Arabis and others may be prepared and planted with shrubs or spring-flowering plants. They should have the same care as to keeping as given to summer bedders.

Rolling and sweeping will require much attention till all the leaves are off the trees. Turfing, walk-turning, gravelling, and all such work, may have attention when it can be done. All shrub-planting not completed this month had better stand over till February and onwards. Evergreens do well till April. They are then about to push into growth, and move on unchecked. Avoid planting out of views or cutting up greensward. Curtailing lawns, by cutting up the space into beds, is not uncommon, but very objectionable; and many places, large and small, are ruined by it.

#### ROSE-GARDEN.

A long chapter might be written on Roses at this season, their general treatment is so varied in certain localities: kinds which do well in some soils, may be seen in others half dead with mildew. But writing on *these* difficulties to *any* extent will do no good to any one who does not cope with them on the spot, and use legitimate means to secure the end in view. A few general remarks, by way of remembrance, are offered. Roses require deep well cultivated soil: free drainage (natural or artificial). Rotten cow-manure suits well where soil is light, as a general manuring or for mulching. Where soil is heavy and tenacious, rotten horse-manure (being more open) is very suitable. Where roots can run free unchecked, mildew is less formidable. The plants consume much nutriment while in active growth, and liquid manure tells wonderfully on their growth and flowers too; but when stagnant water harbours about them, in winter especially, they have a sorry appearance during the summer. Now being a good time for planting, selections should be made instead of collections. Roses are scarce this year, and very expensive. Many good nurseries were almost cleared out last year. Pruning is a matter for consideration, when the severest of the weather is past. Good mulching is always of much service, both for protection and nutriment to the plants. Those grafted or budded close to the roots of stocks should be planted under the junction, and the mulching to fit closely to the collars. Tea and other tender Roses are protected very simply by lifting them and placing their roots safely in any light soil in frames or turf pits. Trained Roses, of the tender kinds, can be easily protected by Fern or Spruce branches.

#### PLANT-STRUCTURES.

Chrysanthemums will be gay to end of month. They then should be hardened gradually for the supply of cuttings. Most plants date their success from the cutting or seedling stage. Azaleas, Camellias, and some of the stock



of forced plants will take the place of Chrysanthemums, where there are means to bring forward the numerous plants often referred to for conservatory decoration. Better to err on the side of low temperature at this season than the reverse—small batches taken in often, are preferable to large quantities at longer periods. All plants to be forced should be under protection of some kind. Never take frozen plants into heat; all forcing should be gradual, and as natural as possible. At all times take every advantage of sun-heat. Greenhouse plants of the hardwood class should have plenty of air when weather is mild. Use fire-heat to expel damp, and the temperature need not fall much below 40°. About 45°, all other things being equal, will suit most plants in the daytime—at night 6° or so less in severe weather is all the better for the plants. Cinerarias, Calceolarias, Cyclamens, and Pelargoniums require plenty of light and air, and damp must not be confined in the structure. The last named may be kept drier and more airy than the others. Mildew must have no place, but have sulphur dusted over it. Vermin and decaying matter must not be seen. In stoves the treatment varies little from last month: numbers of the plants grown specially for Christmas decoration will now be well forward. Among the chief of them are Poinsettias, Begonias, Euphorbias, Scutellarias, Calanthes, &c. Gloxinias may be started if wanted early—also Achimenes, a few Caladiums, and others. Mixed stoves may be very “quiet” at this season. Temperatures need not be over 55° at night, and 60° by day. Thrips are always very active at this season: keep the sponge going.

M. T.

## WINTER FLOWERS.

CONSERVATORIES should be brilliant now with flowering-plants, and at no season of the year—not even during the summer—do flowers present such a bright and cheerful appearance. When the days are shortening fast, and assume their most dismal aspect, conservatories and other houses kept gay with flowering-plants are generally places of resort; and frequently much time is spent in these structures during the winter, especially by ladies. Under such circumstances it behoves gardeners to render them as attractive as possible. Cleanliness is of the utmost importance, and in such places even extra precautions should be taken; if dirty they cannot be enjoyable. The glass and woodwork should be clean, and not a green or dirty pot to be found. The stages on which flowering-plants are arranged should be gone over every morning when the watering is being attended to, and all sickly leaves and decaying flowers should be removed. These houses should be, by the time employers are ready to visit them, clean and beautiful. If directions previously given in the ‘Gardener’ have been carried out, there will be no scarcity of flowers, but abundance, and in good variety.

Early and hard forcing of Azaleas, Camellias, Rhododendrons, and other plants, can be avoided, if a judicious system of preparation of suitable kinds has been carried out during the summer. How-

ever beautiful Azaleas may appear during the early autumn months when placed amongst other flowering-plants, it is not really necessary to have them in flower before Christmas, as plenty of others may be had in bloom, by which a brilliant and bountiful supply of flowers can be produced. It is wise to delay the forcing of such plants, if they can be spared, so as to give them as complete a season of rest as possible. A good plan is to train and prepare a few Azaleas in case any failure should occur in the growing of other easier subjects. If not wanted they can readily be retarded, and will afterwards, when placed in warmth, quickly unfold their flowers. In forcing Azaleas or Rhododendrons into bloom, the operation should be gradual, so as to excite them gently into activity, and then allow the flowers to expand under as cool conditions as the plants will bear without check or injury. When unfolded under such circumstances they not only possess better colour and substance, but last longer, both for decoration and cutting. Flowers generally are in great demand about Christmas—especially white ones, which are eagerly sought after at that festive season. Unfortunately we do not possess a good double white Pelargonium that will produce flowers freely at that time—in fact none of the varieties are of much service for either autumn or winter. I have tried *P. candidissima pleno*, *Madame Baltet*, *Nymphe*, and others: these are three of the best that can be grown in their season, but next to useless for the dark days of winter. If preference can be given to either, it is the last named. Double white Primulas are invaluable, and should be grown in quantity, as there is no comparison between the double and single forms for cutting purposes. White Azaleas are indispensable, and the following should be largely grown for the supply at Christmas: *A. indica alba* and *A. narcissiflora*, a beautiful semi-double flower, even earlier than the old white. Some cultivators imagine that *A. indica alba* has to be grown a long time before it will flower profusely on its own roots, but this is a mistake. It will bloom splendidly in 5-inch pots—a capital size in which to grow it; but if potted on and allowed plenty of root-room, it will produce strong, long shoots, which are bare of leaves by the time it has rested or come into flower. This straggling habit can to a large extent be prevented, if kept in the size of pots mentioned, and pruned over once or twice after flowering. When worked on small stems this variety assumes a more compact head. The blooms are grand for using in many positions for church decoration, especially for furnishing the bases of windows. If green moss can be obtained, and the base covered with it, and the flowers dotted into it singly, and a drop of water placed in the centre of each flower, they remain fresher and last longer. It is not necessary to cut any wood with the flower, the tiny stem being sufficient.

For flowering at this season of the year Pelargoniums are amongst the most striking, and will, when properly treated, flower through the

whole winter. Old Vesuvius is unrivalled for a profusion of flowers. Its trusses are considerably smaller than many others; but the freedom with which they are successionally produced more than compensates for the deficiency. Many large-trussing kinds are very good, and give great satisfaction during the autumn. When gigantic conservatories have to be kept a blaze of bloom during the winter, and house-room for bringing the material into bloom is limited, selection is of the utmost value. My aim is to obtain plants that will bloom over the longest period of time, according to the temperature and other conditions that can be given. White Vesuvius is a good companion to the scarlet variety, and equally free here. Apple Blossom and Aida, which are very much alike—the flowers of the latter being a little more pink—are in consequence worth growing. The flowers of either variety individually would not please the florist “proper,” for the petals are loose and anything but a good shape. They nevertheless answer our purpose, by flowering freely and continuously for a long time. The trusses are large and contrast well with the above. Rev. S. Stanhope and Charles Schwind do well, and the stock will be increased. Sophie Birchin, a distinct mottled salmon flower of fine form and substance, does well under the same treatment as Vesuvius. Fanny Catlin and Laura Strachan are good salmons; but where the first-named is grown the latter can be dispensed with. Amongst pinks a variety named Harry Turner is the favourite—being a good-shaped flower, and the trusses are freely produced all winter. Arthur Pearson is free, and promises well; also Mrs Strutt—the flower being rather loose but very large. Mrs Skipworth, Lady Byron, Lady Sheffield, and Mrs Findley, are pleasing colours and fair flowers—a few plants only of each being grown. The semi-doubles are a most useful class—Wonderful being free and most worthy of extensive cultivation. Others have been recommended to me as being better; certainly Raspail makes a larger truss, and is of a much darker shade of colour, but lacks freeness. Guillon Mangilli is very fine for winter, and free, and should be grown in quantity. E. South is a better flower, and of a deeper colour, and is a grand companion plant. These two require more heat, and do not draw up weakly like other varieties: Wonderful soon draws and becomes straggling, if subjected to too much heat. Madame Thibaut is a good pink double of dwarf habit, and flowers very freely during the early autumn months.

A few of the Hybrid Cape Pelargoniums, or Echinatums, should be grown for autumn and winter: they are beautiful for cutting and conservatory decoration, and are very easy to grow, being in no way particular either to soil or treatment. If treated in the same way as Zonal Pelargoniums they do remarkably well; and if potted up during March and placed in a little warmth, they flower through the whole summer and well on into winter. After flowering they can be placed under the stage and kept dry for a long time. When potted

up, the old soil should be shaken from the roots and the plants placed in smaller pots, potting on afterwards as they require it. After they are fairly started they can either be grown indoors or outside, with the stock of Zonals for winter, until housing time. A little heat in autumn soon brings them into flower, and they continue to do so all winter. For button-hole bouquets or cutting, no plants are more serviceable.

Chrysanthemums will be gay until Christmas, if properly treated after the buds are formed, and late kinds selected and left outside longer than the general stock. The beauty of *Souvenir de Malanche* should be pressed upon the minds of all growers of these plants. For flowering from the end of October and through November, no other variety I am acquainted with can surpass it. Its flowers—which are of the purest white when fully expanded—and the freedom with which they are produced, recommend for it a foremost place. It will stand gentle forcing; but if housed as soon as the buds are formed, the plants will be in bloom about the middle of October. Its habit is dwarf, and it retains its foliage much better than any other kind that I know. When once grown, the white *Cedo nulli* would quickly be discarded. The flowers are much after the style of *Elaine*, and resemble in miniature that beautiful white variety.

WM. BARDNEY.



#### MUSHROOM-CULTURE.

THROUGHOUT the winter months few garden productions, in the way of eatables which pass through the kitchen, are more acceptable or highly valued than Mushrooms. When outside vegetables are scarce, as they have been in many instances during the last two or three winters, a good supply of Mushrooms will be found most useful, as they can be used in a variety of ways at the dinner-table, and form substitutes for many other things; and many are anxious to have them frequently for breakfast too. Altogether they must be regarded as the most useful of our crops at this season of the year; and fortunate are they who have the means of producing abundance of them. Although we have heard some assert that they could grow Mushrooms in an old hat, or shoe, or anywhere, I hardly agree with this, and think that reasonable means for their culture must be provided. Material for making beds is of less importance than having a suitable house for growing them in. In summer time, or during the warmest part of the year, they may be grown out of doors or in a cool shed, or any place of the kind; but now, and from November until April, artificial heat is wanted in their quarters. To secure this, many have thoroughly-heated structures; but all are not so well off: the Mushrooms would be more certain if they were. Here our Mushroom-house is heated with a flue, which is capable of maintaining a high enough temperature so long as the outside elements are favourable; but during severe weather the tempera-

ture fluctuates a good deal, and this is much against the Mushrooms. A steady heat is most favourable to them, and this may sometimes vary  $5^{\circ}$  less or more from  $60^{\circ}$ , but never lower, and at times  $70^{\circ}$  is required to bring them forward more quickly. Sometimes our temperature cannot be raised above  $40^{\circ}$ , and this is a great disadvantage, as Mushrooms may be checked in their growth like other things. A good layer of dry hay thrown over the beds at such times is of great benefit. Still this is never so satisfactory as having a good command of heat, and any one putting up a Mushroom-house would find it much to his advantage to see to this. Its form or position is not of very great importance; generally it is included with other sheds behind forcing-houses, and this is very suitable. The most conveniently arranged house we have had any experience of, is one with a pathway up the centre and a bed on each side. The back is some five feet wide—which is a good width for a Mushroom-bed,—and about four feet above this there is another bed made of wood, of the same dimensions as the lower one, and in this way two rows of beds can be made. To the front there is a vacant space, which is filled up with fermenting material, and this answers admirably for bringing forward Rhubarb, Seakale, &c., at the present time. This hotbed manure also helps to keep up the temperature, and a nice agreeable humidity is emitted from it. Besides this, sometimes small beds can be made up here and there in comfortable corners, and these often prove most useful. Whenever it is decided to make a bed to grow Mushrooms, material for its composition must be found. At one time it was generally thought that nothing but horse-droppings would produce Mushrooms, and much time was devoted in getting beds of this; but it is understood now that Mushrooms of the finest quality may be had from beds with little or no horse-droppings in them. We have proved this, and many others have done the same. In fact, the finest Mushroom-bed we ever had has been bearing from July till now, and three parts of it are leaves and turves, the remainder only being droppings. At the same time it may be well to say, that had we abundance of droppings at all times we would use them, but not wholly; and the want of droppings would not keep us from making a bed, as leaves and turves and any other slightly fermenting materials would be used. Lumps of fibrous loam are useful in all Mushroom-beds. It is surprising what a cluster of Mushrooms may sometimes be found coming out of a nugget of loam. The material for the bed, whatever it may consist of, should be moderately dry before being used; but it must not be too dry either, as much of the fertile matter is thereby lost. A little experience will soon enable any one to tell when it is in proper order, and then the bed must be made up. Firmness is one condition of success. When put up loosely the heat soon escapes, and Mushrooms are not produced for long if there is not a little heat in the bed; the longer the heat lasts, the longer will Mushrooms appear. Its size may be anything from one yard square. The larger it is the better;

and a good depth, too, is an advantage, as this all tends to retain the heat in the bed. We have found beds 18 inches or 2 feet deep bear much longer than those half that depth ; and when material will allow, there is nothing like making up a large, deep bed. Its size should be ascertained before beginning, and a layer of stuff should be placed all over the bottom first, and this repeated until the top is reached. As each layer is put in it should be trodden down firmly with the feet. After this the temperature in the bed will rise rapidly, and may reach 100° or more ; but the spawn must not be put in until the heat declines to 80° or 85°.

Good spawn is most important, and such must be used, or no skill will bring the Mushrooms. One of the ordinary squares may be broken up into a dozen or more pieces ; and one of these should be dibbled in every foot all over the bed, and about 3 inches below the surface. The holes made in doing this will let out a good deal of heat, and when there is rather too much heat in the bed this will generally rectify it, especially if the holes are left open for a few days ; but it is always best to close them up before the temperature is too far down, which it would be at 60° or so. As soon as the spawn-holes are shut up, the bed may be soiled over. Various textures of soil have been recommended for this purpose, but we find the soil from any ordinary kitchen-garden very suitable as a rule. It may be put on to about the depth of 3 inches, and it must be beaten very firm, and the surface should be made quite smooth with a spade. It is best when the soil can be beaten into a complete cake all over the surface ; but if this cannot be managed without water, a little should be applied to the surface until it is quite moist, and beaten immediately afterwards, when a smooth surface will be formed. From the time the bed is spawned it may be five or more weeks until the first Mushrooms appear. Sometimes we have had them in four weeks, and at other times it has been double this, much depending on the quality of the spawn and the temperature of the bed and house. To keep up a constant supply, a bed should be made up every three weeks. When a bed has been bearing for some considerable time, and shows signs of flagging, a thorough soaking with water at a temperature of 85° will often put new vigour into the old material, and a fresh crop will be the result ; but of course this will not continue so long as in the first instance. Snails often destroy many Mushrooms, and small worms eat the best part of some ; but a slight sprinkling of salt thrown over the bed at their first attack will generally stop them.

It may be added, that although Mushroom-culture in many instances is one of the easiest of all our garden practices, it is not so in every case, as failures sometimes occur where they are least expected, and nothing is more obstinate than a Mushroom-bed, so that all precautions should be taken in its preparation to reduce the chances of failure as much as possible.

J. MUTR.

## NOTES ON DECORATIVE GREENHOUSE PLANTS.

## THE CHOROZEMA.

THE above genus of plants are natives of New Holland. The name is from two Greek words (*choros*, a dance, and *zema*, a drink), and was suggested to the discoverer by the fact that he found it growing near some fresh water, after the party had been a considerable time without any of that very necessary fluid, and the sight of which caused them to dance for joy. The plant is a greenhouse evergreen, and is one of the handsomest, as well as one of the most useful, of our greenhouse plants. It is useful either for cutting, for decorative work, or for exhibition; in fact it is among the very best of exhibition plants. They bear pruning well, so that should they at any time exceed the space allotted to them, one need not be afraid to use the knife freely upon them.

The soil best adapted to their wants consists of good fibry peat three parts, turfy loam one part, a little charcoal, and a good sprinkling of sharp sand added thereto. They root readily from cuttings of the half-ripened side-shoots about midsummer, and treated in the usual way; but plants raised from seed are by far the best, and make the finest specimens. The seed should be sown in March, and the pot or pan plunged in a hotbed, and covered with a piece of glass, until the seed begins to vegetate, when the glass may be removed. When the young seedlings have made two pairs of leaves, they should be pricked out singly into small pots, and replunged in the hotbed for a time, until they begin to grow afresh. When the pots are filled with roots, they must be shifted into larger ones, and so on, as they require it. They should be pinched a few times when they are small, so as to induce them to break into numerous shoots and form bushy plants. Their time of flowering is from March to June. They can be set out of doors when the weather becomes warm enough, choosing a sheltered place, and exposed to the sun: the pots might be plunged among coal-ashes, which will tend to prevent them from getting over-dry at any time. A winter temperature of from 45° to 50° will suit them.

## TETRATHICA VERTICILLATA.

The *Tetrathica* in habit of growth very much resembles the Cape Heath, and the treatment generally given to the Heath will be found to suit it pretty well. It is a native of New Holland, and was introduced to this country about the year 1845. It is one of the choicest of our greenhouse plants, and most useful either for house or conservatory decoration. As it naturally flowers during the months of June and July, it is one of the best of plants for exhibition at that time. It is not nearly so much grown as it deserves to be, for it is worthy of a place in the most select collection of plants.

The soil best adapted to it consists of good fibry peat with a little

loam added, and plenty of silver sand, with a small quantity of charcoal. It is essential that the plants should be potted firmly; especially after they come to be in pots from 5 inches upwards, a rammer should be used.

The plant is somewhat inclined to be of straggly habit of growth, and therefore, in order to keep it in due bounds, and make a compact specimen, the knife should be used pretty freely annually: it stands pruning well, breaking away again freely.

It is propagated by cuttings of the side shoots, which should be put in in the usual way, in silver sand, and under a bell-glass, and the pot plunged in a gentle bottom-heat. The cuttings are very liable to damp off, and therefore great care should be taken in drying up the condensed moisture from the inside of the glass daily, until the cuttings are rooted. As soon as this takes place, they should be potted off into thumb-pots, and replunged in the bed, which will help to prevent the pots from getting dry so quickly, and thus save repeated waterings. They should be kept pretty closely pinched when young, so that a good foundation may be laid at first. As soon as the small pots are filled with roots they may be shifted into 3-inch pots, and this will carry them through the first season. In order to keep them as dwarf as possible, they should be kept as near the glass as circumstances will permit. A temperature during winter of from 40° to 50° will suit them, and care must be taken that they be not over-watered during the dull winter months; but, in avoiding this, care must also be taken not to rush into the opposite extreme, and allow them to suffer for want of a sufficient supply. After they have started into growth again in spring, they may be shifted into say 5-inch pots, and this will carry them through the second year. It is better to give small shifts, and more frequently, rather than large shifts; the plants will thus be more easily kept in good health—the tendency of the roots being to rush to the sides of the ball first. By small and frequent shifts, the centre of the ball will also get filled with roots. During the summer months the plants may be placed out of doors; but the pots should be plunged among coal-ashes, so that the sun may not injure the roots which are in contact with the sides of the pot. They should be housed again by the end of September. The after treatment will consist of training, cutting them back when they get too straggly, and in shifting them as they require it. J. G., W.



## FRUIT-CULTURE.

### GOOSEBERRIES AND CURRANTS.

WE have already said that, for small gardens, Gooseberries, Currants, Raspberries, and Strawberries are more valuable than such fruits as Apples. We are not sure but, as time rolls on, and competition with the foreigner



becomes closer, that they will also be found to pay better even in the case of growers for market. The leopard will have to change his spots and the Ethiopian his skin, before fresh Strawberries can be brought from America; and as for Gooseberries, America cannot produce them well. Currants, indeed, are brought in quantities from the Continent, but we think that the time cannot be far distant when these fruits shall be produced so abundantly at home that Continental growers will be unable to compete. Our small fruits, even in country districts, are extravagantly dear, considering that there is so much land fit for their cultivation, for which nominal rents cannot be obtained. Every cottager may increase his income, and benefit the community, by producing quantities of these small fruits; for almost all the work necessary may be done by members of his family—instead of, as now, lamenting that machinery has monopolised the work that used to be done by female and juvenile hands. There is plenty of work, if men would only recognise the altered circumstances and adapt themselves accordingly.

This much by the way, however, and we only hope that these remarks may fall into the hands of those for whom they are intended. In the meantime our duty is to teach, as far as in us lies, how to grow these fruits to the greatest perfection and in the greatest abundance.

#### GOOSEBERRIES.

Decidedly the Gooseberry ranks first. Nowhere in the world does the Gooseberry grow to such perfection as in Great Britain. Not only so, but few fruits are so useful; for it is used for making sauce and tarts and jelly when green, for jam when ripe, and it also forms a grateful and wholesome dessert fruit in the latter state. Its uses are so well known that we need not enlarge upon them.

Any good garden soil suits it, but it always pays to treat it well. In order to do it justice, the ground should be trenched at least two spades deep, and liberally manured with stable-yard manure. This may be done any time in winter, and the bushes planted in spring; but we prefer, especially on newly-taken-in soil, to take one crop of early Potatoes off the ground first, and then to plant in autumn. The working of the Potatoes gets the ground into excellent condition for Gooseberries; and when they are planted on finely prepared soil, from the middle of September to the middle of October, and mulched, they root at once and make a fine start the following spring. Plants put out in spring, especially on new, not very well prepared soil, do not make nearly so good a start (even although the season should prove favourable) as when put out under such conditions as we have named; and instead of gaining a season there is often a loss, for bushes which get stunted once, are ill to start into good growth afterwards. Our advice, then, is to trench in winter, take a crop of early Potatoes in summer, and work them well. After the crop is off, fork the soil thoroughly (if light, tread it lightly when dry), and plant the Gooseberry-bushes late in September or early in October, putting afterwards a couple of spadefuls of manure over the roots to keep out frost in winter, and drought in spring and summer. They should not be nearer in the row than 5 feet, and 6 feet should be allowed between the rows.

If possible, plants with one-foot stems should be chosen, which are very much better than those whose branches spring from the surface of the ground. In planting them, the soil should be taken out and the roots spread out in the same way as advised for fruit-trees. Huddling the roots into holes too small to allow of their being properly spread out should be avoided.

The soil should be made firm round their roots; and if the spot on which they are planted is exposed to high winds, each plant should be securely fixed to a stake in a manner, and with material soft enough, that no damage to the bark of the stem or branches may result.

They are often planted in rows round walks, and alternately with Apple and other trees. In such positions they do very well, and serve to economise space; but the fruit will be better in quality if the bushes are in open quarters, for they are not quite so good under the shade of other trees. For tarts and other purposes for which green Gooseberries are used they are equally good. Our advice, however, is to put everything in quarters by itself, for thus a rotation of crops can be carried out, and this should always be kept in view.

Young plants only should be planted; and in order to lay a good foundation for the future bush they should be cut pretty well back. We prefer globular-shaped bushes, with the branches regularly disposed all over the globe at a distance of from 8 to 14 inches. It is of much importance that the sun and air penetrate to every part of the bush, and therefore growths and spurs alike must be kept clear of each other. Some people prefer cup-shaped bushes, but there is no use having some square feet in the centre of each bush unoccupied with branches. It is a waste of space, and no compensating good follows the practice; and with branches thinly disposed, the sun and air penetrate freely enough to produce first-rate results. As nearly as possible all branches should point directly and straightly from a common centre. Branches crossing each other, or crooked and twisted, should not be tolerated.

The Gooseberry bears on spurs which are produced freely on the old branches, and also on young wood. The best fruit is always on the young wood, more especially when the spurs on the old wood are allowed to grow in great thick crowded masses. Most Gooseberry-bushes in cottage gardens are in this latter state. We never yet met the owner of a Gooseberry-bush who did not consider himself a "don" at pruning Gooseberries. The universal plan among cottagers (we are sorry to add, sometimes professional gardeners) is to snap off every young shoot, and they thereby deprive themselves of any good Gooseberries that might have been produced. The crowding spurs they never touch—it is not in their plan. The result is, year after year, a great swarm of miserable fruit, which, although numerically very great, is as a crop (by weight) very small. Still the quantity is matter of much joy, and even pride.

We have described how not to prune. Everybody with eyes can see the resulting failure; but it is simple, and hence its general adoption. The best way is also simple, but requires more mental application. It is, in the first place, to keep all spurs thin and close to the main branches. They should never extend more than 1 or 2 inches, else crowding will result, and crowding means miserable produce. The second rule is, to retain as much young wood as possible. For this purpose all terminals should be left nearly full length. Only the small or crooked points should be removed in those which grow upright, and only the portion of the drooping kinds which point downwards. Still, crowding must not be allowed. To secure a continual supply of young wood without overcrowding, there must be a continual cutting out of old branches, and a continual bringing forward of younger branches to take their place. At the same time the bushes are not to be kept low. Gardens may be restricted laterally, but few are so vertically. Then grow your bushes to the height of 6 feet or more if you can. One 6-foot Gooseberry-bush is worth

three 2-foot ones, and occupies no more space. Some kinds may be got to that height without much trouble. But there are others again, and these some of our best sorts, which will not grow upwards at all. The branches of such kinds should be tied to hoops supported by strong stakes. Summer pinching should be practised in the case of the Gooseberry just as much as in the case of other fruit-trees—indeed more so, for they are more prolific of shoots, and therefore every one which is not needed should be pinched to one or two leaves as soon as it has grown 6 or 7 inches. At the same time, the very strong shoots which often spring from the centre of the bushes should be twisted out. When the shoots are this length, the points are often attacked by green-fly in such numbers that they can grow no further, and the general health of the bushes suffers. Their excrement also fouls the fruit. When pinching is done, large numbers of shoots with the infesting insect are removed, and the remainder is therefore more easily dealt with. The best plan that we have tried for getting rid of them is to crush the point of each shoot between the finger and thumb when we are pinching the shoots. As we go over the bushes two or three times in this way, we manage to rid the bushes effectually of this troublesome insect.

There is another yet more troublesome insect which may be got rid of in the same way : it is the destructive Gooseberry caterpillar. Just at the time the shoots need pinching, the caterpillars are hatching, and whole broods are confined to one leaf. A quick eye will detect these leaves, and the young caterpillars may be destroyed at once before doing any damage. When the attack is moderate (and it will only be moderate in isolated gardens when they are systematically kept down), this is the quickest and most satisfactory method we know of for getting rid of the pest. And when they do come in hosts, it is much easier to get at them when the shoots are pinched, and therefore thin, than when the growths are crowded. When the pest comes in swarms, the best cure is to slightly dust the bushes when they are wet with Hellebore-powder, or the powder may be mixed with water and sprinkled on to the bushes while they are dry with a whitewash brush. Perseverance in the use of Hellebore will soon destroy them. Stragglers late in the season, when the fruit is ripe or ripening, may be got rid of by hand-picking.

On good soils, Gooseberry-bushes which are well treated to begin with, will thrive for twelve or fifteen years without much more in the way of manure. It always pays, however, to be liberal with them, and an occasional dressing of manure pointed into the surface at the annual digging—not always practised by cottagers, but recommended here—will prove of benefit. When urine can be obtained, one pailful spread over the roots after the ground has been dug over in winter, will keep up a vigorous fertility. If applied fresh, it kills the aphid which winters on the roots, and does no harm to the bushes. The soil absorbs all the manurial properties of the urine, so no fear need be entertained of the rains washing its virtues away before it can benefit the bushes. Only the growing roots can extract its virtues from the soil. This fact should be generally known, as the opposite notion prevails.

Underrated are a few of the best kinds for general cultivation, and also some of the largest exhibition Lancashire kinds. *For general use.*—\* Early Sulphur, \* Langley Park Green, \* Pitmaston Greengage, Honeybloke, \* Crown Bob, Hedgehog, \* Warrington, Ironmonger, Whitesmith; and for jam, \* Scotch Red. *For exhibition.*—The following are the heaviest: Whites:—\* Antagonist,

Careless, and Overseer; Reds—\* Beauty, Clayson, Conquering Hero, Dan's Mistake, and \* London; Yellows—\* Catherina, Great Western, and Levels; Greens—\* Drill, Stock-well, and Thumper. Those with an asterisk are best.

#### CURRENTS.

Except in pruning, everything we have said about Gooseberries in regard to their cultivation will apply to Currants. However, it may be as well to say that all Currants will thrive on northern or eastern aspects where but little sun reaches them. Black Currants especially do best on a border at the north or east side of a wall, although they will grow anywhere. Southern cultivators had better note, however, that warm soils and sunny aspects are the reverse of favourable to any of these fruits; and northerners may be glad to know that places too cold or damp for other fruits are just the best position possible for them.

In the matter of pruning, we prefer to keep the old branches of Red and White Currants well furnished with spurs, and to depend on these. To cause spurs to form freely, it is well to cut the annual shoots half-way back at each annual pruning while the bushes are young and in training. We prefer having them globe-shaped, for the same reason that we prefer Gooseberries to be so trained. After the bushes are large, pruning consists in cutting back all annual shoots to one or two eyes, but it is better still to pinch them to that while they are young. On good soil, bushes should ultimately attain from 6 to 8 feet in height; and bushes this size, when well furnished with spurs, generally bear a great quantity of valuable fruit. When birds are troublesome it may be necessary to protect the fruit by means of old herring-nets, which are to be had very cheaply. When the bushes are on borders beside walls this is easily done; otherwise, it may be necessary to put up a railing all round the quarter on which they grow to support the net. A few long poles in the centre will keep the net clear of the bushes. Where birds destroy the buds in winter and spring, pruning should be deferred until the bushes begin to grow. To afford protection, the bushes should be liberally dusted in winter with a mixture of lime and soot.

Red Currants are very suitable for covering north or east walls. Four, six, or eight cordon trees are best for this purpose.

#### BLACK CURRANTS

must be pruned on a different principle, for the best of the fruit is borne on the preceding year's shoots, so pruning must be done in the same way as recommended for Morellos. No spurring in should be practised, but in its place a continual cutting back of old wood, and a continual encouragement of young. Learn the principle on which they should be pruned, and the practice will become easy. Crowding should be avoided, for crowding means small fruit, and small fruit is a great trouble to gather, and very inferior after it is gathered. Amateurs who are first-class pruners of Gooseberries, in their own opinion, generally consider the proper pruning of Black Currants an inscrutable mystery, and so leave them alone. Yet Gooseberry and Black Currant bushes should be treated very much alike, and that means that annually a thinning out in a regular manner should be given to each. It is bad pruning indeed that is not better than no pruning, for the letting in of air and sun works a wonderful improvement on these fruits, and the thinning-out causes greater vigour in the shoots left. For covering north walls which are under 8 feet in height, Black Currant bushes are admirably adapted. In

such positions they should be trained and treated in the same way as Morellos. The best white is White Dutch; the best red, Raby Castle, Red Dutch, and Magnum Bonum; and the best black, Black Naples and Lee's Prolific. There are many very inferior kinds of all the sorts in cultivation, and great care should be taken, when young plantations are made, to get the sorts we have recommended true to name. Gooseberries and Currants are very easily increased by cuttings. The time to put them in is early in October. The cuttings should be of the current year's wood, and 15 or 18 inches long. They should be pulled off the old bushes in a way to secure a thin section of the old wood. The ends should be smoothed with a sharp knife, the tips taken off the tops, and all the buds removed, except four at the top. Such cuttings, planted firmly, with a little sandy soil at the bases, on a shady border, 4 inches apart in the rows, and 15 between the rows, will root readily. Green-fly and caterpillars which attack Currants must be got rid of in the same way as advised in the case of Gooseberries.

A. H. H.

#### TEA ROSES ON THE BACK WALLS OF VINERIES.

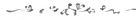
THE great demand that now exists for cut-flowers compels gardeners to make use of all odd corners and positions under glass that are likely to be of any use in producing flowers for cutting, especially in winter and early spring. We have found the Rose, especially the Tea varieties, most accommodating in this respect; growing and yielding a great number of their deliciously fragrant blooms in positions that are not always turned to account. For instance, on the back walls of vineries where the roof is covered with Vines, we have found Roses do very well indeed.

Two years ago last spring, when a number of Tea Roses in pots had ceased yielding many blooms, and had to be turned out of a forcing-house to make room for other things, they were plunged deep enough to cover the pots along the back wall of a vinery. The stakes were taken from them, and they were tied to the wires on the back wall, the weaker shoots being all pruned away. The wall is 134 feet long, and 13 feet high. They have grown freely, and bloomed almost perpetually. When they get too thick of growths, we cut out the weakest; those retained are rearranged over the wall, and syringed with paraffin and water, which keeps them free from insects till they are again thinned out and retied. They have grown moderately strong, and have yielded an enormous number of flowers.

Where vineries will allow of planting Tea Roses in this way, a few started in succession would give an immense number of Roses. In the earlier houses the Roses should not be so frequently syringed as the Vines, or mildew very soon puts in an appearance. I cut a beautiful bouquet of Roses from the wall of our vinery last Christmas Eve, and all through the season it has been very productive. 1800 blooms were cut in April. The varieties are:—

|                      |                   |
|----------------------|-------------------|
| Marie Guillot.       | Gloire de Dijon.  |
| Safrano.             | Isabella Sprunt.  |
| Adam.                | Madame Denis.     |
| Madame Bravy.        | Madame Faleot.    |
| Marie van Houtte.    | Archduke Charles. |
| Perle des Jardins.   | Catherine Mermet. |
| La Sylphine.         | Clothilde.        |
| Souvenir d'un Ami.   | Marie Sisley.     |
| Sombrieul.           | Devoniensis.      |
| Madame Marie Aramel. | Maréchal Niel.    |

A. H. F.



## HOW TO MAKE THE MOST OF WALL-BORDERS IN KITCHEN-GARDENS.

NO. XI.

IN my concluding paper I propose treating briefly upon a few other fruits, more especially with regard to the adaptability of different species or varieties for the various sites. To attempt anything beyond this, seeing how ably "A. H. H." is handling the subject generally, would be altogether a waste of time and space.

*Pears.*—These, I think, we may safely assert are the most generally popular kind of fruits for wall-culture, as not only do they succeed where others fail, but if a judicious selection of varieties is planted, a supply of delicious fruit may be maintained over a lengthened period—the Apple in this respect being its only rival. An unlimited collection, however, is generally the reverse of a profitable one, and, unfortunately, this craving for variety was not confined to the present generation of gardeners. For instance, we have a fine west wall caputally furnished with triple oblique cordons. Sixty plants in sixty varieties were planted, but of these thirty at least are comparatively worthless. Far more profitable would it have been to have planted four each of fifteen good well-tried varieties. Of course it is advisable to give some of the newer varieties a trial; but according to my experience, very few of these are superior to the older sorts.

In the southern counties I have seen Pears fruiting freely on north, south, east, and west walls, and of good quality in each instance. It sometimes happens that employers are particularly fond of one or two varieties; and by planting these in different sites, the supply is considerably prolonged. The only varieties I have seen grown profitably on a north wall are Jargonelle, William's Bon Chrétien, Seckle, and Marie Louise; and in each instance, despite absence of direct sunshine, clean, good-flavoured fruit resulted. Here we have William's Bon Chrétien on south, west, and east aspects, there being no perceptible difference in the quantity or quality of the crops, and by ripening some of the most forward artificially, the supply of this very popular variety was prolonged over a considerable period, and what is satisfactory to all concerned, not a dozen fruits were spoilt. The early and

delicious Jargonelle and Beurré Superfine are being similarly arranged. In the case of varieties that keep longer after ripening, it may not be necessary to distribute the trees; as when the crops are heavy, or early ripening is desired, all that is required is to ripen a few dozen artificially—that is to say, in a box of hay placed in a dry heat such as a forcing-house, or failing this, a hot kitchen. This not only prolongs the season, but really improves the fruit, both as regards quality and appearance, of many varieties, such as Beurré Diel, B. Clairgeau, Duchess d'Angoulême, Flemish Beauty, Josephine de Malines, and Bergamotte Esperen. At the same time, by distribution there is a better chance of securing crops from one or other of the sites.

From experience in midland, southern, and western counties, in addition to the Bon Chrétien, Jargonelle, and Beurré Superfine, I can recommend Louis Bonne of Jersey, Marie Louise, Huyshe's Victoria, Glout Morceau, and Easter Beurré for south, east, and west walls. Beurré Diel, B. Clairgeau, B. Rance, B. Bachelier, B. Hardy, B. Bosc, B. d'Aremberg, Pitmaston Duchess, Thompson's Van, Mons. Leon Leclerc, Maréchal de Cour, Doyenné du Cornice, Winter Trellis, Knight's Monarch, Josephine de Malines, Ne plus Meuris, and Bergamotte Esperen, have proved excellent on south and west walls; while Chaumontel and Beurré d'Amanlis I have only had really good from south walls.

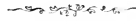
*Plums.*—Seeing how well these succeed as standards, especially in the more southern counties, it is scarcely advisable to generally devote much wall-space to them. Where, however, space is plentiful, or where they do not succeed in the open, they will most probably be found profitable on south and west, and, in favourable localities, even north and east walls. The most appreciated are the different Gages, and these require warm positions to properly ripen their fruit. Green Gage, M'Laughlin's Gage, Purple Gage, and Transparent Gage are all deserving of a place on either west or south walls; and the same may be said of Oullin's Golden, Jefferson, Washington, Guthrie's Late Green, and Reine Claude de Bavay—all being good dessert varieties. In this district, and in other southern gardens, I have found Washington, Kirke's, Jefferson, Oullin's Golden, Coe's Golden Drop, Reine Claude de Bavay, and Ickworth Imperatrice of dessert varieties; and Orleans, Magnum Bonum, Victoria, Pond's Seedling, Early Rivers, Goliath, and Prince of Wales—cooking varieties—succeed admirably on walls of east and north-east aspects. We have several dessert varieties on a wall here with a north-west aspect, and although they crop fairly well, the quality is generally inferior.

*Cherries.*—Of these, again, there are several on a north-west wall; but those of the Bigarreau type do not ripen properly, and are much too sour for dessert purposes. Morellos succeed admirably on this site, and again in a north-east aspect; while on the same wall, trees of Late Duke are fast dying. The Morello is also quite at home and

very profitable on a north wall. A very hot position appears unsuitable to the choicest Cherries; and oftentimes they are difficult to keep clean on an east wall—aphides being their great enemies. A west aspect then is most suitable to Cherries; and such varieties as Knight's Early Black, May Duke, Black Tartarian, Governor Wood, Elton, Black Eagle, Late Bigarreau, and Late Duke are worthy of such a position.

*Red Currants, Gooseberries, and Currants.*—To afford a late supply of these, the north walls and borders will be found of great service. The former, in our case, are in possession of a moderately high north wall, and the buttresses and spaces midway between Plums and other trees on north-west and east walls—in each instance yielding heavily. By covering some of these with mats early in September, the fruit can be kept till late in the season. Ruby Castle is the most suitable variety for the purpose. Gooseberries are sometimes trained to north walls, having all lateral growth kept spurred back similar to the Red Currants; but however well they may succeed, they are not very remunerative, especially seeing the fruit hangs as long on protected bush-trees. The Red Warrington and Sulphur are well adapted for a late border, these being of good habit—cropping heavily, late keepers, and good dessert sorts. Of Strawberries we have had capital late supplies from a north-west border; the varieties being President, Sir Charles Napier, Dr Hogg, and Eleanor. Sir C. Napier was much damaged in the open last winter, but escaped comparatively uninjured in the cooler position.

W. IGGULDEN.



#### NOTES FROM THE PAPERS.

EVERY critic of Darwin's book on Worms, from the 'Athenæum' downwards, has instanced the horticultural writer as one whose "inability to sum up the effects of a continually concurrent cause" has retarded the progress of science; but really it may be doubted if Mr Darwin could appeal to any class of observers who could substantiate his views and credit his statements so readily as gardeners. The "stupendous" work of the worms any gardener can comprehend who ever swept the worm-casts off a lawn. Many a gardener has grumbled at the time and labour lost removing these at certain seasons of the year; and recognised that the accumulations of mould raised daily by the worms on the smooth surface of a good lawn was equal to a man's work to remove on a not very large space of ground. It has also been recommended before now to roll the worm-casts down in preference to sweeping them off, on the plea that the fine mould cast up exercised a manurial influence upon the grass. Indeed, in many poor lawns where the turf is never enriched artificially, it cannot be doubted that the worm-casts exercise a beneficial influence, like the excrement of



any other animal ; and if the operations of the Annelids are not too much disturbed, a very considerable dressing of rich mould will be raised to the surface in a short while. Their worst fault is, that they are always most active in that way where they are least needed—that is, in a rich soil ; and gardeners would gladly dispense with their services under such circumstances. Whatever services they may render, however, by their additions to the virgin mould of the earth, it is certain that worms are not regarded with favour near the roots of choice plants in pots or growing in the bed ; and we cannot remember an instance in which their operations in such quarters were attended with any benefit, but the contrary.

A correspondent of 'Gardening,' writing on the subject of market Grapes in autumn, says that—

“In spite of the large importations of foreign Grapes into this country, home-grown Hamburgs of good quality still command remunerative prices, and I think that I may with safety say that any grower who may not wish to be troubled with keeping his produce until a late period in the year, when naturally higher prices are to be looked for, may calculate upon a profitable return if he should determine upon marketing his fruit as soon as ripe. Let it be understood, however, that I am speaking of good Grapes only ; for bad Grapes are often a complete drug in the market, and neither fruiterers nor salesmen care to be troubled with them.”

Notwithstanding the fact that Grapes last week were quoted in Covent Garden as low as 6d. per lb., there is truth in these remarks. A well-known Covent Garden man said once to the writer, “Good Grapes can always find a remunerative market in Covent Garden, if delivered in good condition.” They require to be good, however, nowadays, and the majority of samples are indifferent. The same writer in your contemporary points out a fact which is not always sufficiently realised—viz., that from the time a bunch of Grapes is quite ripe, a process of deterioration goes on. Hamburgs especially spoil quickly ; and a curious fact in relation to this Grape is, that no matter how black the berries may be, they turn red again after hanging for a time, and lose flavour as well. No other variety has this fault that we know of. The Alicante, Lady Downes, and other late and thick-skinned kinds retain their colour to the last ; and the bloom of the berries, which early in the season rubs off with the slightest touch, “sets,” and in spring will endure considerable friction without injury. All those, too, who hold their late crops with the object of getting better prices, must also lay in their account for loss in the shape of decayed berries, and a very sensible reduction of weight in the bunches, which grow lighter the longer they hang.

In a week or two, or by the time this is in print, the exhibition of smoke-preventing appliances for domestic fireplaces, &c., will be held at

South Kensington, in the arcades of the Royal Horticultural Society. Numerous prizes in money are to be awarded, and competitors are said to be coming from all the great towns in the kingdom with their various inventions, for which numerous patents have already been taken out. Putting aside the saving of fuel effected by such means in towns—which would amount to millions in London alone—the advantages to the health of the inhabitants, and to vegetation in and near great centres of industry, would be almost incalculable. In some manufacturing towns there are already laws in force for the consumption of smoke from furnaces and the like, but they are practically a dead letter. The smoke hangs like a pall over towns and the surrounding district for miles, and settles in the form of black smut on field and forest, and may frequently be seen resting on the surface of reservoirs and lakes in a thick black scum of the consistency of cream. A smoke-consuming appliance is also much wanted in stoke-hole furnaces in gardens. The smoke produced by these is a serious nuisance in all large gardens: hothouses and conservatories get quite blackened in a short time by the soot, which greatly spoils the appearance of these structures. There is a way of consuming the smoke to some extent, if the stoking is intelligently performed; but this cannot be depended upon in gardens, and none of our horticultural boilers present facilities for effecting that end themselves. The use of coke instead of coal will go far to lessen the evil. Indeed a coke-fire is absolutely smokeless soon after it is lit; but gardeners complain that they cannot keep up temperatures with it sufficiently, unless the quantity of piping is greater than is usually provided. Coke, too, is more expensive. Any of our hot-water engineers who will provide a readily available smoke-consuming apparatus for garden furnaces will make his fortune.

After all, those who have entertained and acted upon the idea that the potato-disease might be eventually overcome by the selection of disease-resisting varieties, and propagating from these, are justified by the discoveries of M. Pasteur, which have attracted so much attention of late. The silk-worm disease, this investigator discovered, was caused by tiny microscopic corpuscles or organisms in the juices of the diseased worms, which even extended to the eggs produced by them. By careful breeding from eggs, however, which happened to be free from the disease-germs, although produced by disease-affected worms, he showed that in a short time it would be possible to regenerate the race and entirely stamp out the disease; and that when circumstances did not admit of elaborate precautions, a seed might be secured, which, if not absolutely free from disease, would still afford a very satisfactory crop of silk. The silk-worm and the potato are two very different subjects, no doubt, but there is no physiological reason whatever for supposing that the potato-disease cannot be overcome in the same way;

although fungologists who have given attention to the subject, hope far more from isolation from infection than from constitutional resistance of disease, promoted by healthy culture and the judicious selection of healthy seed.

A gentleman whose vocation in connection with art and science brings him in frequent contact with the great critic and philanthropist Ruskin, called on us the other day to talk about the subject of fruit-culture. In answer to an inquiry, he said that if the great modern philosopher entertained any particular opinions on the subject of horticulture, they were in favour of its simplification and extension, so as to confer the greatest amount of benefit on the greatest number of people. Our visitor said, speaking for himself, that he was of that opinion also, and he thought much was written on the subject of horticulture that was calculated to mystify if not to absolutely deter people from attempting gardening in many branches, and being a reader of horticultural papers, he instanced statements that corroborated this opinion. The gardening papers were, he said, like the 'Pall Mall Gazette,' written for gentlemen more than for the general public and those who were interested in horticulture as an industry, not to mention the number of humble persons who were concerned in the subject. When our visitor called, we had just a few minutes previously received the weekly copy of a contemporary from the postman, and had been reading the following statement by a writer, to the effect that, "in order to insure success for any reasonable length of time" with Pears on walls and on the natural stock, "it is an *absolute necessity* in ninety-nine cases out of every hundred" to have borders 30 feet wide, 3 feet deep, concreted if needful, and composed of good heavy loam! Pointing the passage out, we observed: "This, we suppose, is what you mean?" "Just so," was the reply; "such preparation and expense, if credited, would render the culture of Pears an impossibility in ninety-nine cases in a hundred." The author of the passage was, of course, talking perfect nonsense—unconsciously maybe, but still nonsense; but we do meet with the like very frequently.

READER.

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## THE GRAPE-VINE CONTROVERSY.

### LOW TEMPERATURES FOR SETTING MUSCAT GRAPES.

It is well the author of the "leader" in last month's 'Gardener' has laid so lucidly before the readers of this journal the true bearings of "low night" and high day temperature on the setting of Grapes, and Muscats in particular, for I am afraid the advocates of low night-temperature are overlooking the part played by the "higher day-temperature," in effecting for them those splendid "sets" they speak about. I don't wish it to be inferred from this, that I want to run down "cool night-temperatures." On the contrary—

apart from the actual "setting" of Grapes—I quite agree with all its advocates have said on this subject, for it is in accordance with my own experience and practice for the past thirteen years, which I will now relate.

I entered on my present charge early in September 1868. The first thing that called for particular attention was a Muscat-house, in the middle of a range of three vineries. The Grapes were hanging on the Vines at the time, not quite ripe, and in a very bad condition; the berries shanking, and the wood poor and spindly, and altogether much out of health. I concluded the fault lay in the border. I examined it, and found the soil to be an effete and soapy mass of sour soil. I set about at once to procure some good turfy loam: with this I mixed some burnt earth, charcoal, and some rotten manure, and commenced operations on the border, removing it to within 3 feet of the stems of the Vines. (All the Vines here at that time had been planted in, and confined to, outside borders.) The surface of the remaining 3 feet of border was forked up, and cleared away down to the first roots. After carefully cutting away all decayed and injured roots, and shortening back the strong bare ones, the compost was wheeled in and carefully worked among the roots, which were brought well up to the surface as the work proceeded. As the compost was very dry when brought in, a good soaking of water was given. Both fruit and leaves were hanging on the Vines while these operations were being carried out. It caused the leaves to flag considerably; but by shading with mats, and syringing the Vines once or twice a-day for some little time, the Vines did not appear to be much checked.

Before the end of October the border was covered a foot deep with dry litter, and over this shutters were put, to throw off the rains, and to keep out frosts. Very little fruit was expected the following season. Forcing did not begin till the first of March, and all went well till the flowering stage. Like a great many more, I had been taught to believe that a high night-temperature, as well as a high day one, was necessary to insure a good "set" of Muscat Grapes. With this in view I gave the order to the stoker to fire harder, and bring the night-temperature up  $10^{\circ}$  more. (Up to this time it had not been higher on the mildest nights than  $50^{\circ}$ .) But I soon found out, to my dismay, that the heating apparatus was inadequate to bring the temperature up more than an additional  $3^{\circ}$  or  $4^{\circ}$ ; and the temperature would run down to a very low point on cold nights, lower than we could at the time account for, and I made sure there would not be a berry "set." I looked anxiously up at the blossoming bunches every day. Things went on this way for about a fortnight, when I thought I noticed the berries to be increasing in size every day, and one morning, after a rather cold night, dew-drops were found to be hanging on every point of the leaves, to disperse which I had to give the Vines a rather smart tap, at the same time fearing what might be the consequence to the bunches. Imagine my joy when ultimately I found a perfect "set."

Well, I felt I had been taught a lesson, and one not of my own seeking. It had been thrust upon me through circumstances over which I had no control. I was now convinced that a high night-temperature was *not* necessary for the wellbeing of the Vine. But with regard to the "setting" of the fruit, I still had some doubt about the "low night-temperature" being the *direct* cause of so good a set of berries.

I felt I had yet more to learn on this point. The vinery was an iron one, and this to a great extent accounted for its being so difficult to heat by night, and for the fact that it run up quickly by day with sun to a high temperature. As I could gain no further definable knowledge, for that season at least, on the

setting point, I contented myself with trying to secure as good results the following year as was possible under the circumstances. As I had anticipated, the Grapes were nothing to boast of; still, they were very fair, and finished off well, with not many shanked berries. The following season (1870) I commenced to force the first week in February. Instead of the dry litter on the border, I put 3 feet of hot dung and leaves, and kept this renewed till the ripening stage of the Grapes was reached. I also made daily notes of the day and night temperatures, also of the weather, from the beginning of the forcing to the finishing off of the Grapes, in the hope that I might gain some additional knowledge on the "setting" question. The season passed over, however, without my gaining anything very definite on this point. Like the previous season, it had been a very beautiful and sunny one, especially all through the blooming period. I had a splendid "set," and the Grapes were fine both in bunch and berry, and finished off with a good colour. Some of the bunches were 5 lb. in weight, and the average through the house 3 lb. The Vines were in robust health, and showed they were benefiting by the new compost. I had had no misgivings this time on the score of the "low night-temperature." One thing I had observed particularly, as I had observed the previous season, that two Vines at the hottest end of the house, and immediately over two 6-inch flow-pipes direct from the boiler—one for the heating of this house, and the other, which had to pass through it on its way to heat the early vinery—had by far the *best set* bunches.

I commenced forcing again for the season 1871 at the same time and under the same circumstances as the last. But what a contrast in the weather to the two previous seasons. It turned out to be a cold, wet, sunless, and late spring. There was barely one sunny day all through the blooming period. And what about the "set"? Well, it proved to be as remarkable, in contrast to the two previous ones, as the weather was. In place of a "good set," there was a most wretched one—not a full or presentable bunch in the whole house, *except on the two Vines over the hot-water pipes*, and these were not nearly so full as previously. There were nine Vines in the house—seven Muscat of Alexandria, and two Black West's St Peter. The latter, at the cool end of the house, had not a dozen set berries on them.

On comparing my notes which I had of the temperatures for the two last seasons, I found the night-temperature had differed but little. On very mild nights it had not been higher than 50°, and on the coldest as low as 42° to 45°. There was, however, a very great difference in the day-temperatures during the blooming periods. For the season 1870, with bright sun, the temperature had run up to 80° and 85°, with air on. But for the dull period of 1871, with but little or no sun, we could not force the temperature higher than 55° to 60° at the most, with fire-heat. From this I concluded that I had gained the information I had so much desired, and led me to conclude that "low night-temperatures" have very little to do with the "actual setting" of the fruit; and that a rather high day-temperature, with "sun-light," and a moving atmosphere, are the prime necessary agents for a good "set," especially for Muscat Grapes.

It is said that during the dark hours of the night "all nature" is at rest. I cannot say if my premisses be correct, but I think the pollen and sexual organs of flowers are not in a state to be fructified during the dark, cool, and moister atmosphere of the night, and that it requires the influence of sun-light, a warmer and drier air, to bring them to this state.

J. K. K.

## THE GRAPE-VINE CONTROVERSY.

Mr Simpson has raised a controversy in regard to low night-temperature in the cultivation of the Grape-Vine, which it is desirable should be discussed in all its bearings, in order to discover whether there is really anything in the system he advocates worthy of general adoption, as his ideas clash against all our preconceived notions of the treatment necessary to produce good Grapes.

As far as my own experience goes, my opinion is that good Grapes cannot be grown and properly ripened—at any rate, in the northern parts of the kingdom—in a lower night-temperature than from  $55^{\circ}$  to  $60^{\circ}$  in the case of Hamburgs, and a minimum of from  $60^{\circ}$  to  $65^{\circ}$  in the case of Muscats, &c.—with a rise of  $10^{\circ}$  at night in the case of Hamburgs when in flower; and for Muscats, a minimum night-temperature of  $70^{\circ}$  at this stage, or even  $5^{\circ}$  higher than that, will do more good than harm. This is what we aim at in our own practice; and though we do not rigidly adhere to it through thick and thin, but rather allow the inside temperature to fluctuate in proportion to the temperature outside, we endeavour to come as near to it as circumstances will allow. Except when the Vines are breaking into growth, we never use the syringe, merely contenting ourselves with damping down the paths, &c., at closing time, and keeping the borders well supplied with water; and we very rarely are troubled with red-spider.

As a rule, it will be found that the best-set and best-coloured bunches of Muscats and other shy-setting sorts are at the warm end of the houses, over the pipes where they enter the house, and along the top of the rods,—thus showing that the hot dry air at these places assists in causing them to set better.

As a case in point against a continuous low temperature in Grape-growing, I may be allowed to mention what has come under my own experience here. We have two lean-to houses, which are apart and behind our principal range. The houses were originally built as fruiting Pine stoves. They are, however, wider and loftier than are generally used for Pine-growing, being 16 feet high at back, 18 feet wide, with front lights 4 feet high, and are or were heated with smoke-flues. I don't know how long ago, but probably twenty-five years or so, Pine-growing was abandoned, and the houses planted with Black Hamburg Vines, which were planted in an outside border, and brought through the front wall nearly at the ground-level. These Vines had done good work in their day; but when I took charge of them, both houses and Vines were in a very dilapidated condition. Immediately after I entered on my duties here, we began the erection of a long range of forcing-houses. It was put up in four sections, each section being done in a year, so that the work was four years in hands. The first two sections being mainly vineries and Peach-houses, I found that with growing a good many pot-Vines and supernumeraries among the

permanent Vines, I could supply the family's wants without the two back houses; and as it was intended to convert them into a large Camellia-house, we decided to cut the Vines out. Circumstances, however, occurred which prevented us from getting the work done at the time, and I left the Vines, with the intention of, at any rate, getting leaves for garnishing, &c. They broke away very well; and when the bunches began to run out, I helped them with a little fire at night, and again when they were coming into bloom—but this was all the fire-heat they got. They had abundance of ventilation; too much, indeed, at times found its way through the numerous laps and broken panes in the roof. The Grapes swelled up wonderfully, and coloured up as black as sloes by the end of September, but they realised the fable about "The Fox and the Grapes," for they were very *sour*.

A Grape-grower who used to take a prominent position at the Edinburgh exhibitions, happened to call here on a visit at the time, and noticed how well they were coloured. He suggested that they would be of fine flavour, and asked permission to taste them, which I granted. He made a very wry face at them, and I laughed and asked him what was wrong with him. "Why," said he, "you might as well have a mouthful of tartaric acid," and added that he never would have thought so, judging from their fine appearance. Now here we had everything present that is generally looked for in good Grapes—good colour, good bloom, and fair size of berry—and yet void of flavour; and what could be the reason? Well, in my opinion, it was neither more nor less than want of sufficient heat to elaborate the saccharine juices; and such must always follow where a too low temperature is maintained in Grape cultivation.

JOHN GARRETT.

WHITTINGHAME.

#### TEMPERATURE FOR GRAPE-VINES DURING THE FLOWERING AND OTHER PERIODS OF ACTIVE GROWTH.

Notwithstanding what has already been written and said on this subject, by men who are celebrated for the quantity and quality of their Grapes, there still exists a doubt in the minds of some Grape-growers regarding what is the best temperature to maintain at night during the time the Vines are in flower, especially in the case of Muscat and other shy-setting varieties.

Of late it has been contended by a few writers on Grape-culture, that it is not necessary for the successful setting of the fruit to subject Muscats when in flower to as high a night-temperature as that recommended in books treating on the culture of the Grape-Vine; and that as good, if not better, results would follow, both as regards the set, in the first instance, and the ultimate finish and flavour of the fruit, if, during the various stages of growth, the Vines were treated with a

much lower temperature during the night than is generally practised. And not only so, but it is also contended that a low night-temperature is conducive to health, longevity, and fruitfulness in the Vines; and by its adoption they are kept free from certain insects that prey upon them at some places when treated to a higher temperature in the night.

The foregoing is a short summary of the advantages said by the advocates of the "cool system" to be derived from an adherence thereto in the culture of the Grape-Vine. And at first sight it might appear that their claims were indisputable. For instance, on the score of economy alone, one would think the cooler system of Grape-growing had a great advantage over the hotter. By the former system we are told that a saving in fuel and labour is brought about, and that it also prevents insects from attacking the Vines during the growing season, and thereby the cost of "red-spider and thrip antidote" and other insecticides is saved. The economical argument, however, is more apparent than real, as we will see presently. Speaking of red-spider and thrips, however, leads me to remark in passing, that when these insects infest Vines year after year, it is an evidence that there is a weak link—other than *high* night-temperature—somewhere in the chain of conditions or management under which the Vines are growing.

Referring again to the "cool system," it is much to be regretted that, when tried against the hotter—all other conditions being equal, and the test of superiority being the finish, flavour, and keeping qualities of the fruit produced by the respective systems—it is, to use a sporting phrase, nowhere. I do not say this without "having given both ways a fair trial" with several sorts of Grapes. Where large properly built bunches, having large even-sized berries of good colour and excellent flavour, are wanted, a higher night-temperature must be maintained from start to finish than that recommended by the defenders of cool treatment.

And now with regard to the best degree of temperature to maintain day and night, when the Vines are in flower, with a view of securing a satisfactory set of the fruit. In my experience, I have found that the best results follow, in the case of Muscats, when the night-temperature is kept as near  $70^{\circ}$  as possible, with a rise of from  $10^{\circ}$  to  $15^{\circ}$  during the day, according to the amount of sunshine prevailing. I may state, however, that Muscat of Alexandria, and what is called Bowood Muscat, are the only two kinds that I ever experienced any difficulty with in the matter of setting of the fruit. And in the case of these Grapes, I have never been able to get them to "set so well that the berries become wedged together by the thinning period." Still, until this year, I managed to have as shapely bunches as most people, and superior in other ways to some that had been thought worthy of being publicly exhibited.



I will now tell what, in my opinion, was the cause of the Muscats setting worse this year than usual. Before doing so, however, I had better say that the Muscat-house here contains ten Vines—that is, seven Muscats, one Trebbiana, one Syrian, and one Raisin de Calabrie—all of them being very vigorous; and having been thoroughly ripened in 1880, they were in first-rate order for starting in the first week of February this year. Well, as before stated, the Muscats, although treated to the orthodox temperature, never set so well as I would like them to have done; and I determined last January that I would try them on the “cool system.” The buds swelled and started into growth with great regularity all over the canes, and a magnificent “show” for fruit followed. Everything seemed to be right until the period arrived when the berries should have been set, when, to my amazement and chagrin, they dropped off in showers; and such ragged jack-like bunches of Muscats as we have had this year has not been seen in these parts before. Now, as regards the other varieties of Grapes in the same house, the set was all that could be desired, which, in my humble opinion, proves that Muscats require a higher night-temperature than  $50^{\circ}$  to insure a good set. I will now refer to another house containing the same number of Vines—that is, three Gros Colmar, three Lady Downes, two Alicante, one Gros Guillaume, and one Mrs Pince. In this case the set was all right, and the bunches and berries are of good size, but the colouring process did not commence until three weeks later than in former years. At the present time the colour is as good as needs be, as a bunch of Gros Colmar sent to the Editor will prove [Jet Black—Ed.]; but none of the kinds mentioned are ripe in the right sense of the word, consequently they are keeping very badly, and the bunches are fast becoming in looks like their ragged friends the Muscats in the adjoining house. And thus we are now squandering in the vineries more than we economised in the stoke-hole earlier in the year.

It is of as much importance to those of us who have to supply Grapes every day for ten months of the year, to know the conditions that are most conducive to them keeping plump and sound the longest period, as it is to know the conditions under which the best set of the berries are secured; and to insure them keeping well, they should be thoroughly ripe before the days have crept in much—that is, not later than the first week of September. After this time Grapes will improve in colour; black Grapes will become blacker, and Muscats and other white sorts will become a bit yellower, but neither black nor white will get much riper. True, the flavour may improve or change after this time, but this is not the kind of ripening that tends to their keeping fresh, sound, and plump during the winter and spring months. What is required to enable them to do so is a thorough maturing of the skin, pulp, and seeds of the berries before the sun has declined in power, and the autumn nights have come on, and these conditions cannot be secured under the “cool system” of Grape-growing.

The same holds good in the case of ripening the wood. If it is not solid and ripe about the time mentioned that the Grapes should be ripe, you may fire as much as you like afterwards, but you will not impart to it that fruit-producing ripeness that might have been secured with half the consumption of fuel earlier in the season, when the days were long and the sun powerful. In the case of Grape-growing, the time to economise in the stoke-hole is not during the spring and summer, but during the autumn and winter. In future I intend to start our late-keeping Grapes in the first week of February, and to maintain at night, when they are in flower, "the regulation standard of 70° for Muscats," and 60° for the other kinds; and also to push them on briskly during the early summer months, so that the crop may be thoroughly ripe in the first week of September.

In reference to the quality of certain Grapes when ripened in a high instead of a low temperature, I could quote many authorities to corroborate my own experience, and notably the evidence of your correspondent, Mr J. Simpson, who wrote a few years ago,—“No one, I think, can dispute the fact that late Grapes are better flavoured when ripened early in the autumn under a higher temperature than they are generally treated to. . . . The difference in flavour is so great that they are not like the same Grapes.”

J. HAMMOND.

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#### THE GRAPE-VINE DISCUSSION.

With regard to certain outpourings on this subject in the 'Gardener' and elsewhere, I have only to state that they are so well known to be the outcome of long-pent-up resentment, as to deprive them of any little value they might have possessed. I prefer to discuss such topics with those whose own reputation extends at least beyond the sound of their own trumpeting. Reference has been made by your correspondent to a *confrère* of greater literary ability than himself, in another journal, and I can only congratulate him on the faculty that enables him to recognise a superior when he meets one, and admire the wisdom that teaches him to fall into the proper position of saying ditto to whatever his master may utter in the 'Gardener' and elsewhere. He has something to gain and nothing to lose by connections of that kind.

J. S., W.

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#### FLORIST'S FLOWERS.

For many florist's flowers, the next two months are particularly trying ones. Verbenas and Petunias, as cases in point, very often die off during this period. Much depends on having good established plants, as opposed to those which are struck late, and therefore wanting in vitality. In light modern houses there is not the same difficulty with these, as they keep growing with very little trouble. In old dark structures the case is materially altered, and a higher temperature is an absolute necessity.

Hollyhocks should have been lifted and potted up before this time, so as to have got well rooted before winter sets in. These should be kept in a slowly growing temperature, in order to supply cuttings for January and scions for grafting in February. Summer-struck plants are in 5-inch pots, and are also kept growing, in order to make stock in spring.

Dahlias have kept rather badly with us for the past two winters. It is necessary to look these over pretty often, more especially if any signs of decay are discerned. Pot-roots, for summer-struck cuttings, keep safely stowed away in cool houses, after the foliage has decayed.

Gladioli keep perfectly in a dry room laid out on shelves. I used to clean them; now I do not think this either to be a necessity or of advantage.

Pentstemons, Carnations, Picotees, and Pansies in frames should be kept open to the air at all times when rain and frost are absent. Those in pots should be plunged so as to cover the rims of the pots. No water is required during the winter months when thus plunged.

Auriculas must be kept free from damp; decaying leaves to be removed; no water given in "hard" weather, and very seldom at other times. These should have the lights kept off in favourable weather.

Zonal Pelargoniums are at this season more attractive than at any other time. Strong healthy grown plants in 5½ or 6 inch pots, with the soil a simple one, and rammed perfectly firm, give grand results. They require manure-water to keep them healthy and the trusses large. A light structure, with the plants close to the glass and an even temperature of 55°, keeps them blooming very continuously. I find Pearson's varieties much the best for winter-flowering, or, perhaps, for any other season. Where white flowers are much wanted, White Vesuvius will be found an excellent variety. Under proper conditions the plants will require a good deal of water: the want of water is fatal to a continuous and fine bloom.

Chrysanthemums are just now at their best; we have them into February in good quantity, but just now the main supply is in. These cannot be too close to the glass. The matter of 7 or 8 feet distant is certain to render nugatory all the previous summer work. The work calling for most particular attention with these is to get the old stems cut down when done blooming, and to encourage the production of healthy cuttings for the next year's crop. I always put cuttings in as soon as they are large enough, and throw the old stools away. For specimen plants the cuttings should not only be put in soon, but the plants, when struck, kept growing sturdily. The freer pompons can easily be made into specimens 3 and 4 feet across; large flowering varieties sometimes exceed this size. The largest plants of these are formed from old stems, which are cut down to about a foot of the collar, and after the latent buds have either broken, or (if

started when cut back) are sufficiently grown, the plants are shaken out and potted in 5-inch pots. These cannot be too firmly potted. Loam, fresh, flaky, and dry cow manure, with bone-meal added, suits them admirably. Mrs S. Rundle, Mrs Dixon, Lady Hardinge, Prince of Wales, Venus, Her Majesty, are kinds easily grown, and seem to succeed with ordinary attention.

Primulas will be either in flower or growing freely. They will give no trouble if grown in small pots, in a temperature of 50° to 55°, and never allowed to become anything like dry.

Calceolarias and Cinerarias like a cool damp medium, the latter being susceptible to harm from a very slight frost.

A friend writes to me taking exception to plaster of Paris as a manurial agent. In our case it was used as a substitute for lime, and was most likely mixed up in some other form by the manufacturer who supplied the manure. Sulphate of lime is not so much esteemed in this country as in France, where it is thought a good deal of. In fact, like my friend, many consider its value as a manure a very problematical one. No doubt that ingredient may be left out, and also the nitre, which is said to be a difficult material to obtain of manurial value, and a mixture of sulphate of potash or muriate of potash, and sulphate of ammonia substituted.

R. P. BROTHERSTON.

#### POTTING MATERIAL FOR ORCHIDS.

A VARIETY of opinions have recently been advanced regarding what is the best potting material for Orchids in general. Mr Bruce Finlay, of the Manchester Botanic Gardens, has recently recommended, from his own experience, that Cattleyas are likely to do best in crocks without admixture of soil of any description. In reference to this suggestion, other noted growers have maintained that some peat should be used with the crocks. A writer in a contemporary lately recommended that no peat should be used for the majority of Orchids, but only sphagnum and potsherds and charcoal. No doubt, in the growth of a good many genera, a happy mean between these rival systems has been found most satisfactory.

We believe, however, that, as a rule, Orchid-growers use much less peat now than they did twenty years ago, and are more particular as to the texture of what they do use. There is one point on which we believe all are quite agreed, and that is, that the less peat there is in an Orchid-pot unoccupied with roots, the more likely is the potful of material to remain sweet and wholesome, and the plant itself healthy. A few years ago a lot of Orchids came into our hands that had been potted with a liberal admixture of peat, evidently without having the finer portion separated from the fibre. On turning out the plants they

were found to have plenty of roots, but they consisted of cast-metal pegs, to steady the plants on the top of a sour mass of black peat and small crocks. The soil, on being squeezed in the hand, came through between the fingers something as soft grafting clay would. This may be considered the very worst possible kind of material for Orchids, and is happily not now used in many cases, if any.

After trying a good many proportions of the fibre of the toughest peat and clean living sphagnum, mixed with charcoal and potsherd, we have been induced to use less and less of the peat and charcoal, and more of the sphagnum and potsherd. We grow somewhere about thirty sorts of *Cypripediums*, and find now, beyond all doubt, that they do best with us in nothing but sphagnum and crocks, using charcoal lumps in the very bottom of the pot for lightness. Our objection to charcoal in many instances is, that unless the watering be very carefully attended to—a matter not always easily guaranteed—it holds too much water, and rots the roots.

In the case of *Odontoglossums*, we have used, as a rule, about half the fibry part of peat and sphagnum. But last season a few were potted in pure sphagnum, and if there be any difference, we think it is in favour of the latter, and we intend extending the experiment. The same applies to *Lycaste Skinnerii*.

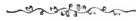
For a good many years we potted our *Calanthes* in about equal proportions of peat and sphagnum, with dry horse-droppings mixed, and the bulbs of *C. Veitchii* often attained to the dimensions of a foot or more in length, with bloom-spikes in proportion. Two years ago we happened to be short of peat and sphagnum at the time of potting them, and we used the somewhat orthodox mixture of turfy loam and a little manure; but two years of this material have, with us, brought down the bulbs to very much less dimensions. And this season, when they were in full growth, we were dissatisfied with their condition; so we shook them out of the loam, and repotted them in peat and sphagnum, with the result that they improved every day afterwards. No more loam in our case, therefore, shall be used for *Calanthes*. Yet others grow them well in loam.

We find also that the less of lumpy peat there is about the roots of such as *Dendrobium nobile* and *thyrseiflora*, the better they thrive. The mere fibre of peat, sphagnum, and potsherd we consider much safer material. Roots multiply and ramify more equally in the latter mixture; and when that is the case, and with plenty of water in the growing season, the growth is more robust and clean.

Frequent repotting may be regarded as an evil in Orchid-growing, but where much lumpy peat is used it is a necessity, or rotten roots will be the result as soon as the peat sours. But when rather small pots than otherwise are used, with sweet fibre and sphagnum and potsherds for potting material, and these get in possession of the roots, frequent shifting is not necessary, and there is not nearly so much danger

from over-watering. To have a surface of living sphagnum is a factor of considerable importance in keeping the material sweet, and in giving warning when water is needed, especially in the case of such genera as *Cypripediums* and *Odontoglossums*.

Many years ago Mr Turnbull of Bothwell grew some specimens of certain genera of Orchids, such as *Miltonias*, to the greatest perfection we have ever seen, and the potting material was chiefly the tough roots of *Luzula maxima*, which plant, to the best of our recollection, Mr Turnbull top-dressed with leaf-mould, to encourage it to make masses of fibry roots for potting with.



### CHRYSANTHEMUMS.

ON page 514 of the last issue of the 'Gardener,' Mr Muir's article on this subject will not meet with the approval of all growers of this fine autumn flower. Why should a cultivator, because he has some peculiar fancy for one system of growing these plants, write of the training requisite to obtain fine large flowers as useless? There are those who do not admire *Chrysanthemums* unless the blooms are large and symmetrical, and display the real character of the variety. Many kinds, especially amongst the Japanese, cannot be grown to display that peculiarity of form so characteristic of this section, when grown as Mr Muir recommends. Certainly some varieties, as *Elaine*, *James Salter*, and others, can be usefully grown for cutting and decoration, and will, when allowed to develop on a semi-natural system, produce a more gorgeous display. While I grow hundreds of useful kinds without subjecting them to much training or disbudding, I also grow many others on the system of which Mr Muir writes disapprovingly. What can be more beautiful than flowers of *Elaine* 8 inches over, and 2, 4, or 6, from one pot—or more, if desirable? Well-developed blooms are not to be despised; in fact, they quickly arrest the attention of those who do not admire *Chrysanthemums*. A new Japanese variety named *Parosal*, is useless if grown on Mr Muir's system; but when developed under the conditions necessary for the production of exhibition blooms it is a great beauty, and could not fail, I feel sure, to please Mr Muir, if he saw a good bloom. Many others might be enumerated, but this is sufficient for an example, to show that the beauty of many of these varieties cannot be brought out to perfection, when grown as low natural-spreading bushes, without being at the trouble of disbudding them. Some kinds do attain a large height when propagated early, but this is not the case when rooted later; and large well-developed blooms can be produced in comparatively small pots, the stems varying in height from 18 inches to 3 feet. These are valuable, and the flowers can be looked down upon, and can be arranged to rise out of low dwarf-growing flowering-plants, and give to the

whole a beautiful appearance. Circumstances frequently alter cases, and Mr Muir's plants would be useless for our side stages; therefore I do not think it wise to urge any one particular system as right, and condemn all others. The height to which the plants attain, is not sufficient reason for a cultivator to condemn a system. I have, at the time of writing, over 100 plants of Elaine and James Salter, and the majority of them are between 6 and 7 feet high. These are specially grown for the position they have to occupy, and Mr Muir's low plants would be of no service. The plants referred to have at least 3 feet of clear stem, and some of them are carrying nearly 100 flowers: they look natural in spite of their height—and would be even more beautiful if, at least, 2 feet taller. What can be more conspicuous than a plant of Elaine, or any other good variety, rising from among Palms, Ferns, Camellias, and other large permanent conservatory specimens?

Mr Muir evidently has not paid much attention to the growing of large blooms, or he would have discovered that the plants are not grown to the height he mentions without being stopped. They are stopped, otherwise they would stop themselves—at least twice during the season—and valuable time would be lost. Mr Muir must consider there are many growers of Chrysanthemums who, if they produced only poor flowers on low natural-spreading bushes, would quickly be discharged.

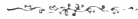
SCIENTIA.



#### CHAMPION AND MAGNUM BONUM POTATOES.

As might have been expected, cottagers and small growers have "gone into" these varieties extensively, but with various results as regards success—some declaring they have had very heavy crops, while others have no crop at all, or at least none worth speaking of. In the latter case, I believe the result has been due almost wholly to too close planting, aggravated, perhaps, by rather late seasons. In this district, which is a late one, the most conflicting testimony is given regarding the yield of the two sorts named. That in some cases the yield has been small I have myself ascertained, but it was, as I have stated, because the sets were too thick on the ground. Cottagers are proverbially prejudiced against wide planting, thinking it is a waste of space, being naturally anxious to make the most of their small plots. From what I have seen of the Champion here and the Magnum Bonum, I am of opinion that the rows should be 5 feet asunder, and the sets at least 18 inches apart. The haulm grows that height, and, so far as I have noticed, the crop has always been in proportion to the space allowed to the tops. Planted much thicker, both sorts get to be a tangled thicket of attenuated roots. Both varieties do produce enormous crops under favourable conditions, and they are the kinds for the cottager; for they

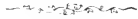
keep well, and are in fine condition and really good late the following season, when most other sorts are over, or nearly so, and new Potatoes have not yet come in for general use. The mistake of too close planting is very common. Every kind ought at least to be allowed the height of the haulm between the rows. The same space is usually given to every crop, principally, it seems, because anything less than 18 inches is barely sufficient for any kind; but with tall-growing sorts the necessities of the case are not always realised.  $2\frac{1}{2}$  or 3 feet between the rows is little enough for any late variety almost, and for some of the latest growers even more room should be given. The advantages of plenty of space are more apparent in forcing the Potato than in growing it outdoors. When crowded in a frame, no crop at all is the result; but given room, all forcing sorts are very productive. In order to afford the stems as much light as possible, and keep them from falling over and getting crowded, I have at times gone to the trouble of supporting them with stakes, and with great advantage to the crop. Of course the sets had been disbudded before planting, so that there were not a great number of stems to support, and all were good and strong. J. S.



#### A GOOD TURNIP.

ANY reader of the 'Gardener' who has not grown "Harrison's Early Marble Turnip" should make a note of it, and include it in his seed list when ordering seeds for next year.

I had it on trial this season, and in my opinion it is the best Turnip for garden culture that I have seen. The flesh is very solid and white; and whether cooked or uncooked, it is the sweetest in flavour that I ever tasted. J. HAMMOND.



#### THE IMPORTANCE OF ROOT-INSPECTION.

OUR fickle climate, great rainfall, and late severity of winters, all tend to make our subject one of pressing importance. More especially do we need to look to the roots of fruit-trees cultivated under glass, from which average crops are annually expected, let climatic difficulties be what they may. We desire, then, to make a few observations upon the root-action of the Vine, Peach, Nectarine, and Fig, and its general bearing upon their growth and fruitfulness.

In Vine-culture, the first step to success lies in the right management of root and fibre, and this can only be done by constant watchfulness. In order to the exercising of care and vigilance, the three years' extension system of Vine-border-making cannot be too strongly recommended. Under the old system of making the full extent of



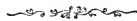
border at once, the Vine, after planting, seldom or never undergoes any systematic inspection. The consequence is, that in place of the roots being kept near the surface, they too often go the reverse way, while those produced are of long, fibreless, unripened material. Under the more protracted system, we have the roots constantly under control, at least for the first three years. The direction of the roots can be easily ascertained, and those destitute of fibre at once brought under treatment, thus giving a freedom of access to the whole border. As each part of compost is added to the border, it at once imparts new vitality to the whole,—for the reason that each addition of compost must be much more fully charged with life-giving qualities than if it had been a soddened mass in the almost unoccupied border. Another advantage of not less importance is the longer time that is given for the completion of the whole, thus giving a better chance for the drawing together of a more suitable compost. Such an advantage will be a special benefit to those whose resources in this direction are somewhat limited. We seldom, however, fully realise the importance of root-inspection until the plague of “shanking” has to be fairly faced. Such a condition plainly indicates an unhealthy root-action. This can often be prevented by careful surface-dressing, with the object of checking downward growth and drawing the roots more to the surface. Before surfacing, all loose soil should be removed down to the roots, when they may be carefully examined. If it is then found that they are in a very unhealthy condition, the best plan would be to make preparations for renewing the borders. Supposing the Vines are planted both inside and out, it will be best to renew one half one year and the other half the following season, thus doing the work in sections, which would be more convenient as well as effective.

The almost incessant rains of the winter months make the outside protection of Vine-borders an urgent necessity, whether they be intended for early or late work. Essential as inspection is for the right development of root-action, we must claim an equal position for protection as a preservative of the work done. Many kinds of material have been recommended for the purpose: corrugated iron is perhaps preferable, owing to its durability, and the ease with which rain finds its way down the corrugated surface. In Peach and Nectarine culture root-inspection is at times necessary, in order to keep under gross growth. In doing so, a trench should be taken out beyond where the roots are likely to have reached, and then commence carefully to lift the roots up to the bole of the tree. If considered necessary, the roots should be carefully examined as the process goes on, and those much larger than others, or likely to take the lead, should be cut back. They may then be relaid upon a layer of fresh loam, with another coating on the top, and the whole made fairly firm. The best season of the year for this operation is when the leaves are about ready to fall, so that no check may be given to the ripening of the wood.

In those more genial climes where the Peach and Nectarine bear in great plenty and freedom under outside treatment, the roots are left much to their natural growth, so that root-limitation is little practised. The roots are kept near the surface by the more powerful influence of the solar rays. Gross growth is by this means prevented, as also by heavy cropping and judicious pinching of the young shoots. The above, of course, relates chiefly to young trees; and we must acknowledge there is much wisdom in such a mode of procedure. The "pinching" enables the tree to direct its energies to the weaker parts, whilst the heavy cropping uses up much of that surplus strength which shows itself in gross growth. We may here observe that the roots of the Peach and Nectarine are much benefited by surface-dressings. In the case of weak and exhausted trees, the compost should be a liberal one. In ordinary cases a surfacing of good sound loam will be sufficient. As to Fig-culture, it *must be repeated*—as, if success is to be attained, the roots must come in for an equal share of attention. This need of attention relates in an especial manner to young trees during the first two years after planting. If root-examining be then neglected, much time will be lost before they can be brought into fruiting condition. In order to inspect the roots, a trench 3 or 4 feet from the stem should be taken out, the roots carefully lifted, preserving those of a more fibrous character, whilst those with little or no fibre may be shortened back. This operation, however, requires the exercise of some little amount of judgment. Those who have seen the Fig bearing abundantly on an outside border, will generally have observed that the space allotted for root-action was somewhat limited.

I remember such a border which extended not more than 12 yards, running in an east and west direction, and from which large quantities of fruit were annually gathered. In the case referred to, the border was limited to a narrow strip of 10 feet, by walks running parallel on each side, which, when made, were taken out to a depth of 3 feet, and then filled in with stone. Such an arrangement formed an effectual barrier against all root-intrusion. As they would not much care for such hungry quarters, this simple example may perhaps show in a practical manner the importance of confining the roots of the Fig as much as possible.

WM. FORBES.



#### DUNDEE HORTICULTURAL ASSOCIATION.

THE ordinary monthly meeting of this Association was held in Reform Street Hall, on Wednesday evening, the 2d ult. The president, Mr Doig, Rossie Priory Gardens, in the chair. There was a full attendance of the members. Mr Brebner read a paper on the "Movements of Plants," being a *résumé* of the contents of Dr Darwin's book upon that subject. He described his experiments in proof of the universality of the law of circumnutation in radicles, stems, leaves, and flowers, and showed the advantage to the plant of this movement. The modifications of this law in climbing and sleeping plants,

and in plants when exposed to the influence of lateral light, were then described and discussed.

Attention was also directed to the peculiar sensitiveness of the tip of the radicle to the action of gravitation, and to contact with solid bodies. It transmits a secret influence to the adjoining portion of the root, and thus acts as its guide along the course best calculated to enable it to extract nutriment from the soil. At the close of his paper, Mr Brebner expressed the hope that Darwin's researches and discoveries would stimulate gardeners to observe more carefully the wondrous processes which were going on in the vegetable world around them. The paper was illustrated by models and diagrams; and at the close, on the motion of the president, a hearty vote of thanks was accorded to Mr Brebner. A seedling Apple was exhibited by Mr D. Mitchell, gardener to G. B. Simpson, Esq., Seafield, Broughty-Ferry; also a hamper of Grampian Potatoes from Mr H. Johnstone, gardener to Thomas Gilroy, Esq., Tighudiun, Monifieth. The hamper consisted of fourteen tubers, weighing 19 lb., and the average produce per pole was 15 stones.

### LIST OF ORCHIDS IN FLOWER

AT THE KILNS, FALKIRK, *November.*

|                          |                                    |
|--------------------------|------------------------------------|
| Burlingtonia candida.    | Masdevallia Lindenii.              |
| Calanthe Veitchii.       | " " superba.                       |
| " " superba.             | " Tovarensis.                      |
| " rubro-oculata.         | " Veitchiana.                      |
| Cattleya guttata.        | Odontoglossum Alexandræ (crispum), |
| " marginata.             | upwards of 30 spikes, one of them  |
| " maxima superba.        | 4 feet 4 inches long.              |
| " Pinelli.               | Odontoglossum Andersonianum lo-    |
| Ceogyne ocellata maxima. | batum.                             |
| Cymbidium Lowianum.      | " cirrhosum.                       |
| " sinense.               | " cordatum.                        |
| Cypripedium Argus.       | " grande (many spikes).            |
| " barbatum.              | " maculatum superbum.              |
| " concolor.              | " Pescatorei (many                 |
| " Dominiana.             | spikes).                           |
| " insigne.               | " pulchellum major.                |
| " Javanicum.             | " Rossii majus.                    |
| " longifolium.           | Oncidium aurosum.                  |
| " Ræzlii.                | " cucullatum.                      |
| " venustum.              | " flexuosum.                       |
| " " pardinum.            | " Forbesii.                        |
| Ionopsis paniculata.     | " ornithorhyncum album.            |
| Lælia albida.            | " tigrinum.                        |
| " anceps.                | " varicosum.                       |
| " autumnalis.            | Pescatoria Dayana.                 |
| " " atrorubens (very     | " Klabochiana.                     |
| fine).                   | Phalænopsis amabilis.              |
| " peduncularis.          | " Schilleriana.                    |
| " superbians.            | " violacea.                        |
| Lycaste Skinnerii.       | Pilumna fragrans.                  |
| Masdevallia bella.       | " nobilis.                         |
| " Chimera.               | Saccolabium giganteum.             |
| " Harryana.              | " violaceum.                       |
| " ignea.                 | Zygopetalum Gantiorii.             |
| " " rubescens.           | " Mackayi intermedia.              |

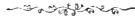
GEORGE FAIRBAIRN.

## LIST OF ORCHIDS IN FLOWER

AT FERNFIELD, BRIDGE OF ALLAN, *November.*

|                                                                                                                                                 |                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Masdevallias. — amabilis, Davisii, ignea, Chimera Wallisii, Lindenii, bella, Veitchiana, Veitchiana superba, melanopus.                         | Epidendrums. — rhizophorum, erectum, sp.                                              |
| Odontoglossums. — grande, constrictum, Uro-Skinneri (fine var.), nebulosum, candidulum, Rossii majus, bictoniense, Alexandræ, Lonsboroughianum. | Onciliums. — tigrinum, Forbesii, varicosum, cheiroporum, crispum, serratum, Schlimii. |
| Maxillarias. — grandiflora, lepidota, picta.                                                                                                    | Laelias. — autumnalis, elegans.                                                       |
| Pleiones. — lagenaria, Wallichiana, maculata. Misospinidium Vulcanicum.                                                                         | Lycastes. — Skinneri, lanipes.                                                        |
| Miltonias. — Clowesii major, Moreliana atro rubens (rare var.)                                                                                  | Celogyne speciosa.                                                                    |
| Sophronites. — cernua, grandiflora, purpurea (new var.)                                                                                         | Zygopetalums. — Mackayi, maxillari.                                                   |
| Cypripediums. — insigne, venustum, Harrisianum.                                                                                                 | Neotia picta maculata.                                                                |
|                                                                                                                                                 | Dendrobiums. — superbiens, bigibbum, chrysanthum.                                     |
|                                                                                                                                                 | Phalenopsis. — Lowii, amabilis.                                                       |
|                                                                                                                                                 | Vanda. — Bensoni, multiflora.                                                         |
|                                                                                                                                                 | Cattleyas. — labiata (true), marginata, Loddigesii.                                   |
|                                                                                                                                                 | Aerides Reichenbachii.                                                                |
|                                                                                                                                                 | Cymbidium giganteum.                                                                  |
|                                                                                                                                                 | Vanda cærulea, Sir Trevor Lawrence's (fine var.)                                      |

Dr Paterson had the honour of presenting her Majesty with a splendid bouquet of Orchids at Perth on the 22d, when on her journey south.



## NOTICES OF BOOKS.

BULBS AND BULB-CULTURE, Vol. II. By D. T. Fish. Bazaar Office, London.

Like the first volume of this work on Bulbs by the same busy author, the second one contains historical and descriptive notes, with very full practical instructions for the successful culture of Cyclamens, Dahlias, Gladiolus, Iris, Ixias, Sparaxis, Tritonias, Babianas, Lachenalia, Ranunculus, Schizostylis, Scillas, Tigridia. All these are treated of in a thoroughly practical manner; and those who require a reliable guide to Bulb-Culture cannot do better than possess themselves of Mr Fish's handy volumes.

THE HEREFORDSHIRE POMONA, Part IV. London: David Bogue, 3 St Mark's Place, Trafalgar Square. Hereford: Lakeman & Carver, High Town.

This Part of this magnificent work follows up and completes the practical treatise on the Orchard and its Produce; the Management of the Fruit and Cider-house; the Process of Fermentation, its Theory, Varieties, Practice, and Difficulties; the Manufacture of Cider and Perry; the Orchard in its Financial Aspect and its Prospect, by C. H. Bulwer, M.A. These matters are treated of in a thoroughly practical manner. The Part contains, besides, accurate descriptions with beautifully coloured portraits of 29 varieties of Apples and 35 varieties of Pears. These portraits are even more beautifully executed, if that be possible, than those of the three former Parts. It is scarcely possible that any one who purchases this splendid work can be disappointed with it.

S. OWENS & Co.'s (Manufacturers of Hydraulic Machinery of every description)  
ILLUSTRATED CATALOGUE. Whitefriars Street, Fleet Street, London.

This is one of the best got up Catalogues we have ever seen. It gives illustrations of almost every description of hydraulic machinery, and a great amount of useful information regarding it; and all who are interested in such machinery will be benefited by a perusal of this catalogue.

## Calendar.

### FORCING DEPARTMENT.

**Pines.**—Should the weather be cold and the days sunless, the temperature for Pines in all stages of growth should be at a minimum throughout the whole of this month. For suckers a temperature of 55° at night will be sufficient, when hard firing is necessary. If these are being wintered in light houses with bottom-heat supplied from hot-water pipes, 75° to 80° is quite sufficient to keep the roots healthy. Look over the plants carefully once a-week, and water such only as require it, taking care never to allow the soil to become dusty-dry; for if allowed to remain so for any length of time, the plants are apt to be checked and stunted, and to start prematurely into fruit when subjected to more heat and moisture. Plants that are plunged in beds of moist tan and leaves require comparatively little water for the next month or six weeks. Where ripe Pines are wanted in May and June, a portion of the earliest Queens should be selected, and placed in a light structure by themselves, at the end of the month. Give them a bottom-heat of 90°, and a night-temperature of 70°, with 10° more by day when there is any sun. If very dry at the root, give them a watering, but do not supply this element too liberally until it be certain that the plants are going to show fruit without making a growth; for early fruit can be had only from such plants as have been well matured, and show fruit without making a growth. Keep a moist atmosphere, but do not give much moisture in the soil. The remainder of the fruiting-plants should be kept cool and dry. A temperature of from 55° to 60° will be sufficiently high for these till the sun gets more power, and solar heat can be husbanded for the night. Continue to supply to those swelling their fruits

a rather moist atmosphere, a temperature of 70° in the air, and from 85° to 90° of bottom-heat. Examine every plant at least once a-week, and water such as are dry with weak manure-water, so that each plant is kept in a moderately moist condition. As soon as the fruit begins to colour, give no more water till ripe, for especially large fruits are apt to get black at the heart by the time they are fully ripe, if much water is given. Suckers on plants from which the fruit is cut should be taken off and potted in 6-inch pots, plunged in a bottom-heat of 85°, and an air-temperature of 60° to 65°, till well rooted. Strong early suckers that were put into their fruiting-pots in October, and that are in light pits, and kept near the glass, should be kept at a temperature of 60° to 65°, according to the weather. When the glass rises to 70° by day, give a little air for a few hours, always shutting up early. These, if kept growing without a check and rested in June, will give fine fruit next winter.

**Grapes.**—If the leaves are not all off late Vines on which crops of Grapes are hanging, they should be removed before decomposition takes place in the leaves and their footstalks. Look over the bunches weekly and remove all mouldy berries. Do not let the night-temperature fall below 45°, nor rise above 50° with fire-heat. During the prevalence of damp fogs, keep the front lights closed, warm the pipes slightly, and keep a little air on the top. When a fine bright day occurs, put a little extra heat into the pipes, and ventilate freely, so as to expel damp. If it be necessary to put plants requiring water into the vinery, the best way is to cut the whole of the Grapes, and bottle them in some cool dry room where an equable temperature can be maintained: then the

Vines can be pruned and kept cool. Where ripe Hamburgs and other early sorts are required for use early in May, some good pot-Vines should now be started. It is not necessary to ripen early Grapes before May, now that we have so many good Grapes that will hang and keep in bottles so well in spring; nor is it desirable to strain permanent Vines by starting them in the dead of winter, when the first crop can be taken so easily and well from pot-Vines. In starting these early pot-Vines, keep the atmosphere moist; and in order to start them in time, it is necessary to keep them at 60° till the buds are fairly moved, when a few degrees less at night, and a few degrees more by day, should be given till the blooming period; when, in order to ripen them at the given time, the temperature should be gradually increased as the sun gains power and the daylight lengthens. If a gentle bottom-heat from fermenting leaves can be given, all the better, but it should not exceed 75°. Put the house of permanent Vines, to be started by the end of this or beginning of next month, in order. If a bed of fermenting material can be placed on the inside border, it is an excellent means of supplying heat and moisture, and it saves fuel. Prune and otherwise get ready for starting succession houses. Where there have not been any insects, such as thrip or spider, last season, do not scrape the Vines much; but if there has been either, remove all loose bark, scrub the Vines well with soapy water, and then dress with Gishurst's Compound, at the rate of 12 ounces to the gallon of water. Where there is mealy-bug on the Vines scrape them rather severely, and scrub them with a hard brush and soft-soapy water. Fill up every crevice about the spurs with styptic, and then dress with Gishurst's Compound, in which some hellebore-powder is mixed. This and careful watching, and hand-picking in spring when the Vines begin to grow, is the safest and surest remedy for this worst of all pests (except phylloxera) on Vines. Now is a good time to prepare for making new Vine-borders. The first thing to secure is a site from which all water passes as soon as it reaches it. For good and permanent results a rather heavy loam is preferable; and the less manure, except bones and horn-shavings, that is

mixed with it the better. The manuring should afterwards be supplied on the surface, when the Vines get into full bearing.

**Peaches.**—Trees from which ripe Peaches are expected by the first week of May should be shut up at once, and kept from falling below 45° at night. By the middle of the month apply fire-heat sufficient to keep the heat at 50° when cold, and 55° when mild. Syringe the trees two or three times daily, after firing commences, with tepid water. See that the border is thoroughly moist, and any portion of it that is outside well protected with fern or dry litter. Prune and tie succession trees, and after they are tied, syringe them with paraffin at the rate of a wine-glassful to a gallon of water. This is the only dressing we use for Peach-trees now, and find it most effectual against green-fly, &c. Where young trees are to be planted, get the work completed as soon as possible. A heavy loam, thoroughly drained, and devoid of all animal manure, is best for Peaches. Do not cut the trees any further back than to hard well-ripened wood.

**Figs.**—Where early Figs are in demand, a light pit or low house should be got in readiness, where trees in pots can be started after the middle of the month. Bottom-heat from a bed of leaves is of the first importance in early Fig-forcing. It should not exceed 80°, and the air temperature should be from 50° to 55° the first month. To secure this, very little fire-heat is required, if the pots be plunged in a bed of oak-leaves. Syringe the plants several times a-day, and see that they are kept steadily moist at the root with water, at about 80°. As soon as ever the buds begin to move, top-dress the pots with loam and horse-droppings.

**Cucumbers.**—This is a trying month for Cucumbers. When the weather is mild keep the heat at 70°; when very cold a few degrees less will be sufficient. Add a covering of fresh soil to the mounds in which they are growing, as the roots extend, and keep them steadily and moderately moist at the root. Give air for a few hours daily, shutting up early. Do not much exceed the night-temperature by day in the absence of sunshine, or else the leaves will be thin and sickly. Do not allow them to bear very much

this month; attend to the stopping of growing shoots, and do not allow the foliage to become crowded. Keep the glass clean, so that as much light as possible can get at them.

**Strawberries in Pots.**—Put a quantity of these into such as the early Peach-house and vinery, where no Strawberry-house proper exists. But

where they can be placed on a bed of fermenting leaves close to the glass, it is the best place for them. Put those in the smallest pots in heat first. See that there are no worms in the soil, and that it is moist. Do not exceed a night-heat of 50° till they have started to grow, and give them more or less air every day.

#### KITCHEN-GARDEN.

THIS being the last month of the year, it is a very suitable time to “take stock” of the garden and its produce; note what improvements on the past system of management may have attention; also the value of the class of vegetables which have been cultivated—what should be discarded, and what are worthy of retaining for future crops. Such a system, well carried out, saves disappointment and waste. The seed-bill will soon be put into form, and one does not wish a repetition of inferior and unsuitable kinds. All gardening practice should be made as simple as possible; and noting one’s experience tends greatly towards that end. Few practical men keep in the same beaten track with due success attending it. Improvements can be made in most gardens, however small they may be. We find that we have many kinds of vegetables which we would not like to cultivate on our heavy land again. Several varieties of Celery, Brussels Sprouts, Lettuce, Onions, and Potatoes, are in the list, which will require revision. Celery, as an example, is large, well blanched, and sound; but while some of the kinds are solid, nutty, and of general good quality, others, though large, are very inferior. Two kinds we like much are Major Clarke’s Red and Turner’s Incomparable—the latter is under many synonyms.

Arrange as far as possible what the plots are to contain next year, and manure or other preparations can be applied accordingly. Roots do well where ground was well prepared the previous year with manure. Most crops do satisfactorily in deep well-prepared ground. Cabbage and most of the Brassica kinds (not Broccoli) thrive on well-manured land. What improvements are to be made (if any) should have attention while weather is open. Treading about on wet ground is a practice which should be abhorred.

Plenty of work in frosty weather is always at hand: stake-making, seed-cleaning, Onion and root inspecting, label-making (large ones are wanted for vegetable crops), manure-turning, burning of brushwood, and storing the ashes for using as a mixture in soils. A good quantity of leaves ought to be stored where they can be had. When rotted by using them in hotbeds or otherwise, they are excellent for heavy soils, or such as do not require rich dressings of manure. Trenching and digging may be pushed forward where any ground becomes vacant. Manure-wheeling is always suitable for frosty weather. The last three winters of severe weather caught many “napping,” which led to a deal of bustle when spring arrived. Protecting of crops must not be overlooked. Artichokes, if not already done, should have litter placed round their collars, or fine coal-ashes. This applies to Globe kinds. The roots of Jerusalem Artichokes may be protected with ashes or litter placed over them. They are hardy, but when severe weather sets in they cannot be got from the ground if left exposed. Celery should have litter thrown over the ridges; but they are better exposed while weather is mild. Asparagus should not be smothered with heavy, wet, holding manure. Well-rotted hot-bed manure suits it well, and richer stuff may be given early in spring, and neatly pointed into the ground. Channels may be made to lead off surplus water. Peas and Beans may be sown on a warm dry border, and dusted with red-lead mixed with ashes: rats and mice would then be kept from them. Earth up Celery where required, but not to choke up the hearts and cause rotting. Beet may be covered with ashes, if preferred to have it fresh from the ground.

Broccoli may be lifted to pits if such are to spare for protection. Orchard-

houses and such structures are of much value for the purpose of protecting vegetables. Heeling them over is an old practice which still has many admirers. Certainly, when plants are close to the ground, the use of litter in extra sharp weather is of good effect, and can be easily applied. Some are pleased with huge plants; but still, firm, small ones are most preferable. We have seen the inexperienced delighted with their gross growth, while their neighbour, from sad experience, aimed at small hardy plants of Broccoli; and we need not say who had most to be thankful for when spring arrived. Lettuce and Endive should be put under protection against severe weather. A board laid over the Endive blanches it well; or it may be tied up till it is white in the hearts.

Leeks and Parsnips should be put into store (small lots at a time) against severe weather. Turnips may have the soil drawn over them in the rows. A quantity may be placed in pits, or covered with straw in sheds or out-houses. A warm border should be prepared for early crops, such as Carrots, Potatoes, Radishes, &c. When thrown up to the weather for a few

weeks, and then well broken, mixing in it sand and light soil, it is in good condition for fine seeds or early crops of any kind. Forcing of Asparagus, French Beans, Rhubarb, and Seakale should now be on the way if these are to be had at Christmas: attend to former directions regarding them. Potatoes (early Kidneys) may be placed in heat and moisture, to sprout and get ready for planting in pots, or on gentle warmth in pits or frames. Put plenty of small salads into growth. Make Mushroom-beds often, of small size in preference to large. If one lot goes wrong, the other soon takes its place. Small beds every fortnight or three weeks are safer than large ones made once in two months or so. Herbs should be potted or boxed, according to the quantity wanted. Mint, Tarragon, Sorrel, and some others are what there is most demand for. Parsley, Cauliflower, and other plants in frames, should have all the air possible; only keep off severe frost and drenching rains. Portable plant-protectors (now so favourably known) are of great value in vegetable-gardens, or wherever one may wish to keep off severe weather. M. T.

### Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be received by the 14th of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

G. F. N.—In our present issue you will find some remarks on materials for potting Orchids that may be of service to you. And we are happy to announce to you, and our readers in general, that we have arranged for a series of papers on Orchid-culture, to be written by a most extensive cultivator, and one who is acknowledged to stand in the front rank of Orchid-growers. These papers will appear monthly, beginning in January.

A. H.—Your Vines have doubtless suffered from the wet adhesive state of the border, aggravated by the sunless season experienced in Scotland. You will never have satisfactory results until you lift and replant the Vines in proper soil—a good holding loam lying on perfect drainage.

S. T.—Peaches—Royal George, Violet Hative, Sea Eagle, Walburton Admirable. Nectarines—Humboldt, Pine-Apple, Pitmaston Orange, Victoria.



# I N D E X.

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