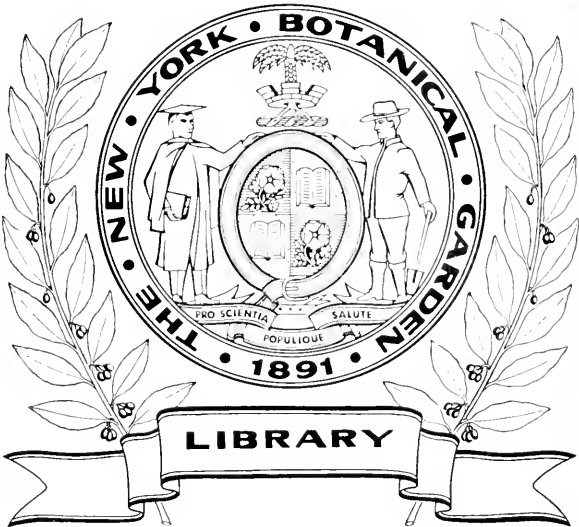


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v. 14
1871
cop. 2



THE
FLORAL WORLD

AND

GARDEN GUIDE.

EDITED

BY

SHIRLEY HIBBERD, ESQ., F.R.H.S.

1871.

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NEW YORK
BOTANICAL
GARDEN

LONDON:
GROOMBRIDGE AND SONS,
5, PATERNOSTER ROW.



LONDON :
PRINTED BY SIMMONS & BOTTEN,
SHOE LANE, E.C.

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LARGE-FLOWERING PELARGONIUMS.

BY GEORGE GORDON.

(With coloured figure of Turner's Pelargonium "Polly.")

THE absence of the grand collections of large-flowered Pelargoniums from Hoyle, Fraser, Bailey, Turner, and other celebrated growers, at the horticultural exhibitions held in the metropolis during the last two or three seasons, is certainly an indication that they are a few shades less popular than they were a few years since; yet it would be wrong to suppose that few people care for them. Indeed, for home decoration, I believe that the esteem in which they have hitherto been held has decreased very little indeed, and also that there can be no doubt that the disappearance from the arena of the collections referred to, is more directly due to parsimonious schedules than to any lack of interest felt in them by the general public. It must be borne in mind that it is a most expensive affair to grow and convey to an exhibition such huge specimens as those staged by the foregoing exhibitors, and it would be unreasonable to expect any one, whether in the trade or not, to devote much time, labour, and skill in the cultivation of any class of plants with the full knowledge of their incurring a large pecuniary loss, even if most successful. Without any further preface I will offer a few remarks on their cultivation for conservatory decoration, and then give a short descriptive list of a few of the best and most distinct of the new varieties.

It matters not at what season of the year their cultivation is commenced, but where they are taken in hand for the first time, or where an addition to the existing stock is made, the plants should be purchased as early in the season as possible. For instance, sturdy little plants that come to hand now, can with proper care be grown into moderate-sized specimens by the period of their flowering, whereas those purchased late in the season, will be so small in size, that the flowers will be sparingly produced, even if they bloom at

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all. They should undergo an examination immediately they come to hand, and if the pots are well filled with roots, shift them into a larger size at once; if, however, they are not well rooted, defer the repotting until the middle or end of February. In either case they should be placed in a light and airy position in the greenhouse, and be watered cautiously. A fortnight or so after they have been repotted pinch out the points of the young shoots to assist the formation of bushy specimens, and when it becomes necessary train out the side-shoots by means of neat sticks. Those intended for exhibition must have the branches brought close down to the rim of the pot, and be kept down as much as possible during the first year; but the growth of those intended for conservatory decoration will merely require tying out to admit a free circulation of air amongst the branches, and for securing a regular well-balanced outline when they are in flower. Upright growing plants with heads of bloom about twelve or fifteen inches in diameter are the most useful for the conservatory, and therefore excessive training must be avoided.

As they go out of flower remove them to the open, and place the pots upon a bed of coal-ashes, and if practicable shade them for a few days to allow the wood to become slightly hardened before they are exposed to the full influence of the sun. Henceforth they must have free exposure to the weather, and in a fortnight or three weeks the wood will be matured sufficiently to allow of their being cut down. The soil should also be kept as dry as it is possible to keep it without allowing the leaves to flag. In pruning, cut back the young shoots to within two or three buds of the old wood, according to their respective positions, but the chief aim must be to give to each a symmetrical appearance. Excepting in unusually wet seasons they should remain in the open, until taken indoors for the winter, but in wet seasons they should be placed in a cold frame, and the lights drawn off at all times, excepting when they are required to protect the inmates from the rain. No water must be applied to the roots from the time they are cut down until the young growth is about half an inch in length, but they will receive much benefit from a sprinkle overhead in the afternoon of a dry hot day. When the young growth has attained the abovementioned length, turn them out of the pots, remove nearly if not quite all the old soil, trim the roots slightly, and put each in a pot one or two sizes smaller than that which it has previously occupied. Return them to the position they previously occupied, and water very sparingly until they are well established in the new soil. Even then, no more water must be applied than is absolutely necessary to maintain a steady growth. Early in September remove to the greenhouse for the winter, and the only attention required to keep them in health will be to supply them with water when necessary, and to keep the foliage free from green-fly, which, by the way, are very partial to them.

Some time during January of the following year, repot all that require a shift into pots two sizes larger; that is, those occupying three-inch pots should be put into the six-inch size, and those in five-inch into pots eight inches in diameter. Potted as here advised, no

further shift will be required until after they have done flowering, and much unnecessary labour is avoided. After the end of February the young growth will make vigorous progress, and should be tied out neatly, and their growing points nipped out. In succeeding years, when the period of flowering will be more under the control of the cultivator, the specimens intended for flowering in May must receive their final stopping in January; for June, in March; and for July, some time towards the end of April. Those required for May must receive their final shift in October, and be placed in a temperature a few degrees higher than that required for the remaining portion of the stock. After the first season's growth the plants should, as soon as they are well established in the pots in which they are to flower, be watered with weak liquid manure about twice, and with clear soft water at all other times.

Large-flowered Pelargoniums winter best in a temperature ranging between 40° and 50° , according to the weather, and with just enough fire-heat to keep the frost out, and the atmosphere dry. A comparatively dry atmosphere and moderate supplies of water at the roots during this period, are most important, and the principal bulk of the failures which occur every season may be safely attributed to a reverse of these conditions.

A compost consisting of three-parts sound turfy loam, and one each of well-decayed hot-bed manure and leaf-mould, and half a part of sharp silver-sand, will grow all the large-flowering varieties to perfection. The soil must be used in a moderately rough condition, and the loam and manure be well mixed together. The compost should, if possible, be prepared four or six months beforehand, by placing the manure between the layers of loam when it is stacked up in a heap, as it comes from the pasture or common.

By pursuing this plan much time and trouble will be saved, as all that has to be done when the soil is required for use is to chop down one side of the heap of soil, and add the sand to it. It now only remains to be said in connection with this part of the subject that the pots must be clean and well drained, and the soil be pressed firm, without being rammed hard.

Cuttings of well-matured wood cut up into lengths of two joints each, with a young side-shoot proceeding from the top joint, strike freely. Prepare by cutting them close under the bottom bud, and remove the lower leaf. Insert in cutting pots, prepared in the usual manner with a layer of dry sand on the top, and then place in a cold frame. Keep rather close and shade moderately during the first week or ten days, and then ventilate freely, and expose to the full sun. Pot off as soon as nicely rooted, and if they are stopped when well established and shifted into five-inch pots about a fortnight or three weeks afterwards, they will make good specimens by the following season.

There are now only three raisers of large-flowered show varieties, and of these Mr. Hoyle and Mr. Foster, whose flowers are distributed by Mr. C. Turner, of Slough, enjoy the highest repute. The new varieties that will be sent out by Mr. Turner in the ensuing spring were all exhibited several times during the exhibition season

of last year, and many of them were shown at the summer shows of 1869, and the descriptions here given of them are entirely my own, and are the result of careful criticism and comparison with others of anterior date.

Admiration (Foster).—A grand flower; top petals deep bright crimson, with dark blotch; lower petals deep pink, with small blotch; fine habit and very free.

Black Prince.—Top petals deep maroon, bordered with red; lower petals pink, painted with crimson; throat pure white; distinct and pleasing.

Brigantine (Foster).—Top petals rich maroon crimson, with narrow margin of pink; lower petals pale rose, painted with crimson; free and showy, grand.

Charlemagne.—Top petals clear bright salmon-pink, with deep maroon blotch on top petals; a large and most superbly-finished flower.

Iron Duke (Foster).—Top petals dark, with margin of bright rosy pink; lower petals bright carmine; throat pure white; first-rate in every respect.

May Day (Foster).—Top petals glossy black, with broad margin of rosy pink; lower petals light pink; throat white; a most refined and beautiful flower.

Polly (Foster).—The faithfully executed figure of this splendid variety renders a technical description unnecessary. The habit is first-rate, and as it is remarkably floriferous, there can be no doubt it will occupy a prominent position in the principal competitive groups many years hence, and be much appreciated for the conservatory stage.

Warrior (Foster).—Deep glossy black top petals, with bright red margin; lower petals bright reddish pink; a superbly finished flower, with a compact and remarkably floriferous habit.

Duke of Edinburgh (Hoyle).—Top petals blackish maroon, with bright margin of pink; lower petals rose, prettily painted with dark; a grand flower of the most superb form.

Eldorado (Hoyle).—Top petals bright red, with dark blotch; lower petals deep rose; wondrously showy.

Exemplar (Hoyle).—Top petals deep maroon, with narrow border of rose; lower petals pink blotched with maroon; free and showy.

Pasha (Hoyle).—Top petals blackish, bordered with pink; lower petals bright red pencilled with deep crimson; valuable for its fine habit and floriferous character.

Of the varieties sent out by Mr. Turner in the spring of 1870, I have a decided preference for *Attraction* (Foster), *Bonnie Charlie* (Hoyle), *Claribel* (Foster), *Corsair* (Foster), *Cycle* (Hoyle), *Harold* (Foster), *Her Majesty* (Foster), *Heroine* (Foster), *Maid of Honour* (Foster), and *Marion Wilkie* (Hoyle).

The Fancy varieties which have been sent out by Mr. Turner during the last two seasons have been wonderfully good. They are certainly a most decided improvement upon varieties of an anterior date, and to grow the older kinds now is a sheer waste of house room. The best twelve of the newer sorts are, in my opinion, the

following, and they combine a vigorous habit with flowers of superb colours and quality.

Agrippa.—A showy rose-pink flower, of the finest form and substance.

Belle of the Season.—Rosy carmine, fine form and most profuse in flowering.

Brightness.—Deep rose, white throat and margin of lower petals; a grand and telling variety for exhibition, as well as being most useful for the conservatory.

Cinderella.—Bright lilacy pink, white throat and margin; fine form, habit good.

Excelsior.—Top petals bright rosy crimson, lower petals pale rose, margined with white, white throat; most desirable in every respect.

Fanny Gair.—Top petals deep rose, lower petals bright rose, with white margin, fine form; grand for exhibition and conservatory decoration.

Lady Carrington.—Rosy pink, light blotch on top petals, white margin; pretty and showy.

Leotard.—Deep rose, whitish throat and margin; a fine exhibition and conservatory flower.

Marmion.—Reddish carmine, whitish throat; a pretty flower, of large size and fine substance.

Mrs. Mendall.—A fine light flower, blotched with rosy pink.

Princess Teck.—Top petals bright rose, margined with white, lower petals white with pink spot, free bloomer; fine for exhibition; one of the very best sent out for many years past.

Vivandiere.—Dark rosy crimson, light margin; a fine flower; very free flowering, and therefore valuable for decorative purposes.

THE CULTIVATION OF THE ROSE.—No. V.

CLIMBING ROSES.



THE "Rose Mount," at the Crystal Palace, should present higher attractions to rosarians than it has ever done hitherto, for it cannot be questioned that the roses that encircle the pavilion consist for the most part of sorts that have become antiquated; that they are disposed without taste, and that during a great portion of the year they are neither useful nor ornamental. But he would be a poor rosarian who should learn nothing from a visit to even that misused attraction, and perhaps the climbing roses would interest a greater number of connoisseurs of roses than any other particular feature of the mount. There are on the pavilion some glorious examples of the best of climbing roses, and there is considerable variety amongst the sorts that contribute to the general effect. The ruddy Boursaults, the delicate Ayrshires, and the best of the Sempervirens section, here present themselves in most creditable condition, clothing the trellises

to the very summit, and in their season sheeting them with flowers. I know not whether it is owing to the proximity of the Crystal Palace as a determining influence, but Boursault roses, for some reason or other, abound more in Sydenham than in any other place within my knowledge, and I speak as a frequent and an observant traveller. Everywhere the walls of pretty villas are smothered with the rich purplish-crimson or brilliant rose-coloured flowers of this best of wall roses; the soil suits them, the owners care for them, and the rose-loving rambler shares in the delight.

If we could make a general survey of all the wall, pillar, and pavilion roses in the country, I fear we should have to report of them in an unsatisfactory manner. Generally speaking, this class of roses is badly treated. Those who know how, oftentimes neglect to apply their knowledge, from a foolish disrespect they entertain for roses that are of no value for their individual flowers. Those who do not know, generally conclude that pruning them with a knife and fork will be the right thing, and that as to other matters the wall roses will take care of themselves. It may be well to say a word to both classes. Those who affect to despise these roses because of their familiarity with the wonders of the rose garden proper, play a foolish part. Once admit that walls and trellises must be clothed, and that certain roses are adapted to afford the desired covering, and it follows that he who gives his mind and hands cheerfully to the task of growing them properly, obeys the dictates of sound sense and good taste; and he who would despise them or act as if they were unworthy of his attention, deserves rebuke for a shallow pretender, and one who in his supposed affluence of knowledge has yet everything to learn. To the more modest ones who would do well for their climbing roses if they only knew how, we shall speak more kindly and communicatively. To them, indeed, is addressed all that follows.

As to climbing roses in general, it must be understood that our first business is to make sure that they will grow. It is in this first stage that many a climbing rose is irretrievably ruined, and made a ghost of for the disgrace of the wall it clings to like a shadow. You cannot have too much vigour in a climbing rose, and therefore you cannot be too liberal in your mode of planting. A deep strong loam is the proper bed, but this bed should be broken up over one square yard of space at least, and a liberal allowance of fat manure well dug into it. When planted in such a bed, a climbing rose will be pretty sure to grow, but if simply stuck in a hole, it will be pretty sure to stand still until death takes kindly charge to make an end of its miseries.

In dry, chalky, and sandy districts, rampant roses are commonly starved, and make but a poor return for the space afforded them. It is in their nature to require substantial nourishment, and if that cannot be provided it is a folly to plant them. If, however, any one dwelling in a district where the soil is of this hot, starving character would "make an effort" to produce a bower of roses, my advice to such an one would be to prepare, by diligent labour, the nearest possible resemblance to a rich loam, and to make an extra large bed, say

two or three yards square and full one yard deep, for every one of the climbing roses. As for the imitation, it may be that a few loads of clay can be obtained; to this may be added good manure and some part of the staple soil of the spot, muck from the bottom of a pond or ditch would be invaluable in such a case, and something might be done by collecting the trimmings of turf that are made when roads are repaired. Having made a fair beginning with a view to plant, you will have to encounter the grave question of the best sorts for particular purposes. We first take into consideration the best sorts for—

WALL ROSES.—If the walls are high, and great sheets of bloom are required, there are really but few sorts to make selection from. The finest wall rose in the world is *Laura Davoust*, the representative of the “multiflora” section, but it is tender, and therefore we may as well at once fix its habitat, which should be a south or west wall in the southern parts of these islands. The most generally useful of wall roses are *Boursault Crimson*, purple-crimson; *Boursault Gracilis*, purple-rose; *Boursault Inermis*, brilliant rose; *Hybrid Perpetual Red Rover*, fiery crimson; *Sempervirens Myrianthes*, pale pink; *Sempervirens Princess Louise*, creamy white. None of these have any quality, but they are rich in rustic worth. They grow rapidly, they flower freely, and in the short season of their bloom they are truly glorious. Happily any aspect and any climate almost in the home empire will suit them.

But can we not have quality in this department of rose-growing as in others? Yes. Let me therefore unfold a plan which I carried out twenty years ago, which combined the two features of clothing a wall instantly and of securing roses for the covering of the finest quality known. In the first place I planted Boursaults and Sempervirens at ten feet apart, and I put a selection of H.P.’s and T.’s between them. They were planted in a border well prepared, and trained to a wall fourteen feet high. The Boursaults and Sempervirens rushed up the wall, the H.P.’s and T.’s climbed up it slowly. Of course not many years would have passed ere the rampant sorts had smothered out the others, only I stood by with a terrible knife, and kept the rampants back, and at last cut them out altogether, root and branch, and left the whole wall clothed with the most glorious roses. For this plan the best of the quality sorts are the following:—

HYBRID PERPETUALS FOR WALLS.—Alex. Bachmeteff, Anna Alexieff, Anna de Diesbach, Clement Marot, Duchess of Sutherland, Empereur de Maroc, Francoise Lacharme, General Jacqueminot, Ipswich Gem, Madame Crapelet, Maxime, Olivier Delhomme, Paul Verdier, Princess Mathilde, Red Rover, Queen Victoria, Senateur Vaisse, Wilhelm Pfitzer.

TEAS FOR WARM WALLS.—Adam, Climbing Devoniensis, Gloire de Dijon, Goubault, Leveson Gower, Madame Damaizin, Madame Willermoz, Narcisse, Souvenir d’un Ami.

NOISETTES FOR WALLS.—Aimée Vibert Scandens, Celine Forestier, Jaune Desprez, Lamarque, Ophirie, Solfaterre, Triomphe de Rennes.

In purchasing any of these roses, take the best care possible to obtain them upon brier stocks or their own roots, for Manettis will not do at all, and briars are scarcely to be desired. If they are on their own roots you will have the power at any time to compel them to renew themselves from the very base, by the simple process of cutting them down, and this may be desirable some day. If upon any stock you will have no such power, because if you are driven to an act of amputation for the purpose of renewing the tree, the stock will immediately send up a host of suckers, and contend for its own renewing at the expense of the rose. I should prefer to put out strong plants from pots in April for the clothing of a wall, and I would buy them two or three months in advance, and keep them in a pit until within three or four weeks of the time of planting, when to prepare them they should be put in the open air in a sheltered spot.

To describe the mode of planting would be to waste the space at our command. But I shall say this, that I would not prune away one inch of any climbing rose at the time of planting, but would spread out all the shoots, and train them carefully, even if I did not mean to keep one of them. By this procedure I should secure a free growth of the roots, and this would constitute the foundation of success. In the following month of April I should probably cut them back severely, perhaps leaving only one shoot its full length, and removing all the rest by cutting close over the roots. The result would be several strong shoots from the bottom, from which I should select the strongest and best placed and suppress the others. Probably in the April following I should cut away the shoot left originally for a fair beginning, having now better wood to take its place, and a tree so vigorous that at any time it would send up new shoots from the base at the word of command. I put this procedure as a probability, because it would not profit the reader to lay down strict rules. But it may be well to direct attention to the fact that the first growth of climbing plants of all kinds is necessarily weak, and never does acquire such robustness as will be found in shoots subsequently thrown up from the roots. Therefore in all probability the course of treatment above sketched out would be the best in any ninety out of a hundred instances, but the last one might afford exception to the rule. As to pruning in general, and some other matters of importance, we must defer what we have to say until next month. In case, however, this chapter should appear incomplete if I omit entirely to refer to the pruning, I shall close it by saying that climbing roses of all kinds require but little systematic pruning, and, generally speaking, if never pruned at all, would grow and flower more freely than if hacked about by an unskilful hand.

S. H.

THE BEGINNER IN GRAPE GROWING.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.



GRAND old theme is that of grape growing, but in dealing with the elementary part of the question there is very little to be said that is new, and what is new has to be so interwoven with the old matter, that few readers are able to detect it. Let it be understood at the commencement of the few papers that will from time to time be contributed to these pages, that they will be written for the guidance of amateurs and others who are anxious to grow a few grapes, but have little or no knowledge of the subject, and therefore all controversial matters will be avoided as much as possible; the discussion of such matters as Extension *versus* Restriction, however much it may interest the veteran, is injurious to the inexperienced, as it perplexes them, and they are left in doubt as to the best course to pursue. The whole question of extension and restriction can be disposed of in a few words, as good crops can be, and are grown by both systems, and either can be adopted with the utmost certainty of success, provided the vines are otherwise managed in a proper manner. For the reasons stated above, it will be necessary to deal more fully with the minor details than would otherwise be desirable, and the instructions will be framed in the plainest manner possible. Acting upon Mrs. Glass's principle of first catching the hare, we will commence with a short chapter on

PROPAGATING THE VINE.

The grape vine can be increased in various ways, but the only methods that we need consider are in the case of in-door vines, by eyes and inarching, and for out-door vines where the cultivator has no glass, by cuttings. For raising a stock for planting a new vinery or re-planting an old one, propagation by means of the eyes is by far the best method, but when it is desired to add a new grape to an established house of vines, inarching it upon the vine whose place it is intended to occupy, and for that purpose it is the most desirable plan to adopt.

Some varieties are not at all suitable for stocks, such for instance as the Frontignans and other weak growers, and therefore, before inarching the variety it is intended to introduce, it will be necessary to consider whether it is likely to do well upon the vine that has to make way for it. The stocks have more influence upon the scion than many people are aware, hence the utmost caution is necessary. As a rule all varieties do well upon the strong growers, but the two best for stocks are the Black Hamburgh and Muscat of Alexandria, they will also do very well upon the Marchioness of Hastings and the Black Barbarossa, and where they exist better sorts can be put upon them, but they are certainly not so good as the foregoing.

The manner in which inarching is performed is very simple, and failures are next to impossible. About a month before the vines start into growth, whether forced or not, is the best time for performing the operation. First of all, determine upon where the scion is to be put, bring the two vines together and form a secure resting-place for the pot in which the young one is growing, then shave off a small strip of bark from the stock and a similar piece from the scion, join the two wounds together, and fasten them securely by means of strong yet soft matting, bound round firmly. To keep out the air and prevent the wounds drying, put a moderate quantity of grafting clay over the bandage, and finish it off by fixing a little moss over the clay to prevent its cracking and falling off. The best position for inarching the young vine on the stock is near the bottom of the rafter, and some means must be adopted to elevate the pot in which the latter is growing to the desired height. The young vine must be cut back to where the wood is thoroughly hardened, and about two buds allowed above the junction.

As the old vine commences to make new growth, the young shoots towards the bottom must be gradually rubbed off, but the shoots towards the top must be allowed to remain, and a few bunches of grapes left on if desirable. If, however, the young vine is attached to wood of the previous year, the latter should be pruned previously to about four buds above the intended junction, and the young growth proceeding therefrom constantly stopped during the summer to prevent its robbing the young vine. The junction will not be effected so quickly when the young vine is joined to an old rod, but it is very objectionable to attach it to young wood proceeding from an ugly spur, such as we usually meet with on old vines. The union will be effected in about six weeks after the vines begin to make new growth, and as the wood will swell very rapidly, the bandage must be loosened occasionally to prevent its arresting the regular flow of the sap. Considerable care is requisite in doing this, as they soon separate if handled in a careless manner. The best means of preventing a mishap is to put a piece of matting round them just below and above the wound, independently of that which is employed for holding them together, and if all are not unloosened at the same time, it will be almost impossible for an accident to occur. The young vine can be cut off just below the union, and the pot removed as soon as they grow together, or it can remain until the winter pruning. Some time after the vines are at rest, cut the old rod back close to the young one, and prune the latter to half its length, or to within two or three buds of it; leave according to its strength, and whether the wood is well or badly ripened, it should in fact be pruned and otherwise managed in exactly the same manner as a young vine on its own roots.

To increase vines by cuttings, select stout well-ripened shoots of about six inches in length, remove all but the two top eyes and insert them at the foot of a warm sunny wall. If inserted soon after the commencement of the new year few will fail, and if properly attended to during the summer they will make strong canes by the end of the season. Only one shoot should be allowed to remain to

each, and the young growth must be secured to the wall by means of nails and shreds to prevent them being injured by rough winds. They should also be taken up and replanted annually, until they are put in their permanent quarters to encourage the production of short fibry roots. When left in the same position for several years they suffer severely when transplanted, and very seldom make much growth during the first season.

To ensure the most successful results in propagating vines from eyes, the aid of a nice genial hot-bed is requisite. The eyes will strike without bottom heat, yet they strike much quicker when the pots are partly plunged in a hot-bed, and a considerable saving of time is the result. Many grape-growers strongly recommend the eyes to be put in some time in January, and some advise their being put in in December, but from many years' close observation I am convinced that eyes inserted early in March will produce better canes by the end of the season than those inserted in either of the foregoing months. When propagation is commenced too early, the soil becomes rather sour by the time the roots are formed, and they do not take kindly to it, and the growth also is weak, because of the insufficiency of light for the elaboration of the sap. March eyes start into growth at once, and grow away freely. They have the assistance of an abundance of light, and require less artificial heat.

Moderately stout and well matured wood should be selected from which the eyes are to be taken; but size is of secondary consideration, provided it is well ripened. Prepare the eyes by cutting them with about three-quarters of an inch of wood above and also below the bud, then shave off, in a slanting direction, a small portion of the wood at each end on the under side, and they will be ready for inserting in the soil. Each eye should be potted separately in three-inch pots, filled with a compost consisting of sandy loam, leaf-mould, and a small proportion of well decayed manure. Partly plunge the pots in a hot-bed, and maintain the soil in a moderately moist condition. A cucumber or melon-frame suits them admirably, as the atmospheric moisture usually maintained in these structures is eminently favourable to the production of roots and a vigorous growth. The pots can either be partly plunged in the bed round the mounds of soil, or they can be placed upon the surface, as may be the most convenient. Where there is no frame or hot-house in which to place them, put them in the warmest part of the greenhouse, and where the sun can shine upon the pots and warm the soil. Even in a greenhouse, by giving them the full advantage of the warmth from the sun, and sprinkling the surface of the soil with rather warm water occasionally, there will not be any difficulty in striking them.

The young vines must be shifted into larger pots before they become pot-bound, or they will experience a decided check. They should be put in six-inch pots, and soil of the same temperature as that of the structure in which they are grown, employed. What has to be done with them when they arrive at this stage must be deferred until another occasion.

THE DIEFFENBACHIA.

BY J. W. SILVER,

Head Gardener, The Laurels, Taunton, Somerset.



IN this genus we have a very interesting class of plants, which, considering their bold and ornamental appearance, and usefulness for exhibition and the dinner-table, do not receive so much attention as they deserve. They are, moreover, very easily managed, and all who have a stove may, by acting upon the rules that will be laid down, grow them most successfully. The most essential conditions for ensuring well-developed specimens are heat, moisture, and light and open yet moderately rich compost.

The compost I have found them succeed best in is prepared by well incorporating together equal parts of turfy loam and fibry peat, with an addition of about one-third of nodules of charcoal and silver-sand. The peat and loam must be chopped up in lumps the size of a hen's egg for small plants, and for large specimens it should be much rougher. In either case, the finest of the soil must be sifted from it, as it is quite impossible to grow them in close stuff that will soon run together and become sour. A little leaf-mould may be added with advantage to the compost in which large specimens are potted. Liberal drainage is at all times indispensable, as they require an abundance of water throughout their growing season. An ordinary stove temperature, ranging in summer from 70° to 75° by artificial heat, and by sun heat from 85° to 90°, will suit them well when growing; in the season of rest from 58° to 65° will be quite sufficient.

The most suitable position for the plant, when in vigorous growth, is over an open tank, and the bottom of the pot should be placed as near the surface of the water as they possibly can be without actually touching, for none of the stove plants require more atmospheric moisture than those under consideration. From March until September syringe them overhead two or three times a-day, and also pour water on the floor and walls of the house at the same time, to ensure a thoroughly humid atmosphere. During the autumn and winter months the supply of moisture, both at the roots and overhead, must be lessened considerably, as it is most injurious to maintain them in a growing state during that period. At all seasons of the year place them where they will have the benefit of full exposure to light, but they must not be exposed to brilliant sunshine during the summer season, or the foliage will be injured. It is most easy to increase or keep up a stock. Commence by selecting an old leggy plant that has become unsightly, and then take off the top with a sufficient length of the stem to admit of its being firmly inserted in the soil. It should be potted singly, as the leading shoot invariably makes the best plant, and at all times a large specimen may be obtained more quickly than from small side-shoots. The remaining part of the stem may be cut into lengths of one joint each, and placed in a light part of the house for two or three days to enable the

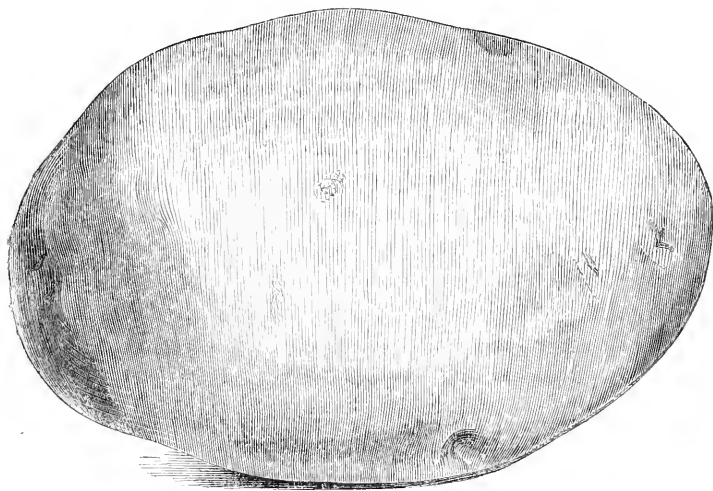
wounds to heal, for when they are inserted at once the base is very liable to premature decay. After the wounds are nicely dried, the cuttings may be placed in a well-drained pan filled with peaty soil, but with an additional quantity of silver-sand, similar to that recommended for established plants. Place the pans in a brisk bottom-heat, keep the soil moderately moist, and they will soon strike and be ready for potting off. Cuttings of the stem generally produce several shoots, each of which can, if required, be taken off and struck. Many cultivators keep and grow on the old stools, but in my estimation it is a very bad practice to do so, as they require very careful management to induce them to break satisfactorily; indeed, in many cases the cuttings will make larger plants and much sooner, besides being much handsomer. It is also very important that the young plants are not, under any consideration, repotted until the pots in which they are growing are well filled with roots.

Thanks to the enterprise of our nurserymen and others, there are a considerable number of sorts in cultivation, but, instead of enumerating all, I will give the names of a few of the best. The best four for exhibition are *D. Pearcei*, *D. grandis*, *D. Baraquiniana*, and *D. gigantea*. The best for table decoration are *D. Weiri* and *D. sequinia picta*.

POTATOES.

DURING the past few years the potato has obtained an immense amount of attention, and a considerable number of new and valuable varieties have been introduced to cultivation. The interest in this useful esculent has been so largely augmented that it has actually become, in many hands, a fancy article, and collections of sorts are made with as much care as the tulip and the dahlia have received. Our own Stoke Newington collection attained to extravagant proportions. In 1865 we exhibited sixty-six varieties at the Chrysanthemum and Fruit Show held in the Guildhall of the City of London. By the close of 1868 we had grown on our trial ground no less than 250 sorts. The multiplying of varieties, however, though of a necessity a matter of profound interest to the potato fancier, is not enough to sustain the enthusiasm which animates him in his pursuit. The real interest, after all, arises out of considerations which society must approve, because they tend to the improvement of our resources and of our daily food. The fact is demonstrable that after a certain number of years the varieties lose their original vigour and constitution, and hence in order to keep the potato in its place in the national dietary, new sorts raised from seed—that is to say, from the potato plum or apple—must from time to time be taken into cultivation, to replace those that are waning in character. Now it is for the immediate welfare of mankind that new sorts should be produced and tested constantly, and the production and

the testing constitute two most interesting pursuits, and are the life of the potato fancy. Lately considerable interest has been excited by the assertion that the proper way to produce new sorts is not by seed but by grafting; a very good kidney called Yorkshire Hero being reported to have been raised in this manner by Mr. Almond. The first systematic account of the grafting process was made public by Mr. Taylor, of Fencote, in the "Gardeners' Magazine" of March 28, 1868, and considerable discussion ensued, in the course of which we expressed our opinion that grafting would never produce new varieties, and to this day there is not an authenticated case known, save and except, we believe, that referred to above, the genuineness of which may be questioned without the slightest imputation on the good faith of Mr. Almond, who no doubt



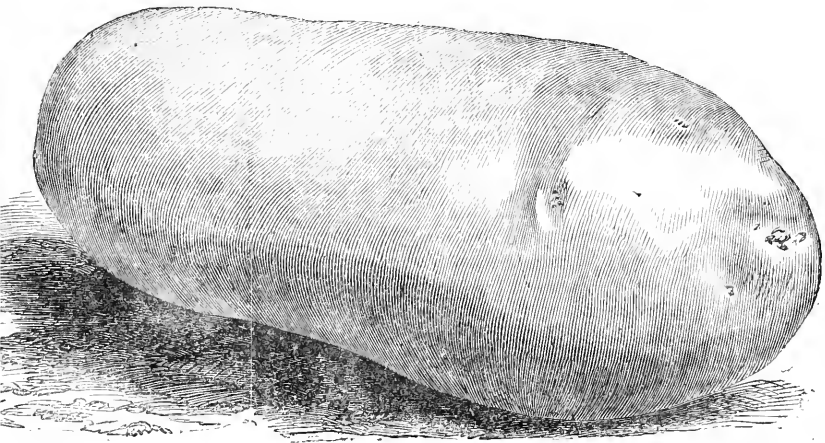
WOOD'S SCARLET PROLIFIC.

believed he had produced a new variety, when probably he had simply perpetuated an old one.

In America there is as much interest taken in potato culture as in this country, as may be judged by the fact that in 1868 Messrs. Bliss and Son, of New York, sent out the *Early Rose* potato at one dollar per pound, and the price rapidly advanced to five dollars. Eighty bushels were sold to one party for 8000 dollars. Mr. Bresee, the raiser of the *Early Rose*, actually sold fifty tubers of his *King of the Earlies* at fifty dollars per tuber, and 500 dollars were offered and refused for one peck! Amongst the trade growers, we believe Messrs. Sutton, of Reading, may fairly claim to represent the potato in this country, for their collection is one of the largest, and they exhibit extensively at all the great agricultural and horticultural

shows that take place in autumn. At one of the autumnal meetings at Kensington last year this firm presented a collection of fifty sorts, and at the Smithfield Club Exhibition in the Agricultural Hall they brought forward a collection which we should think comprised nearly one hundred varieties.

Very many experiments have been made in the cultivation of the potato, and in many cases the results have been of immense value and interest. Contrary to the long-cherished opinion, it has been found that better crops can be grown with manure than without it, and the potato proves to be similarly constituted with many other plants in respect of at least one character, that it thrives best when well nourished. A deep light loam is the best soil for this crop, but we may safely say that any land on which a tuft of groundsel



SUTTONS' BERKSHIRE KIDNEY.

will grow will produce potatoes. We are now using a crop grown last year on a piece of unmitigated clay, which had been thrown out in making a foundation, and had no preparation whatever. The potatoes it produced were a heavy crop of the finest quality. Deep digging and plentiful manuring are, however, necessary preparatives, more especially as it is desirable to promote a rapid growth, with a view to the removal of the crop as early as possible. There is nothing gained by planting over close, in fact it is better to allow too much room than too little, but a distance of four feet between the rows, and of three feet between the sets, may be considered sufficient for the productive main crop varieties, and half those distances for the comparatively unproductive early sorts. The potato is a most exhaustive crop, for in one ton of tubers there will be of potash 11 lbs., soda 1 lb., lime $\frac{1}{2}$ lb., magnesia 1 lb., sulphuric acid 4 lbs., phosphoric acid $2\frac{1}{2}$ lbs., chlochine $1\frac{1}{4}$ lbs.

All good soils contain all these ingredients, but their removal by cropping necessitates manuring, and it is evident that for the potato we require a manure rich in potash and phosphorus. Good stable manure is the best manure for potatoes where it can be obtained cheap. Guano is immensely beneficial, but, generally speaking, it is too dear. A new mineral manure, called "kainit" peculiarly rich in potash, appears to be the best for the potato field, as it costs only four pounds per ton, and if dug in with superphosphate at the rate of 5 cwt. per acre will produce a crop three times as heavy as the same land would produce without it, except in those few cases where manure is not at all required.

We have had no potato plague since 1866, when we grew a crop on tiles, and proved that in a bad season this system may be depended on to save the crop. We were so fortunate as to obtain at a pottery a tile admirably adapted for the purpose, but as it was not made for the purpose, we should be doing our readers no service by directing them to the makers. Any tile that can be employed in such a way that the potatoes will, when planted, be placed upon them, with a hollow tunnel beneath, will answer the purpose. The common roofing tile may be considered a good model, but it should be double the ordinary size to afford a fair test of the system. And here we must remark that in such a summer as that of 1870 tiles would be useless, and they might indeed be injurious, though I shall take care to say that, judging from my experiences in potato growing, they might be always used with advantage. However, the case is as clear as I can put it. In 1866 we had our trial-ground literally covered with heaps of filth, consisting of diseased potatoes. The few rows grown on tiles were sound and good, and the cost of the tiles was more than paid for. In the hot summers of 1868 and 1870 we had no tiles in use, and therefore obtained no experiences of the value of tiles in hot and dry seasons.

Potato disease! It is one of the greatest calamities with which we are familiar. My tile system, whether good or bad, aims directly at it as a remedial or preventive agent. Whence comes disease? From the sun we may say. Yes, the potato disease may be described as cosmical. If the sun happens to be covered with spots on the disk next us in July and August, the potato fields are ravaged by the murrain. The potato is peculiarly the product of sunshine: in hot, dry summers the crop is good; in cold, wet summers the crop is bad; if chilly rainy weather occurs at the end of July, and continues through August (as in 1866), the crop is almost annihilated. We make a joke of the value of an "if;" but *if*, yes, **IF** we could predict our seasons, we could in a great measure make sure of a potato crop in good and bad seasons alike. **IF** we knew a bad season to be coming, we should plant on tiles without manure, and be content with a smallish crop, harvested in good condition, but for a good season should dispense with the tiles, and manure heavily, so as to make the very most of the fructifying sunshine.

All other vital points in potato culture may be summed up in

four advices:—1. Select the best sorts obtainable, without any timid consideration of price, but do not for other than fancy purposes pay fancy prices for sorts. 2. Plant early, say in February if possible, but without fail in March, and if the tops are cut off by frosts in May, take comfort that new tops will appear almost immediately afterwards. 3. Take up just before the haulm is completely withered, as every day gained is something towards the certain saving of the crop, and the roots are ripe before the haulm is completely withered. 4. Select for sets perfect tubers, averaging 4 oz. to 6 oz. in weight, and give all the chits and mutilated rubbish that are commonly used as “seed” to the pigs. You may think these advices fanciful, but carry them out with spirit, and instead of some seven or eight tons per acre, you may harvest fifteen to twenty, which will pay for extra cost and care. On our heavy land we obtain twenty tons per acre in a good season, and none at all (without tiles) in a bad one.

A SELECTION OF POTATOES OF THE FINEST QUALITY IN THEIR SEVERAL CLASSES.

EARLY KIDNEYS.—Veitch’s Prolific Ashleaf, Royal Ashleaf, Sutton’s Racehorse, Saudringham.

EARLY ROUNDS.—Williams’s Victoria, Smith’s Early, or Coldstream, Early Cockney, Early Goodrich.

SECOND EARLY KIDNEYS.—Mona’s Pride, Haigh’s Kidney, Erin’s Queen, Yorkshire Hero.

SECOND EARLY ROUNDS.—Daintree’s Early, King of Potatoes, Milky White, Early Pink-eyed Kemp.

MAIN CROP KIDNEYS.—Webb’s Imperial, Sutton’s Berkshire Kidney, Belgian Fluke, Prince of Wales’s Kidney, Red Ashleaf.

MAIN CROP ROUNDS.—Wood’s Scarlet Prolific, Sutton’s Redskin Flourball, Early Rose, Fortyfold, Wellington, Paterson’s Victoria, Bresee’s Prolific.

MARKET POTATOES.—Sutton’s Redskin Flourball, Belgian Fluke, Fortyfold, Skerry Blue, White Rock, Walker’s Regent, Paterson’s Victoria, Red Regent, Webb’s Imperial.

S. H.

A NOTE ON WATERING FRUIT TREES IN WINTER.

BY A KENTISH GARDENER.



Twas perhaps a surprise to many of the fruit-growing readers of the FLORAL WORLD to learn that the most frequent cause of peach, nectarine, cherry, and other fruit trees grown under glass, shedding their flower-buds prematurely, is due to dryness at the roots when they are at rest. It is a very common practice for inexperienced cultivators to keep the inside borders of fruit-houses as dry as it is possible to keep them during the period between the trees shedding their leaves until they begin to make new growth in the following spring; hence the number of failures in the cultivation of indoor

fruits that occur annually. It is not necessary for us to stop to inquire how or from whence this erroneous impression originated, as it is quite sufficient for us to know that the practice of keeping the soil in which fruit-trees are planted perfectly dry when the trees are at rest, will be resented by the flower-buds dropping off just as the anxious cultivator is expecting them to expand. It is not desirable that inside borders should be kept in as moist a condition during the winter as others in the open air are kept during the same period, as it may possibly be injurious to the trees; but the soil must be moderately moist, even when the trees do not evince the slightest symptoms of vitality. Fruit-trees, unlike bulbous or tuberous-rooted plants, have no vast storehouse from whence they can receive support when they are deprived of their ordinary supplies, and are therefore utterly unable to undergo a season of starvation without being injured in some way.

A very large quantity of water is not required to keep the inside borders in a properly moist condition, and, generally speaking, one or two thorough soakings during winter will be sufficient. I would urge all fruit-growers who have any doubts as to the condition of the borders under their charge, to examine them at once, and water them copiously if they are dry. If the trees are in a healthy state, and the border from long usage has become impoverished, the drainings from the manure heap and stables should be used instead of clear water. That obtained from the last-mentioned source should be diluted with water, for if used too strong the roots will be injured; but the exact quantity that must be added must be determined by its strength. The trees will not receive any immediate benefit from the fertilizing matter contained in the liquid manure, but it will enrich, and become thoroughly assimilated with the soil, and be of more assistance to the trees when they commence an active growth than it would be if applied to the border when they are in full activity.

The foregoing remarks are of especial importance to the owner of pot-trees, which usually suffer more from dryness at the root than trees planted out in a border. It is by no means an unusual occurrence to meet with pot-trees huddled up into one corner of the orchard-house, to make way for bedding and other plants, and then utterly neglected, if they are not forgotten altogether, until the season for starting them into growth comes round again. Trees in pots ought to be watered often enough to prevent the soil becoming dust dry; but fruit-growers generally may save themselves much trouble and vexation by taking pot-trees into the open air, and by removing the lights from houses in which the trees are planted permanently, as soon as the crop is gathered. The rains and dews assist in keeping under red-spider and other insect pests, and the foliage is maintained in a healthy condition until the last moment, and the result is fine plump buds which nothing but the worst management will cause to fall off prematurely.

It is not wise to expose peach and nectarine trees to very severe frosts, such as those which occurred in the winter of 1866-7, and therefore, after the commencement of the new year, the lights

should be put on again, and pot-trees taken under cover, or laid on their sides, and a moderate thickness of litter thrown over them. It will, perhaps, be as well to add, that when in the open air the pots must be protected with long litter or leaves to prevent the frost splitting them.

If it appears late in the season to offer these suggestions, it must be remembered that the roots of orchard-house trees do not generally become dry until January, and then it is that severe frost may be expected. Hence, perhaps, this paper is strictly seasonable, and in any case it is better to speak late than not speak at all.

JAPANESE CHRYSANTHEMUMS.

BY ROBERT OUBRIDGE,

Church Walk Nursery, Stoke Newington, N.



THE Japanese Chrysanthemums, considered as "florists'" flowers, are decidedly inferior to the incurved varieties, which have descended from the species originally introduced from China, hence they do not enjoy the popularity to which they are so justly entitled. For exhibition purposes they are well-nigh useless, because when grown into large, well-trained specimens, they have not such a finished appearance as those belonging to the other classes, and can hardly be tolerated; but for conservatory decoration, when grown in a natural manner, they are of the utmost value. The flowers of most of the varieties are of the richest and most distinct colours, and all are more or less novel and fantastic in form. Grown in the manner as here suggested, the flowers have a peculiarly light and elegant appearance, which is entirely wanting in all the others; and as many of them do not flower until late in the year, the chrysanthemum season can, with care, be prolonged very nearly until Christmas. They should not, however, be grown exclusively, or in greater numbers than the varieties belonging to the other sections, for to produce the best effect a fair number of each section must be grown.

The few suggestions respecting their cultivation will apply to the large-flowering varieties generally, and I would strongly advise my readers to grow all the plants intended for conservatory decoration with as little stopping and as few stakes and ties as possible. Huge, closely-trained specimens look very well upon the exhibition stage, and it would be waste of time to say anything against them; but they are entirely out of place in the conservatory, for by the most skilful hand they cannot be arranged to produce such a pleasing effect as a group of untrained plants with about half-a-dozen flowers upon each.

Where the conservatory is lofty, or where the plants can be placed on the floor, they should be grown without stopping at all, as the flowers will be much larger and of better quality than those

upon plants the growth of which is pinched back several times during the season to keep them dwarf. Where, however, the conservatory is of the usual height, and the plants have to be placed on stages several feet above the ground level, it is necessary to stop the shoots once or twice, or the flowers will be too far from the eye to admit of their being seen with any degree of comfort. Early propagation is only necessary when exhibition specimens are required, and the first week in March is quite early enough to commence; but the work must not be delayed after that period. When the cuttings are put in previous to that date, a gentle bottom-heat is necessary, and the plants also become somewhat "leggy" and leafless by the time they come into flower. When, however, they are struck in March, the shelter of a cold frame is all that is necessary in the way of shelter; and if the plants are not neglected during the summer, they will be furnished with leaves down to the rim of the pot. Select healthy cuttings of about three inches in length, remove the two lower pair of leaves, and insert them in three-inch pots, three or four in each. Place the pots in a cold frame, and shade during bright sunshine to prevent the sun burning them; sprinkle them lightly once a day, if required, to prevent the leaves flagging, and they will soon strike and be ready for potting off. A little air must be admitted during warm, sunny weather, after the first few days, to maintain a sweet atmosphere, and the cuttings must not be overwatered, or a large proportion will damp off. Pot the cuttings off singly into three-inch pots immediately they are well rooted, and before they become pot-bound; for when the roots are allowed to run together before the plants are separated, the young and tender fibres are broken about, and the plants receive a severe check in consequence. They should be kept in a cold frame, or be placed so that a mat can be thrown over them during frosty weather. But during their stay in the frame they must be freely exposed to the air to prevent the possibility of the growth becoming drawn up weakly. Nine and ten-inch pots are the most suitable sizes for flowering them in, and until they are put in these sizes they must not on any account be allowed to become pot-bound. Frequent shifts are not however required, and for all ordinary purposes the plants should be shifted into six-inch pots, and from thence into the size in which they are to flower. The pots must be clean, and sufficient crocks, with a layer of rough turfy soil over them, placed in the bottom to carry off the water quickly, and prevent the soil becoming sour through remaining in a saturated condition for a considerable length of time. Chrysanthemums are not very particular with respect to the sort of soil they are grown in, provided it does not run together; but the compost which suits them best is one consisting of turfy loam that has been stacked in a heap for a few months, two parts, and incorporated with one part of well-decayed stable or hotbed manure. When they are removed to the open, place the pots upon a bed of coal-ashes to keep the worms out of them; and to make the work of watering them as light as possible, fill the space between the pots with cocoa-nut fibre refuse, or partly-decayed leaves. At no stage of their growth must they be allowed to suffer from drought;

and after they have been in their blooming pots about a fortnight, water alternately with weak liquid manure, and continue its use until they are taken indoors. The growth must not be stopped more than twice, if stopped at all, but, generally speaking, once will be quite sufficient, and the last stopping should be performed a few days after the plants are repotted for the last time. When stopped once, only pinch the growing point out about a fortnight after the plants are shifted into six-inch pots. Except for those which are stopped more than once, a single stake to each is all that is necessary; but a stout stake fixed in the ground at the end of each row, and joined together by means of a stout piece of wire, to which each plant can be fastened, will be of great service in preventing them being blown about and injured by the wind. All but the end or terminal bud to each shoot must be removed as soon as they are large enough, or the flowers will be small in size and poor in quality. The plants should be taken indoors soon after the middle of October, and the conservatory must be well ventilated and the atmosphere dry to preserve the freshness and beauty of the flowers as long as possible. As they go out of flower, cut them down and place in a cold frame, to protect the young growth from frost, or there will be a difficulty in securing a supply of cuttings for the following season.

The names and colours of twenty-six of the best of the old varieties are as follows:—*Aurantium*, clear golden yellow; *Aurora*, bright orange yellow; *Boule de Neige*, white; *Chang*, red and orange; *Clorinde*, crimson, yellow centre; *Comet*, bright orange yellow; *Cromatella*, bright chrome or orange yellow; *Dr. Masters*, bright yellow; *Emperor of China*, blush-white; *Giant*, pale lilac; *Grandiflora*, golden yellow; *James Salter*, clear lilac mauve; *Jupiter*, amber, changing to buff; *Madame Godillot*, reddish brown; *Mandarin*, bright canary yellow; *Nagasaki Violet*, rosy violet with golden disc; *Negro*, deep maroon; *Prince Satsuma*, bright yellow; *Red Dragon*, red chesnut, tipped with yellow; *Red Indian*, Indian red; *Simon Delaux*, reddish bronze; *The Daimio*, pale pink, changing to rose; *The Mikado*, golden yellow; *The Sultan*, rosy lilac; *Wizard*, bright red rich maroon; *Yellow Lilac*, rose lilac and lighter centre, curiously incurved.

NOTES ON PALMS.

BY F. W. BURBIDGE,

Baildon, near Leeds.



PALMS are so graceful in character and elegant in outline that it is impossible to speak too highly of them. The strong-growing kinds are the most useful for decoration of the stove and conservatory, whilst for table decoration small-growing plumose species are unsurpassable. When we take into consideration the ease with which they are grown, it seems somewhat singular that they have not hitherto been

cultivated more extensively in this country. Some of the more hardy species will grow readily in an ordinary sitting-room without any attention beyond giving them a good supply of water when necessary, and occasionally sponging the foliage to remove dust and other impurities. They are admirably adapted for this purpose, and have a more graceful appearance than the long-legged, scraggy pelargoniums that are too often met with in such situations. It certainly cannot be their price that prevents their being more generally grown, since many of the most popular sorts are not more expensive than the ordinary run of stove plants. Seeds are occasionally to be had, and are sometimes advertised in the horticultural periodicals. Seedlings may be purchased in some of the continental nurseries in the seed pots for a trifle, and perhaps our own nurserymen could so supply them if desired. This arrangement would suit those amateurs who have not much money to spare for plant buying, or who like to grow their own plants.

In sowing the seeds of such sorts as can be procured, place them regularly in well-drained five-inch pots, in a mixture of fresh turfy loam, peat, and a little sand. The number of seeds in a pot will depend much on their size, and this may be left entirely to the cultivator. After they are sown, place the pots in a gentle bottom-heat; if plunged in a hot-bed of leaves, tan, or manure, so much the better. A newly-made cucumber bed will be just the place for them. Some germinate in a few weeks, while others remain months before they throw up their delicate green plumules above the soil. Then comes the pleasure of watching their first tiny leaves unfold, and of carefully turning them out and potting them, if singly, into small pots, as palms must not be disturbed at the roots more than can be possibly helped. Indeed, if they are turned out of the pots and the ball of soil reduced, and a large proportion of the roots trimmed off in the same way as many soft-wooded plants are root-pruned, numbers of them will perish.

Palms should be repotted annually when in a young state and growing vigorously; but afterwards once in two years will be quite often enough; and when they attain a very large size, a shift every three or four years will be all that they require. The pots must be drained efficiently, as they require liberal supplies of water at all seasons of the year, but more especially while making their new growth an abundance of water is required. If therefore the drainage is ineffective, the soil will soon become sour, and the roots will perish. Specimens after remaining in the same pots for several years should be assisted occasionally during the growing season with weak liquid manure, but previous to their becoming pot-bound it will be better for them to be watered with clear rain water, or water that has been exposed to the atmosphere some time before it is used.

Sound turfy loam, chopped up roughly, and a moderate quantity of silver sand then mixed with it, forms a capital compost in which all the species at present in general cultivation can be satisfactorily grown. Until quite recently palms were entirely neglected by gardeners generally, and by nurserymen also, and very few species were obtainable in this country. The public taste has, however, under-

gone a change, and they are now much sought after, and in a trade list before me I find that upwards of 200 species can be purchased in this country. All the sorts that will be enumerated are remarkably beautiful in a young state, and a moderately large collection can be grown in a medium sized house. I will now glance through the list, and pick out a few of the most beautiful and distinct sorts that can be procured at prices ranging from five shillings to as many guineas. Small plants of the commoner sorts can be had for less than five shillings at some of the principal nurseries. The species that I should recommend for forming the nucleus of a collection, so far as means will permit, are the following:—

Areca lutescens.—This free-growing palm is perhaps less elegant than many others, but in a young state it is very beautiful, and the bright yellow petioles render it very effective when under the influence of artificial light.

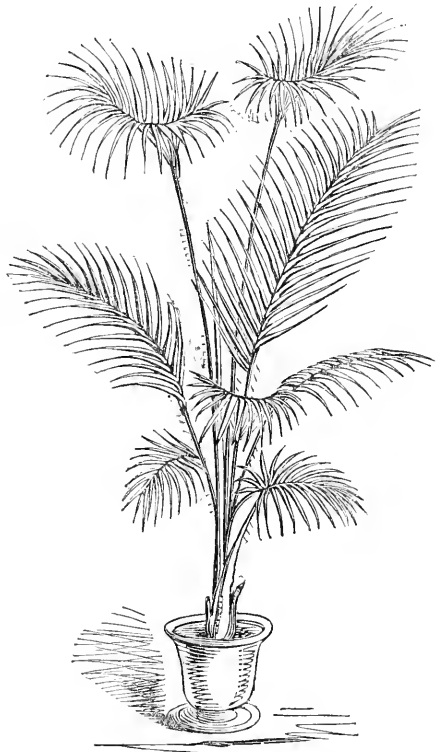
Areca rubra.—This differs from the preceding in petioles being of a deep brownish red colour instead of yellow. Both can be grown successfully in a warm greenhouse, but the former is the hardiest of the two.

Calamus dealbatus.—This is the Madagascar Silver Palm, and one of the most beautiful species yet introduced to this country. The leaves are elegantly pinnate, glossy green above, and silvery white beneath; petioles brownish, and set with slender spines, which point backwards. Should be grown in the stove.

Calamus spectabilis.—

A most beautiful-growing species, recently introduced from Malacca. The leaves are borne on green petioles set with white spines, tipped with brown, elegantly pinnate, and of bright green colour. Also require a stove temperature.

Chamædorea spectabilis.—Another dinner-table plant of elegant appearance; leaves glossy light green, petioles conspicuous; the whole borne by a slender stem. Stove temperature suits it admirably.



DEMONOROPS ACCIDENS.

Chamædorea graminifolia.—A slender stemmed palm with long curved foliage. Its delicate plumose appearance renders it attractive, and of great value as a decorative plant.

Chamædorea Wendlandii.—Leaves deep glossy green, gracefully arched, very beautiful.

Chamærops Fortunei.—One of the most handsome fan palms for greenhouses, conservatories, and indoor apartments. In sheltered situations it is quite hardy.

Chamærops humilis.—This also is very hardy in constitution and handsome in appearance. The leaves are fan-shaped, and of a dull green colour. This and the preceding are now very cheap.

Cocos Weddelliana, syn. *Leopoldina pulchra*.—This is of all palms perhaps the most beautiful. It is of a dwarf, compact habit, with gracefully arched plumose fronds of a dark glossy green colour. It is from Brazil, and does well in a warm greenhouse. It is one of the very best that can be used for dinner-table decoration, but is at present too expensive to admit of its being employed extensively for that purpose.

Corypha australis.—Although not so beautiful as many of the stove palms, this species is very desirable. It is well adapted for indoor apartments, being very neat in growth and hardy in constitution.

Dæmonorops accidens.—A neat-growing species of the most graceful outline, as will be seen by the accompanying sketch. The leaves are of a bright glossy green, and very effective in appearance when under the influence of artificial light. It must have the assistance of a stove temperature to grow it satisfactorily.

Dæmonorops plumosa.—Like the preceding, of most elegant growth, and one of the very best palms for table decoration. It requires stove temperature.

Euterpe edulis.—For lofty houses and for table decoration, in a young state, this is one of the most useful. The leaves are pinnate and gracefully arch outwards. Well-developed specimens four or five feet in height may be grown in six and eight-inch pots. Should be placed in the stove.

Geonoma Ghiesbreehtiana.—A highly ornamental species, with irregular pinnate foliage; very elegant. Requires the warmth of a stove.

Latania borbonica.—This fine and well-known species is not so valuable for the table as those of a more plumose habit of growth, but it is one of the most ornamental and useful species grown for the conservatory, vestibule, and sitting-room. The leaves are fan-shaped, spreading, and of a pleasing shade of light green.

Licuala peltata.—Leaves dark glossy green, five or six lobed, the lobes being toothed at the apex; petioles spinose. Very distinct, and well worthy of extensive cultivation. Must be grown in the stove.

Livistonia australis.—A beautiful fan-leaved species, well adapted for the decoration of sitting-rooms or as a window plant, being of a highly ornate character, and possessing a most robust constitution. Does well in the greenhouse.

Malortica simplex, syn. *Geonoma fenestralis*.—This is a dwarf and

very elegant species, that should be obtained if possible. It may be recognized by the slits at the base of its glossy dark green leaves. Not hardy enough for the greenhouse.

Martinezia caryotæfolia.—A distinct and unique species of a glaucous green colour, with irregular pinnæ and long dark spines on the petioles. It is of compact habit. In some nurseries it is known as *Martinezia brassicæfolia*. Must be grown in the stove.

Ptychosperma excelsa.—Very distinct in character, the leaves being bilobed, and closely resembling the tail of a fish. Requires a stove temperature.

Rhapis flabelliformis, foliis variegata.—This is a free-growing species, with dark glossy leaves striped with straw-colour, and, being very ornamental in its character, is worth every attention. The green-leaved form is also very pretty and neat-growing, and well adapted for sitting-rooms. It is also very cheap, which is a matter of considerable importance to most amateur horticulturists. The variegated form is as yet very expensive.

Seaforthia elegans.—Strong-growing and effective,

the bold pinnate leaves having a strikingly ornamental appearance. One of the best for the greenhouse, and it will grow vigorously when placed in the open air during the summer.

Seaforthia Veitchii.—This noble species has the fine bold appearance of the preceding, but it is far more beautiful. It is rather new and expensive, and does well in the conservatory.

Thrinax elegans.—A beautiful species, with dark glossy fan-shaped leaves, borne on gracefully curved smooth petioles. Should be grown in the stove.

Thrinax gracile.—A distinct and very elegant member of a well-known and most beautiful genus. Like the preceding, must be grown in the stove.

Welfia regia.—A distinct plant, with pinnate foliage of a dark



LICUALA PELTATA.

green colour, except the youngest growth, which is of a red or crimson tint. Very beautiful, and one of the best for table decoration. Requires the assistance of a stove temperature.

HORTICULTURAL NOTES.



EVERYTHING in the horticultural world has been so dull and cheerless during the last two months, that there is very little of interest to write about. It is true that during the month of November we had the chrysanthemum shows, but they were all, with the exception of those held at Bristol and Liverpool, very much alike. Some day or other the managers of the chrysanthemum societies in and around the metropolis will, no doubt, follow the example of their brethren at the towns mentioned above, and invite ornamental leaved and miscellaneous flowering plants and fruit to their exhibitions. The importance of not confining autumn exhibitions to chrysanthemums has already been pointed out in these pages, therefore I will not occupy valuable space in going over the same ground again. There was a great dearth of novelties at all the exhibitions, for by the retirement of Mr. Salter from business through the railway company taking his nursery, we have lost one of the very best raisers of new varieties. The only new varieties exhibited during the whole season were a few at the meeting of the Floral Committee of the Royal Horticultural Society, held in November, and one at the exhibition held at Stoke Newington. For the benefit of chrysanthemum growers generally I herewith subjoin the names and descriptions of the best sorts staged upon the occasion referred to. The best of the batch which came from Mr. Bull, of the King's Road, Chelsea, was *Jane Salter*, a grand Japanese variety, with flowers measuring about seven inches in diameter, and of a pleasing shade of pink. Certainly a most valuable acquisition, because of its early-flowering qualities, and therefore a fine companion to James Salter, which is one of the most beautifully coloured varieties of the Japanese section. The other variety shown by Mr. Bull was *Renown*, a large finely-incurved flower of a buff or brownish orange colour. Messrs. E. G. Henderson and Son, of St. John's Wood, had two good Japanese varieties that will ultimately become popular. They were, *Bismarck*, large and double, with broad sword-shaped florets of a dull orange hue; and *Erecta Superba*, a grand flower of medium size, but very full, and of a rich rosy crimson hue. At Stoke Newington, Henry Little, Esq., of Cambridge Park, Twickenham, exhibited a sport from Mrs. Huffington, with flowers of a similar colour to Lord Derby. The flowers are too small to admit of its ever becoming popular, but it will nevertheless be useful for the conservatory. Mr. Little is a most devoted admirer of the chrysanthemum, and cultivates something like 300 varieties. The whole of the plants are grown without stopping or training, and the results

are plants that can be grouped together in the most effective manner, and flowers of the finest quality. Mr. Little kindly invited me to see his collection about the middle of November last; and although I have seen some good displays of chrysanthemums in private gardens, that in the conservatory at Cambridge Park was certainly the best.

Very few things indeed that possess general interest were contributed to the meeting of the Floral and Fruit Committees of the Royal Horticultural Society, held in December. One of the most striking novelties was *Selaginella Martensi albo-lineata*, exhibited by Messrs. Perkins and Son, of Coventry. It differs from the species in being more elegant in growth, and the tips of the young growth are of a creamy white. For dinner-table decoration, and other purposes, it will be held in high esteem for many years hence. As it is of free growth, and very easily propagated, we may soon look for it at a price within the reach of all. Tree Carnations were tolerably well represented. Messrs. E. G. Henderson and Son had a small collection, but they were unnamed, and therefore did not contribute much to the edification of the visitors.

Two new tree carnations—*White Nun*, with large and remarkably full flowers of the purest white, combined with a very vigorous habit; and *Maiden's Blush*, with very pale flesh-coloured flowers of the finest form, and large in size—from Mr. W. Lee, Arundel, Sussex, are most decided acquisitions. *Amaryllis Spotted Gem*, from Messrs. Veitch and Sons, King's Road, Chelsea, is also deserving of notice, for the flowers are large, of fine form, and spotted with bright red on a cream coloured ground. Cyclamens and primulas were contributed in plenty, but they were not in quality such as to require any special notice, excepting *Cyclamen persicum purpureum*, a grand variety, with large flowers of the richest rose purple hue and finest form. This came from the gardens of H. Little, Esq., and was awarded a first-class certificate. Berry-bearing plants are as yet imperfectly understood, and, therefore, the fine collection of Hollies, Aucubas, Skimmias, etc., from Messrs. Standish and Co., of Ascot, must have honourable mention; and also a fine standard specimen of Capsicum, *Yellow Gem*, a large yellow-fruited variety, of great value for table-decoration during the winter, from Mr. Robins, gardener to Sir E. C. Verrison, Oakley Park, Eye, Suffolk. The head of the plant was about fifteen inches in diameter, and upon a clear stem of about eighteen inches in height, and the large dependant orange-coloured fruit, seen from underneath, as it would be upon the table, had a very effective appearance.

Before the Fruit Committee, Mr. Chaff, gardener to A. Smee, Esq., Carshalton, had a most magnificent collection of culinary and dessert apples, numbering in all twenty-four dishes, of the highest excellence. The collection consisted of the best sorts only, and the names will be found in the selection of apples given in the FLORAL WORLD for last November. Mr. Wm. Paul, of Waltham Cross, sent three new seedling grapes, and a first-class certificate was conferred upon a white variety with large oval berries, and of most excellent flavour. Its chief value, however, consists in its hanging

well, of which the plump condition of the berries shown was a sufficient indication. Perhaps the feature of the meeting of most interest to amateur gardeners was the splendid display of Alicante grapes, from Mr. Wells, of Southend, grown in the ground vineries of which he is the inventor. The bunches were of medium size, but the berries were large and of a deep blue-black colour, and the flavour was most excellent. Thirteen bunches were shown, and they were stated to have been all gathered from one vine, which proves beyond doubt that good grapes can be grown without the aid of an expensive vinery.

Amateur gardeners have certainly no cause to complain of the lack of interest felt in their welfare. Mr. Looker, of the Norbiton Potteries, Kingston-on-Thames, the inventor of the plant covers, figured and described at page 222 of last year's volume, has recently invented a new Garden Frame, or ground vinery, which, in my opinion, is the best combination of earthenware and glass that has yet been introduced to public notice. Mr. Looker, who is one of the best amateur gardeners in the neighbourhood of Kingston, has christened this invention the "Acme Garden Frame and Ground Vinery;" but as no doubt a full description, accompanied with an illustration, will shortly be given in these pages, it is not necessary to do more here than to announce its appearance.

Speaking of inventions reminds me of "The Victoria Electric Thermometer," which has recently been introduced to public notice by Mr. B. S. Williams, of the Victoria and Paradise Nurseries, Upper Holloway. The inventor and patentee is Mr. G. Rothnie. The invention has an immense amount of ingenuity displayed in its construction. It consists of a peculiarly-constructed balance thermometer, which, when placed in the conservatory or other structure, will, with the assistance of a small galvanic battery and one or two wires communicating with an indoor apartment, give warning of any change in the temperature. The tube of the thermometer is coiled round a central piece of wood on which the degrees are marked, and on this is placed a sliding weight and scale so as to slide along the top of the graduated scale, and thereby permit of its being balanced at any temperature that may be required. Accordingly, so long as the temperature of the house is equal to that at which the index is set, the thermometer remains perfectly quiet, but as soon as it becomes either hotter or colder, it will give warning by ringing a bell fixed in the gardener's or other room connected with the instrument by means of a wire. Henceforth, therefore, it will be the amateur's own fault if he is caught napping by the frost, and the bulk of his plants destroyed, because if the "Victoria Electric" thermometer is placed in the conservatory, and set at 40°, it will commence ringing the bell as soon as the temperature falls below that, and those who have charge of the structure will know at once that a fire should be lighted. It will also be very valuable in warehouses, as it will give notice immediately the temperature rises higher than that which those in charge of them may consider safe.

The seed catalogues are now coming in very fast, and, as usual,

a number of new flowers and vegetables are offered. Glancing through the lists of new vegetables, I find a few really good things that must be noticed. *Heatherside Rival* and *Blue Gown* cucumber are both good; the former for frame-work, and the latter for exhibition. *Blue Gown* is one of the handsomest cucumbers in cultivation, and the fruit averages twenty-six inches in length, and of a uniform diameter throughout. The *Chinese Mustard* is a valuable addition to our list of salad plants; the seed-leaves are fully twice the size, and it is ready for use two or three days before the mustard usually grown. It is also more pungent in flavour. New peas are offered in considerable numbers, but the only one I should care to speculate in is McLean's "*Best of All*." It is a wrinkled variety, having large well-filled pods, and usually attaining a height of about two and a-half to three feet. East's *Kentish Invicta* is cheap and worth trying. It is a round blue pea, said to be earlier than Daniel O'Rourke, and very prolific. Why do the raisers, in enumerating its good qualities, say, "and being a blue pea, it is superior in flavour to any white variety," when it is well known that blue peas are decidedly inferior in flavour to the white varieties? There are, of course, people who look upon blue peas as luxuries, in just the same manner as others prefer the watery taste of the first earlies to the sweet, buttery taste of the wrinkled marrows. Several new tomatoes are also offered, but the only claim they have consists in their being rather larger in size than those already in cultivation; and for exhibition purposes will no doubt be much appreciated. The most valuable new vegetable for exhibition offered this season is Veitch's *Giant Autumn Cauliflower*, which is also of great value for the table. The heads are of the most gigantic size, even in outline, and perfectly hemispherical, of the purest white and the finest flavour; they are well protected by the leaves, and under ordinary cultivation will average, when perfectly solid, twelve inches in diameter; but by having a little extra care bestowed upon them, they may be had much larger. People who prefer small cauliflowers, can easily overcome all difficulty respecting the size by planting them rather close together.

G. G.

THE GARDEN GUIDE FOR JANUARY.

FLOWER GARDEN.—During the present month very little work of importance can be done in this department. The lawn should be thoroughly swept and rolled, to keep a good firm bottom, and to give it a clean and cheerful appearance. Gravel walks may now be turned. This should be done without disturbing the rough stuff underneath, for that is not wanted on the surface. Walks when first made should always have a sufficient depth of fine gravel on the surface to admit of their being turned over every other year, if required. By turning them in a proper and workmanlike manner, they can be kept clean and in a good condition for a long time.

KITCHEN GARDEN.—Take advantage of frosty weather, to wheel manure and dressings of other materials on quarters from which the

crops are cleared. This is an important matter, for it ruins walks to wheel upon them when they are wet and soft from the frost and rain. Turn over and mix together manure-heaps, to assist the decay of the various components, and prepare them for use without further trouble when the compost is wanted in the spring. Quick and all other hedges, with the exception of evergreens, should be cut and repaired without delay if necessary, so as to leave as little work of this kind as possible for succeeding weeks. Trenching and ridging up unoccupied quarters should be carried on with activity. The ground cannot be too rough, or too much exposed through the winter. As Globe Artichokes are often injured by severe frost, additional protection should be afforded the crowns. Heap round them a good thickness of dry leaves or long litter, and cover with soil or coal-ashes, to prevent the wind blowing the protecting materials about. Cauliflowers under ground vineries or hand-lights and in frames should have an abundance of air, whenever the state of the weather will admit of its being given with safety. To keep them as hardy and as stocky as possible, take the lights entirely off for a few hours on fine days. Keep the foliage dry, and remove all decayed leaves without delay. Cover the lights with mats, straw hurdles, or long litter, on frosty nights.

CONSERVATORY.—As there is necessarily a mixed collection of flowering plants in this structure during the present month, some requiring a higher temperature than others, a little attention is necessary in their disposition and arrangement to make all comfortable. Hard-wooded plants should be arranged at the cool end, forced Bulbs and Primulas, Justicias, Euphorbias, Violets, Lily of the Valley, and Poinsettias, should be kept at the warmest end. Water early in the day, and keep the atmosphere dry, to prolong the beauty and freshness of the plants in bloom as long as possible.

GREENHOUSE.—Fire-heat must be used sparingly, but the frost must not be allowed to enter any of the houses. Soft-wooded plants must be kept near the glass, or they will become weak. Ericas to be cleared of dead leaves, and have a dry air. Pelargoniums for show to have their last potting; keep near the glass, and look out for green-fly. Fuchsias required in flower early to be repotted, and have a moist heat of 60° by day and 50° by night. Scarlet geraniums to have little or no water. Verbenas and petunias should be on a top shelf, and be kept tolerably dry. If any appearance of mildew on any of the inmates of this structure, dust with flowers of sulphur immediately; if any fly, fumigate with tobacco.

FORCING.—Vines to be started at 50° to 60°, never higher, and the syringe to be used freely amongst them. Peaches in bloom to be kept well watered at the roots, but maintain a dry atmosphere to keep the pollen dry and enable it to perform its allotted functions. Pines in fruit, 80° by day, 65° by night; shift succession pines at the end of the month. Figs will bear more heat than any other forced fruit, but too much heat or too much water will cause the fruit to fall. Strawberries to be kept near the glass, and the pots to stand on a warm bottom. Mushrooms must have a temperature of 55° to 65°, and the beds to be syringed frequently with tepid water;

thrust the hand down to ascertain if the bed is moderately damp. Asparagus, Sea-kale, and Rhubarb to be put in for succession, and to have plenty of water.

PITS AND FRAMES.—Pot up a few roots of musk and mint. Commence propagating Verbenas, Heliotropes, Lobelias, Salvias, Geraniums, Petunias, and Fuchsias. Sow in cold frame Cauliflower, Broccoli, Shilling's Queen and Early York Cabbage, Hammersmith, Neapolitan, and Cos Lettuce, and also a few hardy annuals to flower early.

NOTICES TO CORRESPONDENTS.

ROSES.—*Rosa* may cover the arches and pillars in a few years, but she cannot have roses in the first instance large enough to cover trellises twenty feet high. The Boursaults and Noisettes will no doubt be most valuable for the purpose. The best climbing white is Miss Glegg. The *Sempervirens* and Ayrshire roses are not to be despised. The borders should be made ready by deep digging and very liberal manuring, and the roses be planted at once.

TREE MIGNONETTE.—*W. B. R.*—Tree mignonette is the same plant as we grow in the borders; to make a tree of it, grow it under glass, in rich soil and a warm moist atmosphere, and train up a single stem, which keep denuded of side-branches.

CROTONS.—*Sibson.*—You will do no good with them in a cool greenhouse. They must have a moist stove and generous treatment, or they will become a nuisance.

UMBILICUS PENDULINUS.—*W. B.*—It is scarcely worth growing, though it occasions no trouble. We have flowered specimens in a cool fern-house, and found them easy enough to do, provided they never wanted water.

WOODLICE, ROSE STOCKS.—*R. B. Johnson.*—The woodlice that are destroying your rose cuttings under handlights must be trapped and killed. Scoop out a few halves of potatoes or apples and lay them hollow side downwards amongst the cuttings. Every morning take them up, and you will find numbers of the vermin inside them. Or take a number of thumb-pots and fill them lightly with moss and place them among the cuttings without any bait at all, and the woodlice will soon take to them for shelter.

FRUIT TREE SUCKERS.—*W. R. H.*—You can do nothing with the suckers of apricot and pear trees that crop up two or three yards from the stems, but spud them out, and cut away the crowns or clusters of underground buds from which, on the upper side of the roots, they will be found to proceed. The pear tree may be trained down on the other side of the wall, and will probably bear good fruit there; but you must expect a branch so trained to die occasionally.

W. C. H.—The mushroom-bed has probably become too wet and too cold. Make up a fresh bed, using short dung only for the new material, and incorporate the whole of the old bed with the new material. The spawn will probably run again freely, and give you a good crop.

AMARYLLIS AND LILIUMS, ETC.—*Subscriber.*—Every kind of bulb grown in a pot should be repotted every year, and have a complete change of soil. There can be no better rule generally than to repot at the time when the bulbs, whatever they are, begin to grow naturally. Amaryllis may be potted at any time after they have had a few week's rest, and if repotted in winter they must have bottom-heat to start them into growth; they may be easily subjected to any routine the cultivator may adopt, provided they are well ripened, and have some rest, being then quite dry before being started into growth again. We always repot liliams in autumn, and keep them in a cool pit all winter; they begin to grow in spring, and after the middle of April are put out of doors on a bed of cocoa-nut fibre for the remainder of the season.

HOYA CARNOSA.—*Amateur, Clapton.*—*Hoya carnosa*, a first-class climber for a warm greenhouse. The plant requires a mixture of one part each of fibry peat, silky loam, and pounded brick, and a half part of silver-sand and charcoal dust.

During winter, keep rather dry and cool, say not more than 45° on the average; in summer, it should be exposed to all the sunshine possible. This plant looks charming when trained to the roof above the level of the eye.

HOLLYHOCKS.—*R. Smith, jun.*—Hollyhocks should be planted in deep strong loams, as they attain to finer proportions than in light soils, but they really are not particular, provided the soil has some substance, and is liberally manured. It is quite true that hollyhocks may be grown as annuals; indeed, seed sown now could be grown on to flower well this year. Grafting hollyhocks is not much in favour, but we have seen many a fine show of flowers on grafted plants. To make a good job of the grafting, the roots to be grafted on should be cut so as to be quite fresh and plump when operated on, and as soon as the grafts are inserted and tied, they must be potted in thumbs and be plunged in a gentle moist heat. Old stools of hollyhocks are grand as garden ornaments, but they do not produce fine flowers.

HARDY LILIES.—*A Notice.*—The best time in the whole year to plant hardy lilies is the month of September. But they may be planted during the present month, with every prospect of growing and flowering freely, provided the bulbs are not then dried up. All bulbs which have soft coats and a soft fleshy consistence suffer much if exposed for any length of time to the atmosphere. A very good plan to adopt would be to obtain at once all the bulbs required for the bed, and pot them singly in small pots in any loamy soil of a mellow texture, and place them in a cold pit or frame, plunged in coal ashes or cocoa-nut fibre; there let them be till April, and then carefully plant them where they are to remain.

DESTROYING WOODLICE.—*W. S.*—There is but one way to deal with them, and that is to trap them, and if this be vigilantly followed up, every woodlouse may in time be destroyed. Place near their haunts wooden boxes or flower-pots filled with dry moss and lettuce leaves, or slices of potato or apple concealed amongst the moss. They will scent out these dainties, and take up their abodes amongst the moss. The traps should be examined every morning, and the vermin found in them should be at once killed. They will take shelter in any place that is *dark and dry*, and may be almost as easily trapped without baits as with them. We have caught them in the following manner: Large sheets of bark were stripped off some trees that had been felled, and these were laid hollow side downwards near the haunts of the woodlice. In the course of a few days, the bark was crowded underneath, and the vermin were swept off it and destroyed wholesale.

CUTTING SEAKALE.—*A Young Gardener.*—Seakale sent to market is cut with about an inch of the root attached, to facilitate the carriage of it, and keeping the heads together complete; and usually the roots are destroyed after forcing, and the loss of an inch is of no consequence. The regular market growers sow every year, or raise plants from root cuttings; therefore their practice need not guide the cultivator in cutting from permanent beds. In cutting from permanent beds it is best to pass the knife close over the junction of the stem with the root, and generally speaking there is a good inch of white stem firm enough for the purpose of keeping the heads complete until they go into the hands of the cook, who must remove the root part if the gardener cuts so low as to have any of it. The advantage of this is that the buds of the crown are left for the next growth. But it will not injure a permanent bed to cut deep, even to the removal of an inch of root, for the root will throw out crowns from any part, as may be seen on taking up an old stool, which will be found to consist of several underground stems forking from a depth of three to six inches from the top, forming a series of crowns.

FERNS FROM SPORES.—*B. H.*—There is no mystery at all in raising fern from spores. The simplest way to raise them is to prepare a few shallow pans and bell-glasses. Fill the pans with very small potsherds, the top stratum to be broken to the size of peas. Over this put about an inch of a mixture consisting of equal parts fine peat and silver-sand, and water with a fine rose. The water will carry the fine stuff in amongst the uppermost crocks, and make a firm bed with minute points of crocks projecting all over; sprinkle the seed on this surface, and put the bell-glasses on. The proper place for these pans is some warm and rather dark part of the greenhouse, or the cool part of the stove will do. If they must be placed in full light, smear the glasses over with wet clay, to render them semi-opaque. To obviate the necessity of watering again, bed the pans to the rim in cocoa-nut fibre, which keep constantly moist. There are a thousand ways of raising seedling ferns if a warm, damp, and rather dark place can be found for them.



Phaseolus vulgaris

THE BROCKWORTH PARK PEAR.

(With a Coloured Illustration.)

THE handsome pear here figured was submitted to our notice in September last by Messrs. Wheeler and Son, of Gloucester, who described it as a new variety raised by Mr. William Lawrence, at Brockworth Park, near Gloucester. There are so many good dessert pears available in the early autumn months, that we could not have assigned this a high place in the list, unless we had been quite satisfied of its possession of features of distinguishing excellence. It needed, however, only a fair comparison with varieties with which it naturally came into competition to convince us that the Brockworth Park Pear is a distinct and valuable acquisition, and worthy of a place in every garden where first-class pears are held in any degree of esteem. The Brockworth Park Pear attains to a large size; in form it resembles Louise Bonne of Jersey, but differs from that fruit in colour, being of a clear yellow, overspread with russet, with a tinge of crimson next the sun. The flesh is fine in texture, sweet, juicy, and highly aromatic. If we were required to indicate the most distinctive quality of this pear, we should probably say nothing of its size, or beautiful colour, or rich flavour, but refer to its entire and uniform absence of grittiness as a more distinctive quality than any other. Many of our finest dessert pears are gritty at the core under some circumstances, but this appears to be a true melting pear under all circumstances, whether on the pear stock or the quince, whether in a good soil or a bad one. Its season extends through September and October, when it is the finest pear at our command. The tree is vigorous and hardy, very prolific, and equally adapted to form a bush, pyramid, standard, or espalier, according as it may be treated; but probably it will be generally regarded as a model pear for a pyramid, in consequence of its naturally regular growth, and disposition to form fruit-spurs early. In connection with the figure of this fine pear, we are enabled to present our readers with a practical paper on the culture of the pear by Mr. Trussler, who has in his charge at Hoddesdon a remarkably fine collection, consisting for the most part of handsome pyramids, the management of which is as near perfection as can be imagined. We agree with him that, although fruit culture obtains more and more attention every year in this country, the pear is still undervalued, for while it must rank next to the pine and the grape as a dessert fruit, it has the advantage of perfect hardiness, and by a judicious selection of varieties, it is capable of embellishing the table, and ministering to enjoyment and health, for fully nine months of the year. Mr. Trussler's selection of varieties constitutes a valuable guide for cultivators who wish to make or improve plantations of dessert pears.

S. H.

DESSERT PEARS.

BY THOMAS TRUSSLER,

Head Gardener, High Leigh, Hoddesdon, Herts.



ALTHOUGH the Pear is unquestionably the most valuable of hardy dessert fruits, it must be admitted it is not appreciated to the extent it should be, and also that, so far as the majority of small gardens are concerned, its cultivation is at present imperfectly understood. The pear surpasses the peach and nectarine in usefulness, and the plum and apple in flavour; yet, in many gardens, all these fruits, at planting-time, are considered of the most importance. Consequently, the walls are planted with the two first-named, and the available space in the open quarters with the latter and the ordinary bush-fruits before the pears are thought about. There are many gardens in which they are considered of the first importance, and I am happy to say that the number of these gardens is rapidly increasing; for, by planting a judicious selection of sorts, the table may be supplied with ripe fruit from July until the following May. The value of the pear does not, however, consist in the length of time it may be had in season, for it is especially valuable for the delicious and wholesome character of its fruit, and the extreme facility with which good crops can be produced in ordinary soils and situations, without the assistance of a single foot of wall. There are numerous varieties, the fruit of which is improved when the trees are trained to a wall having a favourable aspect. Still, we can select from the immense number of varieties at present procurable in this country more than sufficient for any one garden, that do well in the open quarters. Wherever the proper means exist for fruit-culture, all classes should be fairly represented; but it may safely be said that the pear should be planted more extensively, and held in higher regard, than it hitherto has been.

BEST FORM OF TREES.—It would serve no useful purpose to say anything about either budding or grafting, because so few amateurs, for reasons sufficiently obvious as to require no explanation, would be able to act upon the suggestions which it would be necessary to offer. Therefore, we will say nothing about propagation, but proceed at once to the consideration of the best forms of trees to plant in the majority of gardens. For planting in the open quarters, we have standards, pyramids, espaliers, bushes, and cordons. Without beating about the bush, I will at once express my preference for pyramids and espaliers; the latter for planting by the sides of walks where the garden is very small, and the former for gardens that afford sufficient space to plant trees of larger size. Standards are too large excepting for the orchard, and bushes and cordons are too small to be profitable anywhere, considering the amount of labour requisite to keep them in order. Pyramids take up less room in proportion to their fruit-bearing capabilities than any other form; and as, excepting a stout stake to the main stem when first planted,

neither stakes nor wire trainers are required, the expense of these trainers, which to many is a matter of much importance, is avoided. In the cultivation of espalier trees, either stakes or wire trainers cannot be dispensed with, but the trees will more than repay the cost, especially as they take up so little space. Pyramidal trees are also much handsomer in appearance; and well-grown trees of many of the sorts form beautiful objects, and are well adapted for the embellishment of the lawn and shrubberies. When in full bloom, they are unsurpassed by any of the early-flowering shrubs and trees; but when, in the autumn, the branches are borne down by their handsome and, in many instances, highly-coloured fruit, they are unequalled in the beauty and grandeur of their appearance. In well-appointed gardens, where there is space sufficient to admit of everything being kept in its proper place, the fruit-trees ought to be strictly confined to departments set apart for the fruit and vegetables; but with small gardens the case is entirely different, and there is nothing objectionable in having a few handsome fruit-trees upon the lawn or in the shrubbery-borders. Trees against walls can be trained with the side-branches spreading horizontally from a perpendicular main stem, or the fan mode of training may be adopted. Of the two, the latter is the best, although the trees do not present such an artistic appearance.

STOCKS AND PLANTING.—Nearly all the best varieties do well upon the quince stock in naturally deep and fertile soils; but, in those of a poor, sandy nature, very few indeed do any good upon that stock. They make so little wood, and bear so freely, that in a few years the trees perish. To obtain fully-developed fruit, a healthy growth is essential; hence, in all but the richest soils, select trees upon the pear stock. The trees will certainly require more space for their development, but it must be added that one healthy tree will produce finer and a larger quantity of fruit than two or three miserable, half-starved scrubs. They should be planted at a distance of about five or six feet apart in the open quarters; but it is a capital plan to put a row of trees on each side of the walks in the kitchen-garden, at a distance of about four feet from them. The space between the walk and the trees can be utilized by planting such things as lettuces and radishes, which do not impoverish the soil much; and they are also most valuable for growing the plants during the summer that are employed for the winter and spring decoration of the flower-garden.

In purchasing the trees, select healthy and well-formed specimens; and give preference to those that are strong enough to produce a crop within two or three years after they are planted. It is no gain whatever to purchase small trees because they are sixpence or a shilling cheaper, and then have to wait two or three years longer before they arrive at a bearing state. The really cheapest trees to buy are those from three to four feet in height, moderately bushy, and ranging from four to five years of age. Plant early in October, or as soon after as may be convenient, as the soil is then warm, and the roots take to it kindly, and soon become established. They can, however, be most successfully planted during February

and March ; but, unless the soil and weather are unfavourable, they should be planted as soon as possible after the appearance of this. Whether planted in the autumn or spring, they should not be pruned severely the same season. The holes in which the trees are planted must not be too deep, but they should be large enough to admit of all the roots being spread out regularly. Previous to putting the trees in position, place a few inches of well-pulverized soil, or maiden loam, in the bottom of the hole, and also cover the roots with it before filling in with the ordinary soil. Tread the soil firmly as the filling-in goes on, but avoid the rather common but bad practice of puddling the roots.

PRUNING.—This part of the subject must now have attention, but the reader will not be overburdened with details, for the frequent stoppings of the young wood during the growing season, which some writers recommend for pyramids and espaliers, are not only unnecessary, but positively injurious. Severe stopping encourages the production of a mass of weakly wood which seldom becomes well ripened, and most frequently a large portion has to be removed at the winter pruning. To secure fine fruit, strong wood that is as hard as whalebone must be produced ; and the best means for having well-ripened wood is to stop the young growth once only during the growing season. In ordinary soils and situations, the early part of August is the best time for stopping, and each shoot should be shortened back to within six or eight inches of its base ; then, instead of a second growth being produced, the lower buds will be matured, and eventually become fruit-spurs. At the winter pruning, thin out the previous season's growth where it has become too crowded, and shorten back the remaining shoots two or three inches, according to their length ; but, at both summer and winter pruning, due regard must be paid to preserving the symmetrical appearance of the trees.

ROOT-PRUNING.—Trees that have been planted several years, and have become too luxuriant to produce good crops, must be checked by root-pruning. Those that have been planted three or four years may have the whole of their roots trimmed at one operation ; but others that have been in the same position a longer period should have one-half only pruned, and the remaining part the following season, or they will suffer severely.

In some soils it is necessary to root-prune every second or third year, and in that case the trees will become so well furnished with fibrous roots that all the roots can be trimmed at the same time. First of all, describe a circle round the tree at a distance ranging from twenty to thirty inches from the stem, according to the size of the tree. Then open out a trench outside the circle, half, or all round, and chop off all the roots close to the side of the trench, and work the spade well underneath the ball of soil to sever all that strike down into the subsoil, as they are most frequently the prime cause of unfruitfulness. Trees upon quince stocks will not often require root-pruning, and so long as those upon the pear continue to produce good crops of well-flavoured fruit, they should be left alone.

SOIL.—Nearly all soils will grow good pears, excepting those of a sandy character, and in these the fruit frequently cracks, and is hard, and gritty, and deficient in juice. This part of the subject need not detain us a moment, for it may be said that soils that will grow good cabbages will grow good pears, and also that when they become exhausted, the usual means of restoring their fertility must be resorted to.

GATHERING THE FRUIT.—A word in conclusion with reference to gathering the crops. It cannot be known too widely that all summer and early autumn pears should be gathered a week or ten days before they attain full maturity, as they are so much finer in flavour than when allowed to hang upon the trees until they drop off. Late pears must not be gathered too early, or they will shrivel and eat tough and dry. On the other hand, they must not be exposed to frost, and should be safely stored in the fruit-room by the end of the first week in October. They are generally ready for gathering when the seed has become black, and the stalks part readily from the spur. As a rule, the fruit of those that are not fit for the table until February, and two following months, should be left upon the trees until the last. It should be handled very carefully, and it keeps better when spread out singly.

SELECTION OF SORTS FOR PYRAMIDS AND ESPALIERS.—As many varieties remain in season for a considerable period, I shall, to show when they are in perfection, and to avoid repetition, classify them as follows:—Summer Pears, to comprise those ripe in July and August; Autumn, those ripe in September, October, and November; Winter, those ripe in December, January, and February; and Spring, those that do not wholly attain maturity until March and April.

Summer Pears.—Ananas de Courtrai, Andre Desportes, Barbe Nelis, Petit Muscat, Beurre de l'Assomption, Citron des Carmes, Doyenne d'Été, Jargonelle.

Autumn Pears.—Belle Julie, Autumn Bergamot, Gansel's Bergamot, Beurre Bosc, Beurre Capiaumont, Beurre Deil, Beurre Goubalt, Beurre Navez, Bon Chrétien (Williams's), Pitmaston, Duchesse d'Angoulême, Duchesse d'Orleans, Hazel, Gansel's Seckle, Swan's Egg.

Winter Pears.—Alexandre Bivort, Beurre Berckmans, Beurre Easter, Beurre Sterckman, Broom Park, Comte de Flandres, Grand Soleil, Josephine de Malines, Louise Bonne of Jersey, Knight's Monarch, Winter Nelis, Prince of Wales, Huyshe's Victoria, Langelier's Victoria, Zephirin Grégoire.

Spring Pears.—Basiner (De Jonghe), Bezi de Caen, Bezi Mai, Colmar de Mars, Madame Millet (in warm situations), March Bergamot.

A NEW USE FOR IVY.

BY A TOWN AMATEUR.



AM now occupying a house situated in a very smoky locality, and, upon taking possession of it three years since last Michaelmas, I was sorely puzzled as to how I could give the garden a cheerful appearance. Excepting a few half dead geraniums, and a few deciduous shrubs, such as lilacs and snowberry bushes, it was quite bare. I referred to the back numbers of the *FLORAL WORLD*, and read with much interest the various articles upon shrubs and trees that thrive well in towns. But on making my purchases of the plants recommended, I had to be content with dwarfs, whereas I wanted something six or eight feet in height, that would produce an immediate effect. Necessity is said to be the mother of invention, and true enough it was in my case. Amongst other things recommended for town gardens was the ivy, and knowing that when planted in good soil it grows at a rapid rate, the thought struck me that a few tall specimens could be extemporized with the strong-growing varieties that would help to make up for the want of other tall things. The idea was no sooner moulded into shape in mind than it was carried out; for an empty garden is bad enough in the country, where we can look upon the green trees and fields, but to be shut up in a town without a bit of greenery visible from the window during the winter is to me a very great punishment.

Such a grand hit was made in the use of the ivy that I cannot refrain from giving you a few particulars respecting the way in which we went to work, although, of course, the plan adopted is not new to you.

We commenced operations in just the same manner as we should have done had we been about to plant large hollies, or other evergreens eight feet in height, and selected the positions accordingly. When the positions for planting the ivy were determined upon, a circle of three feet in diameter was made at each, and the soil was taken out to a depth of three feet. About twenty inches of the top soil was of a very good quality, and was placed on one side of the hole, but the other was light and stony, and after taking out the stones, we spread it over the garden to make up the deficiency. We procured a few loads of moderately good loam, and a cartload of manure about three parts decayed. The soil was obtained from the surface of some ground a few miles off, upon which building was going on, and it answered admirably. We mixed enough loam with a moderate quantity of manure to make up for the soil taken away, and then filled the holes in again.

The next step was to procure the plants, and the supports to which they were to be trained. We went to a nursery a few miles out of town for the former, and as preparations had been made for six groups, nine plants of the strongest-growing form of the common English, and the same number of the Irish ivy, were purchased, so

that three could be planted in a group. The supports for the young growth were purchased for a mere trifle at a wood-yard not far from us, and stout pieces, with a few projecting arms towards the top, were selected. They were branches of trees that were hardly good enough for making up into rustic chairs, and averaged seven inches in diameter at the base, and were from seven to nine feet in length. The number of supports was the same as that of the plants. They were firmly fixed in the ground, in the form of an angle, three feet apart, then brought together at the top, and then secured in that position by means of rather stout copper wire. They were of course arranged so as to give the affair an air of rusticity, and towards the bottom they were joined together by means of small branches about an inch in thickness. Small larch poles, and a few laths, both of which can be bought at any timber-yard, are well adapted for this work, and are not so expensive as the supports we bought.

As soon as they were properly fixed, the ivies were planted carefully, and fastened to the woodwork. A dry summer followed, and each group had a thorough soaking of water, such as you usually advise, and the foliage dashed overhead with clear water at the same time to keep it clean. Since then the plants have been able to take care of themselves with respect to moisture at the roots, but during the summer of the last two years a few pailfuls of water have been thrown over the foliage after I come from the counting-house of a Saturday afternoon.

All the plants, with but two exceptions, and they had the roots injured in being taken up, have grown with remarkable vigour, and four out of the six groups are a dense mass of foliage, and have a most effective appearance, although not so beautiful as they will be when they assume more of an arborescent character. It is very certain that I could not have obtained such delightful masses of evergreen foliage in such a short time for the same cost as those of the ivy, and therefore have just cause to be proud of my work. Much of the success is undoubtedly due to the careful preparation of the soil, and the waterings the plants have had since they were put out in their present quarters.

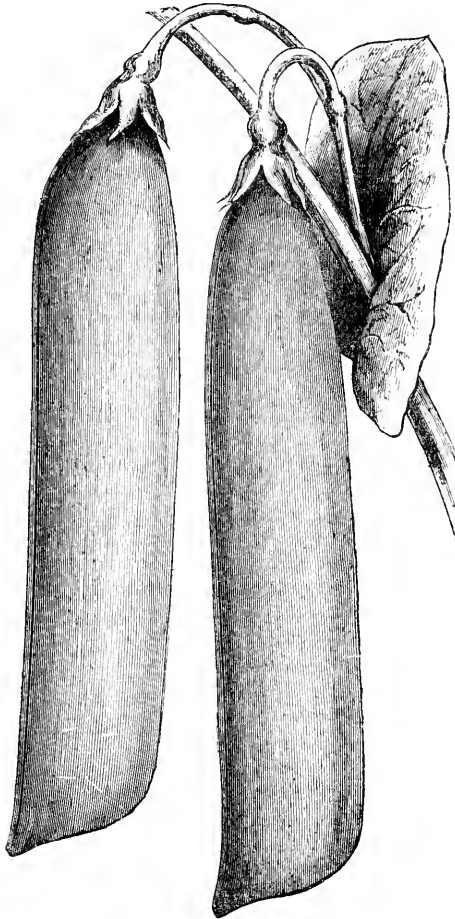
THE MAPLE LEAF.—The representative plant and badge of Canada is said by the "American Horticulturist" to be the Maple Leaf, as is told in the national song of that dominion:—

“On merry England’s far-famed land
 May kind Heaven sweetly smile ;
 God bless old Scotland evermore,
 And Ireland’s Emerald Isle ;
 Then swell the song, both loud and long,
 Till rocks and forests quiver—
 God save our Queen, and Heaven bless
 The Maple leaf for ever ?
 The Maple leaf, the Maple leaf,
 The Maple leaf for ever !
 God save our Queen, and Heaven bless
 The Maple leaf for ever !”

THE GARDEN PEA.



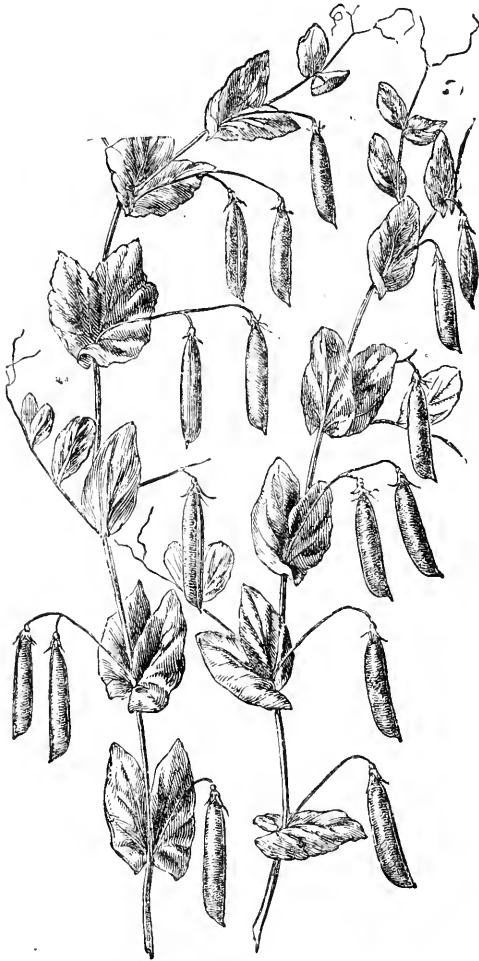
ONE of the most important of all our green summer vegetables is the Pea, and the esteem in which it is held justifies the utmost liberality and spirit in its cultivation. The immense number of varieties affords evidence of the popularity of this most wholesome and savoury escu-



“MACLEAN’S BEST OF ALL” PEA.

lent, and may suggest to the cultivator that some discrimination is required in making a selection, when only a limited number of varieties is intended to be grown. It cannot be said, however, that the varieties of latest introduction are wholly superfluous, for in

respect of improvement in recent years, the pea has kept pace with the potato, and a number of sorts that were held in high esteem only from ten to twenty years ago—to go back no further—have been quite superseded by later sorts of extraordinary fine quality. A large proportion of the finest garden peas in cultivation were raised by systematic cross breeding by the late Dr. Maclean, of



EASTE'S KENTISH INVICTA.

Colchester, who devoted many years of his valuable life to this interesting and useful labour. Another successful worker, who has scarcely yet acquired fame in this department, is Mr. Thomas Laxton, of Stamford. Many of the most celebrated sorts of peas

are simply improved strains of old varieties, secured by careful selection on the part of the seed-grower, and oftentimes the strain or stock so secured acquires a character which places it many degrees in advance of the market type, or general average of the parent. Hence, it is not only important to obtain the best sorts of peas, but the best strains or stocks of the best varieties.

The pea will thrive in any soil of average good quality, provided it has good cultivation. The ground should be in every case deeply dug, and for all the second early and main crop sorts be liberally manured; the best mode of employing the manure being to lay it at the bottom of the trench. For the first early sorts it is advisable to manure less liberally than for those that come into pod later in the season, because a luxuriant growth is antagonistic to precocity of production, and in the case of the first earlies, the object of the cultivator is to gather a dish at the earliest date possible, even if the plants are less luxurious, and therefore less productive than they would be if encouraged by heavy manuring. It should be understood, however, that although manuring does somewhat delay the season of production, it is scarcely possible to manure too liberally for robust-growing sorts of fine quality; for although the first gathering from them may be obtained less early by a week or so than from the same sorts grown on poor ground, yet in the end high cultivation will pay the best by the superior quality and greater quantity of the produce, and the greater length of time during which the plants will continue in bearing.

Peas are highly nutritive, and, when properly cooked, are as wholesome as any vegetable in our gardens. Being richer in phosphates than most other table vegetables, they are particularly adapted for invalids, and especially such as are deficient of nervous energy, the mineral constituents of peas ministering directly to the nourishment of the nervous system. The inorganic elements amount to about three per cent. of the entire bulk in ripe peas, but in green peas somewhat less. The principal inorganic elements are potash and phosphoric acid, and therefore it is only in soils rich in potash-salts and phosphates, that peas can be grown profitably, unless by liberal and systematic manuring the deficiency of the soil in those essential elements is compensated for. The importance of keeping the soil rich in these ingredients will be understood when we say that one bushel of shelled peas contains about the following quantities of the several elements, namely, of—

Phosphoric acid	9	ounces
Lime	2	”
Magnesia	1½	”
Potash	10	”

The best manures for this crop, after farmyard dung, which is undoubtedly *the* best, are guano, superphosphate, kainit, and gypsum, which may be employed together in a mixture, and dug in when the ground is prepared, at the rate of half a ton per acre. If one comprehensive manure is required, there is nothing better than phosphoguanos, which may be employed at the rate of five cwt. per acre if dug

into the ground, or at a fourth of that rate if sown in the drills with the seed, which is the most economical method of employing it.

The earliest peas should be sown on ridges, and the main crops in trenches. In other words, the first earlies require the warmest and driest position that can be found for them, and the more luxuriant and later sorts require heavily manured land in positions favourable to the retention of moisture. In every case close cropping is to be avoided as an unprofitable procedure, hence the custom of growing spinach, and other smallish subjects, between early peas is commendable, as necessitating a sufficient space between the rows of peas to insure a free circulation of air. The dwarfest sorts, however, admit of being sown in close order, but the space between the rows must be increased in a direct ratio with the heights of the varieties. Our custom has been to extend the pea crop over the largest extent of ground possible, so as to have room between the rows for plantation of cabbage, cauliflower, and other summer crops, the tallest sorts of peas being, fifteen to twenty feet apart in the rows, and the dwarfier sorts at least five feet. The practice commonly prevailing of sowing tall peas so close that there is scarcely room left for the gathering of the crop is simply a waste of labour, land, and seed, for where the vines mix and entangle the produce is miserably small, and if the crop has to contend with drought it soon becomes hopelessly mildewed.

In sowing the seed, drills two inches deep should be drawn with the hoe guided by the line, and the seed sprinkled in the drills with careful regularity. The early and wiry-habited sorts may be sown rather thickly, but tall robust kinds should be fully two inches apart. In districts favourable to early production, the first early sorts are sown in November and December, but in places where the soil is deep and damp, and the climate unfavourable, it is sheer waste of labour to sow until the middle of February at the earliest, and, generally speaking, the middle of March is as early as the seed can be sown advantageously. The earlier the better everywhere, of course, but a sowing of peas made a week too soon will scarcely pay for the ground it covers, hence in cold districts experienced cultivators wait for favourable weather, without respect to the almanac, for the good reason that a late sowing that has had no check will in the end overtake and surpass in productiveness earlier sowings that have been two or three times pinched by frost, or desiccated by the east winds. Sowings of the second early and main crop sorts should be made from the middle of March to the end of May, according to requirements, and if these are sown in trenches prepared as for celery, at a distance of about fifteen feet apart, they will produce double the crop, and last double the time in bearing than the same sorts would if sown upon the level in a close piece with only enough space between for gathering.

It is of the utmost importance to put stakes or rissels to peas very soon after they come through the ground, for from the first moment they require support they should have it. Even the dwarfest sorts will give a better yield if assisted with suitable sticks, or a couple of lengths of strong twine run along on each side to prevent

them falling over. There is nothing gained by staking peas insufficiently, nor indeed by any "skimping" in any part of the routine culture of this crop. Therefore, if suitable stakes cannot be obtained, rissels or wire hurdles should be purchased, and as these will last a lifetime if taken care of, one outlay is sufficient, and that need not be of an extravagant nature.

For all ordinary purposes, about half-a-dozen sorts of peas are enough for any garden. But those who make an amusement of vegetable culture may grow fifty sorts of nearly equal value, respecting which it would be very hard to say if any one amongst them is better or worse than the rest. We may, however, indulge a little fancy in this matter, and prefer a score of sorts to half-a-dozen, because of the immense interest attaching to this vegetable, and the variety of qualities to be found in the best sorts we have. We will now attempt a few selections to suit various tastes and requirements.

SIX SORTS FOR SUCCESSION.—*Sutton's Ringleader*, 3 feet high: *Advancer*, 3 feet: *Maclean's Wonderful*, 3 feet: *Veitch's Perfection* (or *Stuart and Mien's Prince*, which is a shade better, but very scarce), 3 feet: *Ne plus ultra*, 6 feet: *British Queen*, 6 feet.

TWELVE SORTS FOR SUCCESSION.—*Sutton's Ringleader*, 3 feet: *Sutton's Early Champion*, 3 feet: *Laxton's Supreme*, 5 feet: *Maclean's Wonderful*, 3 feet: *Princess Royal*, 3 feet: *Champion of England*, 5 feet: *Yorkshire Hero*, 2½ feet: *Paradise Marrow*, 5 feet: *Veitch's Perfection*, 3 feet: *Premier*, 4 feet: *British Queen*, 6 feet: *Ne plus ultra*, 6 feet.

TWELVE VARIETIES, SELECTED FOR QUALITY ONLY.—*Laxton's Alpha*, 3 feet: *Advancer*, 3 feet: *Laxton's Quality*, 4 feet: *Sutton's Invincible Green Marrow*, 3 feet: *Huntingdonian*, 4 feet: *Fortyfold*, 4 feet: *Maclean's Best of All*, 3 feet: *Lord Palmerston*, 2½ feet: *Jersey Hero*, 3 feet: *Knight's Dwarf Green Marrow*, 3 feet: *British Queen*, 6 feet: *Queen of the Marrows*, 6 feet.

SIX GOOD DWARF KINDS SUITABLE TO GROW WITHOUT STAKES.—*Easte's Kentish Invicta*, 2 feet: *Bishop's Long Podded*, 2 feet: *Sutton's Tom Thumb*, 1 foot: *Maclean's Little Gem*, 1 foot (this is the best to grow in pots to fruit in the cold frame or forcing house): *Nutting's No. 1*, 2 feet: *Dwarf Waterloo*, 1½ feet: *Peabody*, 1½ feet.

It was a common article of belief with the gardeners of the last generation, that to obtain good peas "you must go up a ladder to gather them." The march of improvement has, however, altered the case, and we may now have peas of the finest quality from sorts that rise only three to four feet. In our selection above given of sorts selected for quality, there are only two tall sorts, and they may be very well dispensed with by those who are so circumstanced as not to be able to grow them properly. S. H.

BEDDERS AND BEDDING.

BY A HEAD GARDENER.

PROPAGATING BEDDING-PLANTS.



EARLY all the readers of the FLORAL WORLD being more or less interested in bedding-plants, I intend, with your permission, to offer a few practical remarks on their propagation in spring, and then enumerate a few of the best in the several classes. That the notes will be of considerable value to those who have not had much practical experience in plant-propagation, I have no doubt, because the furnishing of such a large flower-garden as the one under my charge has rendered it necessary that I should pay much attention to bedding-plants of all classes. As you know, we give nearly all the plants sent out every year a thorough trial, and therefore I am able to speak with confidence respecting the value of the new, as well as of the old and established kinds.

Nearly all soft-wooded plants, such as verbenas, lobelias, and petunias, can be struck with greater facility in the spring than in the autumn, provided a due amount of care is exercised in their preparation; but it is necessary to state that they will not bear rough usage with impunity at this season of the year. Cuttings of soft shoots strike more freely than those that have become hardened; therefore, it is necessary to place the stock plants in a brisk growing temperature, from three to four weeks before the work of propagation is commenced. They should be placed near the glass, to prevent the possibility of the young growth being drawn up weakly; and if, at the same time, the pots could be placed upon a genial bottom-heat, they will start into growth much quicker. We generally fill one of our pits, which has a four-inch pipe round it, with leaves that were collected the previous autumn, and keep the temperature at, or about, 65°. The pots are stood upon the leaves, and the genial heat which arises from them is enough to warm the soil sufficiently to promote a vigorous root-action previous to the growth of the top. Many amateurs do not appreciate the leaves which fall from the trees in the autumn according to their value, and have them consigned to the rubbish-heap, instead of carefully storing them away for spring use. They are not only useful for the purpose here indicated, but they are exceedingly valuable for mixing with stable manure in making up hot-beds for cucumbers, melons, and propagating purposes. A mixture of leaves and manure is much better than manure alone, as the heat is given off in a more gradual manner, and consequently the beds do not become exhausted so soon.

Immediately the stock plants are placed in a growing temperature, as advised above, preparations must at once be commenced for providing a genial hotbed for their reception. A bed of leaves and manure, after it has become well sweetened, is decidedly preferable, as it can be employed for so many purposes, the most important

being raising seeds of early vegetables, such as cauliflowers, cabbages, and lettuces, and also for growing on early melon and cucumber-plants before the houses or pits in which they are to be grown are in readiness for them. In the preparation of the fermenting materials, care must be taken, by frequent turnings, to insure their being thoroughly sweetened before they are made up into a bed; and to prevent the possibility of the cuttings suffering from the noxious gases which arise from improperly prepared stable manure, they should not be put into the frame until a week after it has been put upon the bed. A little air should also be left on night and day, and, in covering with mats at night, the ends of the mats must not hang low enough down the sides to draw the steam arising from the things outside into the frame. Where fermenting materials are scarce, a bed of faggots or brushwood, three feet in thickness, and a few inches larger each way than the frame, may be made, and the temperature raised to the necessary degree by means of linings of warm fermenting materials put round the outside. In either case, the surface of the bed inside should be covered with a thin layer of turf and a few inches of ashes, in which to partly plunge the pots.

Wherever there is a pine or plant stove or a vinery at work, and a portion of the pipes situate so that plants placed upon them may receive a moderate amount of light, the whole stock of bedding plants may be struck without the aid of an ordinary hotbed at all. Thousands of cuttings are struck here annually in the following manner:—We have several boxes three feet in length, two in width, and twelve inches in depth; the bottoms are constructed of stout perforated zinc, with three iron bands, an inch in breadth and an eighth of an inch in thickness, to support the weight of the pots. The boxes are placed upon the hot-water pipes of one of the houses at work, at a point where they are near the glass, and six inches of tan placed in the bottom in which to plunge the pots. Cocoanut-fibre refuse or sand would also answer very well. The heat communicated by the pipes is ample, and the bother, dirt, and anxiety attendant on a hotbed is entirely dispensed with.

In a garden where the whole glass it contains is comprised in a greenhouse or conservatory, the plan described in the foregoing paragraph cannot be carried out, because the heat from the pipes will not be constant. There are, however, several contrivances for propagating purposes, which can be heated with lamps. I have not had much experience with the propagating cases heated in this manner, but during last spring and summer I saw one of the cases manufactured by Messrs. Barr and Sugden, 12, King Street, Covent Garden, at work several times, and it appeared to answer admirably, and my friend states that he is thoroughly satisfied. They are effectively and cheaply heated, and so cleanly, that for lady gardeners they must be pronounced a great boon. Figures and descriptions of two of the cases will be found at page 253 of last year's volume, to which those in want of a heated case can refer.

The soil used for filling the cutting pots should be light and sandy. We generally employ the old soil from the potting bench for this purpose; we first sift it, and then mix with it a fourth part

of silver sand. Fresh loam will require rather more sand. Five-inch pots are the most convenient size, and we generally employ them, and put in the cuttings at the rate of twenty to each. In preparing the pots, put three inches of crocks in the bottom, and then fill in firmly with the prepared soil to within half an inch of the rim. Then finish off by putting sufficient sand on the top to bring it level with the rim. The sand should be moderately moist when used, to enable the operator to make it thoroughly firm. The sand should then be sprinkled, and everything will be in readiness for the cuttings.

In taking off the cuttings, select the points of the healthiest shoots, and do not expose them to the atmosphere any longer than possible. Cuttings of two joints are preferable, although the shoots of verbenas, petunias, and several other subjects, cut up into single joints only, will strike freely in the spring. In inserting the cuttings, make a hole of moderate size, then drop in the cutting, and fix it firmly by thrusting the dibble close down by the side of the stem, but without touching it. The cuttings should be prepared, and inserted in the pots in which the propagating frame is placed; or where an ordinary hotbed is employed, in a close and rather warm house or room. As each pot is filled, place it in the frame, water liberally, and shut down the glass, and keep it quite close for a day or so.

The after management comprises air-giving and watering, and upon the manner in which the air is regulated and the water applied depends much of the success. It is, however, impossible to lay down any definite rules upon these matters. As a rule, as much air may be admitted into the frames as the cuttings can bear without the leaves flagging; for if the atmosphere is too much confined, a considerable proportion will damp off. Again, with respect to watering, it may be said that extremes must be avoided, because too much or too little moisture is equally injurious. A light sprinkle overhead will be required once a day, and in bright weather it may be repeated. The most important matter in watering is to leave off the covers until the leaves have become rather dry. Shade from the sun by means of thin canvas or tiffany, as a few hours' sun will soon make an end to a batch of cuttings. Harden off as soon as rooted, and either transfer to single pots or a bed of soil made up in a frame without delay. It ruins bedding plants to keep them for any length of time in a high temperature.

Bedding geraniums of all kinds can be struck without the aid of bottom-heat; indeed, they do much better when the cutting pots are placed on a warm sunny shelf in a warm greenhouse.

The selections of the most suitable kinds must be deferred until next month.

LARGE PEARS IN AUSTRALIA.—As an instance of the enormous size to which fruit may be grown in the vicinity of Melbourne, may be mentioned some Brobdingnagian Pears, which were on view the other day at a seedsman's. They numbered half-a-dozen, the total weight being 16 lb. 11 oz. The largest weighed 3 lb. 3½ oz., and the smallest 2 lb. 10½ oz.—*Overland Telegraph.*

A GAY WINDOW GARDEN.



THE cultivation of a few plants on the window-sill is certainly one of the most interesting and pleasurable occupations in which those having no conservatory nor other convenience for plant-growing can engage. The embellishment of the window-sill is not, however, a matter of interest to those only who have no other means of enjoying a few flowers of their own growing, because few adornments enhance the appearance of a dwelling-house more than flower boxes at the principal windows. By well-directed efforts, it is surprising what a large number of flowering plants can be grown in that way, and how easy, comparatively speaking, the floral decoration of the windows becomes.

The most important step to take in connection with plant-growing outside the window is to eschew pots altogether, and to employ well-made boxes instead. It is a matter of extreme difficulty, after the beginning of June, to keep pot-plants in health. The fierce heat of the sun, playing upon the sides of the pots, scorches the roots of the plants, consequently all healthy growth is checked, and they soon present a languishing appearance. Even if the roots

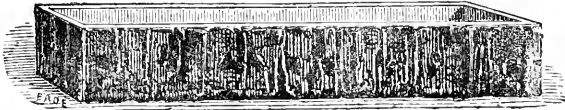


FIG. 1.—RUSTIC WOOD BOX.

were not injured by heat, they would be by drought, because it would be practically impossible to keep the soil moist enough to maintain a healthy growth. These remarks respecting plants in pots refer, of course, to those only which are placed upon the sill, without the sides of the pots being protected; because, when the windows are furnished with boxes, plants in pots can be employed according to the means and wishes of each cultivator, as the boxes can be loosely filled with cocoanut-fibre refuse, and the pots plunged

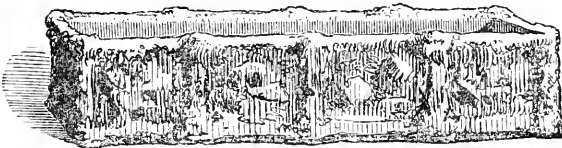


FIG. 2.—RUSTIC ZINC BOX.

to their full depth. The roots and soil will then, of course, be beyond the injurious influences of the heat from the sun. Indeed, to carry out window-gardening in the most perfect manner possible, the whole of the plants should be grown in pots, to admit of frequent change; but, as that system would require more skill and time than

the majority of my readers would be able to devote to it, my remarks will be confined almost exclusively to the cultivation of the plants from first to last in the boxes.

The form and pattern of the boxes must in a great measure be decided by the style of architecture of the house for which they are intended, and the taste and means of the occupier. The accompanying designs, which are from the stock of Messrs. Dick Radclyffe, and Co., 129, High Holborn, W.C., who devote much attention to window-boxes and other horticultural elegancies, illustrate some of the very best forms that could be devised. Figs. 1, 2, and 3 are

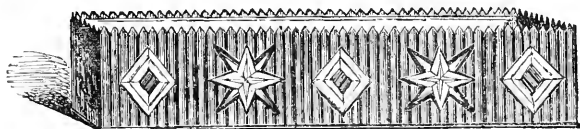


FIG. 3.—RUSTIC WOOD BOX.

eminently adapted for cottage and small villa residences, whilst for the more aristocratic villa and the mansion, Figs. 4 and 5 will be more acceptable. Fig. 3 is, perhaps, the prettiest of the rustic designs; and of the other two, Fig. 4 is the most useful, and the pattern of the tiles with which this kind of box is faced is almost illimitable. Fig. 5 is remarkably beautiful, but, of necessity, is too expensive to admit of its employment elsewhere than at the dining and drawing-room windows, excepting in the houses of the most wealthy. As an act of justice to the firm referred to, it is necessary to say that the designs here figured comprise only a portion of the stock, and that in selecting boxes of No. 4 pattern, a personal inspection will be most satisfactory, as tastes differ so much. They should

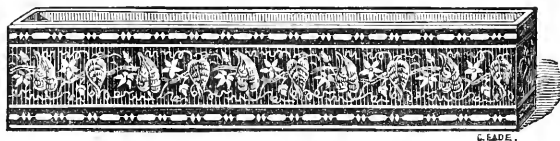


FIG. 4.—TILE BOX.

fit the window nicely, but they must be deep and broad enough to hold a considerable quantity of soil, or the plants in them will be no better off than if they were grown in pots. Each box should be wide enough to comfortably hold a double row of plants, and if the sill is narrow, it may be allowed to project two or three inches, as a neat bracket on each side, will hold it firm. Means must be provided for the ready escape of all superfluous water, by placing in the bottom a layer of rather small crocks, and then covering them with a layer of rough material, to prevent the fine soil choking them up. A compost consisting of two parts turfy loam and one part decayed manure or leaf-mould, will suit all the plants—with which they should be filled throughout the year.

Having thus far disposed of the preparation of the boxes, we will turn our attention to the most useful plants for rendering them bright and cheerful all the year round. There is no lack of good things suitable for the purpose, but I shall name a few only of the most useful, and such as are within the reach of all classes. For spring decoration a mixture of *Arabis alpina*, *Alyssum saxatile*, *Aubrietia Campbelli*, *A. deltoidea grandiflora*, *Iberis sempervivens*, *Phlox Nelsoni*, *Saponaria calabrica*, and *Wallflowers*, of sorts, comprising both double and single varieties; but the latter are the most useful, as they can be most readily raised from seed. The above-mentioned subjects should be regularly intermixed, and a row of *Alyssum saxatile variegatum*, *Arabis lucida variegata*, and the variegated Daisy, *Bellis perennis aucubæfolia*, planted in front, separately or mixed. A row of yellow Narcissus should then be planted at the back next a row of red Hyacinths; and in front, alternately with the variegated plants, a row of Squills. The best of the sorts are, considering their cheapness and effectiveness, *Narcissus Lord Canning*, *Hyacinth Amy*, and *Scilla præcox*. The pretty little *Narcissus bulbocodium* is also fine for front rows. The furniture of the boxes may consist

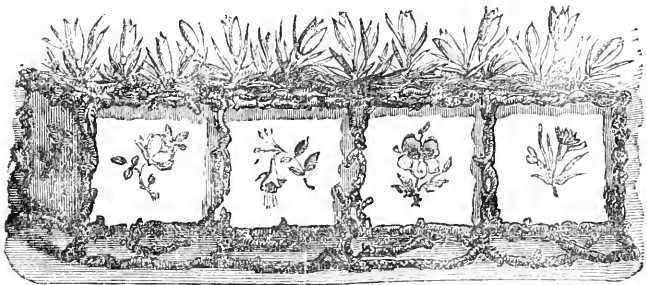


FIG. 5.—THE DRAWING-ROOM BOX.

entirely of bulbous plants, but it is much better to fill them with other things, and then plant the bulbs amongst them.

For summer decoration, boxes in shady positions should be filled with hardy *Ferns*, and a few *Fuchsias* and *Blue Lobelias* intermixed. Those occupying sunny aspects should be chiefly filled with *variegated* and *zonal Pelargoniums*, and a few *Lobelias*, *Fuchsias*, *Mignonette*, *Candytufts*, *Gallardias*, *Centaureas*, and *Heliotropes*. The *Pelargoniums*, must, however, be planted the most extensively, as they grow freely and flower very profusely under the most adverse conditions, provided they have the advantage of an abundance of sunshine. The other subjects must be introduced sparingly, because many of them will present a shabby appearance by the middle of the summer, if they suffer much from drought.

All the variegated and zonal *Pelargoniums* are more or less valuable for filling window-boxes; but in selecting twenty of the older sorts that can be purchased cheap, I should prefer, of the double-flowering varieties, *Charles Glyn*, *Madame Michel Buckner*, *Marie Lemoine*, and *Wilhelm Pfitzer*. Single-flowering: *Blue Bell*, *Gloire de*

Corbeny, *Louis Veillot*, *Lucius*, *Madlle. Nillson*, *Rose Rendatler*, *Richard Headly*, *Thomas Moore*, *The Bride*, *White Wonder*. Bronze zonals: *E. G. Henderson*, *Beauty of Riverdale*. Gold zonal: *Louisa Smith*. Silver zonal: *Italia Unita*. White variegated: *Princess Alexandra*. Golden-leaved: *Crimson Banner*. For drooping over the front of the box, variegated and other *ivy-leaved* Pelargoniums: *Maurandya Barclayana*, *Lophospermum Hendersoni*, and *Thunbergia aurantiaca*—all of which, excepting the Pelargoniums, can be raised from seed.

By a judicious selection of hardy evergreens, the boxes may be rendered bright and cheerful throughout the winter. The most suitable for general purposes are green and variegated *Aucubas*, *Box*, *Euonymus*, *Golden Arbor-vitæ*, *Laurestinus*, *Cupressus Lawsoni*, with variegated and green-leaved small-growing *Ivies* for trailing over the sides, and a carpet of the beautiful *Golden-tipped Stonecrop*. Boxes filled with hardy evergreens, as here advised, need not be disturbed until they are filled with the summer occupants, for, by the introduction of a few *Crocuses*, *Snowdrops*, *Scillas*, *Hyacinths*, *Narcissus*, and *Tulips*, there will be no lack of colour throughout the spring.


It only now remains to be said, that the plants, especially during the summer, must not be allowed to suffer from the want of water, and that the foliage must be kept perfectly free from dust. The evening is the best time for watering and cleansing the foliage.

THE BEGINNER IN GRAPE-GROWING.—No. II.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.

MANAGEMENT OF YOUNG VINES IN POTS.

 HIS will be a short chapter, because all that we have to do under this heading is to consider the few details connected with the management of the young vines during the first season. We concluded last month with a note urging the importance of not allowing them to become pot-bound; but, on the other hand, a caution against over-potting appears necessary. Of the two evils, shifting them before they are well rooted is certainly the worst. Whether the stock requires shifting can soon be determined by turning one of the vines out of the pot. If the roots exist in sufficient numbers round the outside of the ball of soil to hold it together, shift without delay; otherwise allow them to remain in the pots until they are sufficiently rooted. Frequent repottings are undesirable, and as a rule those intended for fruiting in pots the following season will require three shifts, but for those required for planting out in the vinery border, either in the autumn or following spring, or for cutting down with the intention of their being fruited in pots the second year after the eyes are struck, two shifts will be ample. In any case put them first into

six-inch pots, and from that size into the nine-inch size. At the third shift, when required, put them into pots two or three sizes larger.

Inside borders may be planted in June with vines obtained from eyes struck the previous March, and the stock set apart for that purpose should, if convenient, be put from the small pots into shallow boxes, and then at planting time the sides can be knocked away, and the bottom removed without disturbing the roots. It is better to plant vineries in June with vines struck the previous spring than to wait until the following March, to admit of its being planted with canes twelve months older. But where the vines are too hard, and the house and border in readiness for their reception, I should strongly recommend its being planted some time during March or April with one-year-old vines that were cut close down to the ground, and have when planted about twelve or eighteen inches of new growth. These will start away stronger, and also have two months more of the best part of the growing season in which to make their growth than younger ones planted in June. Therefore, the rods will be much stronger and better matured at the end of the season.

In preparing a compost for vines when in pots, whether they are to be fruited in them or not, the cultivator should encourage as much as possible the production of short fibrous roots. Hence hot-bed or other manure of a similar character must be used in a sparing manner, and where available bone-dust or crushed bones employed instead. Partly decomposed horse-droppings are valuable for this purpose, when bones cannot be afforded, as they assist in keeping the compost light and open, whilst at the same time they furnish food for the vines. To render everything as clear as possible, it is necessary to say that the most suitable compost is prepared by well incorporating together four parts turfy loam, one part manure, one part brick-rubbish, and about a third of a part of bone-dust. The pots will require draining effectually, but no more crocks than are absolutely necessary must be employed. At the last shifting I should recommend the use of inch bones instead of crocks, especially if the vines are to be fruited in the pots.

Plunging the pots in a brisk hot-bed after the eyes are struck is not only unnecessary, but positively injurious, and after the first shift the pots should be stood upon a hard surface. When the vines are grown with the assistance of bottom-heat, the wood is generally soft and pithy, and they are usually furnished with thick fleshy "goose-quill" roots, which, if subjected to bad treatment during the winter, will perish. Consequently if they are fruited the following season a large portion of many of the branches will be ruined through the berries shanking. This so-called disease is usually attributed to too much atmospheric humidity; rightly in some instances, but generally it may be ascribed to defective root-action.

Vines in their first, as in all subsequent stages of growth, should not be crowded closely together, but be placed far enough apart to admit of the stems being fully exposed to the light. By closely following the instructions here given, and during the summer maintaining a free current of air through the house in which they are

grown, there will be no difficulty whatever in producing well-ripened and short-jointed canes. By the end of August or early in September the canes will, if they have been properly managed, be full grown, and should be taken to the open air for a month or six weeks to insure their being properly ripened. The canes should be securely fastened to a wall or fence having a south aspect, and during heavy rains some means must be adopted to prevent the soil becoming saturated. The soil, however, must not be kept dust dry during the season of rest, or many of the roots will perish, and the vines suffer immensely. The very excellent remarks made by "A Kentish Gardener" upon this subject in last month's number, renders it unnecessary for me to say another word in reference to the danger of drying the roots in winter.

Next month vineries, vine-borders, and planting must engage our attention, but before quitting the subject, for the present, it will be worth while to add that although the vines should be kept cool when at rest, they must not be exposed to severe frost.

THE NIGHT-SCENTED STOCK.



EXCEPTING by reputation, the Night-scented Stocks, *Mathiola bicornis* and *M. tricuspidata*, are only known to a few, whereas they should have a place assigned them in every garden where sweet-scented flowers are appreciated. No plant in cultivation, much less hardy annuals, can surpass, and few equal, the delicacy and richness of the perfume emitted from their flowers. The entire plant, of both varieties, with us, usually attains a height of about twelve inches; the upper half consisting of a branching spike of pale lilac, and in the case of *M. bicornis*, it must be confessed, rather insignificant flowers. The latter are closed during the day, and are then nearly scentless, but from early in the evening to the following morning the odour exhaled from them is so powerful, that the presence of the plants can be detected when many yards from them. *M. tricuspidata* is an old variety of much value, and has been recently re-introduced. In some respects it is superior to *M. bicornis*; the flowers are larger, rather deeper in colour, and remain expanded during the day as well as the night. The perfume of the flowers of this variety during the day was said to be equal to that exhaled from them in the evening, but that is an exaggeration, as it is far inferior, although very delightful.

We sow a pinch of seed in March, here and there, in the shrubbery borders, where the plants will be partially screened from observation by those of greater stature. They are thinned out in the same way as other annuals, and then left to take care of themselves. The fragrance which arises in the evening from the plants on all sides is most lovely, and produces an indescribable effect upon those of our friends, when seated at the open window of the drawing-room, who have not hitherto been personally acquainted with either

of these plants. They fancy we have a bank of mignonette, violets, and roses hidden away somewhere behind the shrubs, and will hardly believe, the next morning, when we show them the plants, that such overpowering fragrance can be exhaled by such insignificant objects. We save our own seed, but I see, by the trade-lists, that a sufficient supply of each of the varieties can now be obtained for sixpence.

HARRIET TETTERELL.

CENTAUREAS AND HOW TO PROPAGATE THEM.

BY JOHN WALSH.



GR^{EAT} popularity has been obtained by the Centurea, since plants remarkable for their rich colours and the ornamental character of their leaves, have been generally employed in the embellishment of the flower garden. It well deserves the high esteem in which it is held, for without doubt it is the most valuable of all plants, with silvery or grey foliage. These remarks are not penned with the intention of passing an eulogy on its merits, because that is not required, but my object is to assist amateurs in raising a stock with the least possible amount of trouble. Most professional gardeners are now well acquainted with the best steps to take in their propagation, but I now and then meet with some who are as yet firm believers that they are most difficult to increase, whereas in reality they can be propagated with the greatest ease. I shall not therefore apologize for communicating these notes to a work which is so extensively read by all classes of horticulturists.

Centaureas can be propagated by means of cuttings struck in the spring or autumn, and from seed. Each mode has its advantages and disadvantages; but for these not well up in the mysteries of striking cuttings, seed affords the readiest means of raising a stock. It must also be resorted to where there are no old plants to supply cuttings. Seed of all the varieties is plentiful in the trade, and may be obtained from any respectable house. Sown at once in heat, and the seedlings pushed on in a brisk temperature until the middle of April, plants suitable for edging purposes may be secured by the time they are required for putting out in the flower-garden. Sowing in autumn is the best period for people who have not the command thus early, as the plants can be raised in the open, or in a cold frame or greenhouse, and wintered in either of these structures. They will also be considerably larger by planting time. All the sorts will bear a considerable amount of frost without injury, when raised in the autumn, and they can be wintered in a cold frame with a mat thrown over the glass to break the frost. Nothing special is required in sowing the seed, and in the management of the seedlings, therefore it would be a waste of space to allude to it further.

Plenty of home-grown seed for autumn growing may be obtained by allowing the plants taken up from the beds last autumn to bloom,

which they will do if not stopped, and as soon as the flowers begin to expand, placing them in an airy and dry position.

It is rather more difficult to strike cuttings than to raise seedlings, but it is easier than many people imagine, especially if they are struck in the spring. Supposing the spring is taken advantage of for the work, it will be necessary, first of all, to place the stock plants in a temperature of 65° or 70° to start them into growth. If flower-buds make their appearance, let them rise above the foliage, and then nip them off. Some writers recommend nipping out the growing point before starting the plants, but the advice is as bad as bad can be, because in the majority of cases the act will be followed by the decay of the main stem. The advice is given under the supposition that by stopping the main shoots, the production of side-shoots will be encouraged, whereas it does nothing of the kind. Here the ignorance of the writers is made manifest, for nothing short of a want of knowledge of the habit of the *centaureas* would induce any one to advise their being treated in the same way as *verbenas* and other plants of a similar character. If the stock plants are not over-watered, they will produce a plentiful supply of cuttings without stopping. Take off the cuttings with a very small heel, and insert them thickly in pans, or pots, filled with sandy soil and surfaced with sand. Place the cuttings in a temperature of 70°, and where they will not be exposed to draughts or subject to much atmospheric humidity. Here they can be left, so far as my remarks are concerned, for they will soon strike, and it would be absurd for me to say that they should be potted off, or to describe details that must be well known to those who have had the slightest experience in plant-growing.

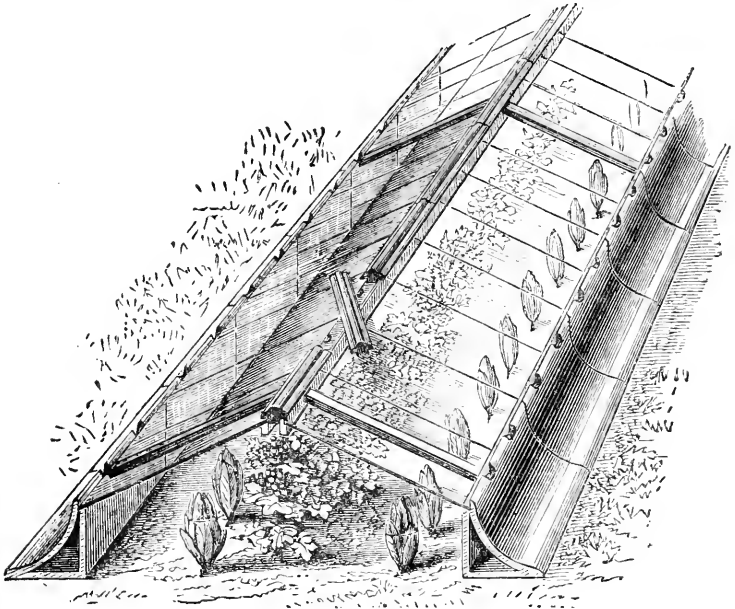
Striking cuttings in the autumn is not attended with such a degree of certainty as the same work performed at the period advised in the preceding paragraph, but it can be done with a little skill. In taking the cuttings select those with about half an inch of firm wood at the base, and slip them off without injuring the main stem. Then remove a few of the lower leaves, prepare the base smooth, and put them round the sides of five-inch pots, at the rate of four to each pot. Also put three small pieces of stick round the outside and connect them together with a piece of matting, to hold the leaves up and keep them in their place. A cold frame, and a moderate amount of water and air will accomplish the rest.

For centres of beds *Centaurea gymnocarpa* is most suitable, as it naturally grows taller than the others; for second rows *C. ragusina* should be selected; and for edging purposes preference must be given to *C. argentea plumosa*, and *C. ragusina compacta*.

C. Clementei, a new variety raised in the south of France, and now in course of distribution in this country, is said to be a most desirable acquisition. It resembles in general character *C. ragusina*, but is much finer in all its proportions, the leaves are deeply cut and in lobes, and these again elegantly fringed. The leaves are also densely white when young, and maintain their silvery appearance when fully developed. As seed can be obtained at a shilling per packet, it is within the reach of all classes.

LOOKER'S GARDEN FRAME AND GROUND VINERY.

BY the introduction of the "Acme Garden Frame and Ground Vinery," Mr. Looker, of Kingston, has conferred a great boon upon all amateur horticulturalists, for of all the many forms of portable plant protectors it must be pronounced one of the very best. They are light in appearance, very roomy, and, with a slight exception, con-



LOOKER'S GARDEN FRAME.

structed of imperishable materials. The uses to which these frames may be put must be so apparent that it is almost needless to refer to them. Suffice to say that they may be employed in the kitchen garden for the protection of lettuce and cauliflower plants for planting in spring; lettuce, endive, and other salading plants, that are full-grown during the winter; raising seeds; accelerating the ripening of strawberries; and for many other purposes of equal importance. In the flower-garden, they will be especially valuable for protecting violets, pansies, pentstemons, and many Alpine plants that require protection from very severe weather, and from too much moisture. They may also be profitably employed for propagating and raising seeds of hardy and other flowering plants during the summer months, and in hardening off bedding plants in the spring. Grapes and summer cucumbers can also be grown most success-

fully in them. As will be seen by our illustration, the lower edge of the glass rests upon earthenware chairs, or tiles, and at the top, upon a light, open wooden ridge. The ridge is supported by angle pieces securely fixed on the inside of the tiles, at intervals of about every four feet. The opening along the ridge is closed with earthenware caps, which cap over the glass and prevent drip. These, when required for ventilation, can be taken off, as shown in the illustration. The glass can be taken off when required to admit of the plants being attended to with the utmost facility. For prices, which are very low, and other particulars, application must be made to Mr. B. Looker, Norbiton Potteries, Kingston-on-Thames.

HORTICULTURAL NOTES.



THE *Garden Oracle*, which has now reached its thirteenth year, has again made its appearance; and, as usual, every phase of horticultural and floricultural progress is duly recorded. The list of New Plants is as complete as possible, but the descriptions are shorter than usual—a change which will, no doubt, be much appreciated, because it occupies less space, and, therefore, room for more useful matters is afforded. The descriptions are ample for all practical purposes; and, as references are given to the works in which they are figured and fully described, nothing further is required. The list of New Flowers, in which about five hundred varieties are described, which will chiefly be sent out during the current year, is sufficient evidence that there is no lack of enterprise amongst florists in this country, and that floriculture is not in the languishing condition many would fain have us believe. The new flowers, such as Roses, Gladioli, Phloxes, etc., that we were wont to receive from France, are, of course, absent; for our brethren on the other side of the Channel have had duties too stern and sacred to perform to admit of their devoting much time and attention to the peaceful arts. The list of New Fruits comprises all the best and most distinct novelties of the past year, and possesses much to interest pomologists and others anxious to furnish their gardens with the best of everything; especially as most of the descriptions are accompanied with characteristic illustrations. All the New Vegetables and Inventions are, as a matter of course, described, and the most important figured. The new inventions form a very important feature of this year's issue, occupying no less than ten pages. The monthly lists are this year devoted to pictorial and hardy-flowering trees and shrubs. The lists comprise selections of trees remarkable for beautiful foliage in summer; beautiful foliage in autumn; the embellishment of lawns, promenades, water-scenes, and boundary-belts; coniferous trees for collections; evergreens for town-gardens; flowering shrubs; shrubs for growing under trees; in fact, all the most valuable shrubs and trees for planting pleasure-grounds and parks are enumerated, and their proper use indicated.

Another new feature consists of an essay "On the Ordering and Management of Small Gardens," which, there can be no doubt, will be of immense service to amateurs and others. The selections of fruits, flowers, and vegetables are as full and accurate as heretofore; and upwards of twenty of the most useful and distinct of the latter are illustrated.

The weather, since my last notes were written, has occupied much of our attention, although, up to the present time, the winter has not been characterized by any unusual phenomena. In the neighbourhood of London, thirty degrees of frost were several times registered, whilst twenty degrees of frost was quite common in all parts of the country. In Yorkshire and Norfolk, and many other counties, correspondents state that upon one or two occasions the temperature fell several degrees below the zero of Fahrenheit. In low-lying and damp situations, the kitchen garden crops have suffered severely; but so far as I have been able to ascertain by observation, and from the reports of correspondents, trees and shrubs do not appear to have received much, if any damage. This is, no doubt, owing to the well ripened condition of the wood when the frost caught it. The exact amount of injury which trees and shrubs have received, cannot as yet be correctly ascertained, but there is no cause to fear that much harm has been done.

The Persian Cyclamen is now justly appreciated in the neighbourhood of the metropolis, but few provincial horticulturists who have not been fortunate enough to see the magnificent collections exhibited at the spring exhibitions of the two Royal Societies in London, by Mr. James and Mr. Wiggins, of Isleworth, Mr. Edmonds, of Hayes Common, and Mr. Stevens, of Ealing, have an adequate idea of the perfection to which they can be grown. The other day, I had the good fortune to see the collection under the charge of Mr. James, in the gardens of W. F. Watson, Esq., Redlees, Isleworth. The bulk of the plants were not fully out, but they were in the most luxuriant health, and bristling with flower-buds. I have had the opportunity of seeing the collection every season for several years past, and I feel bound to say that no word painting will convey anything like an adequate idea of the appearance of the house when the plants are at their best. Many of them have from two to three hundred flowers expanded at one time. The flowers are also of the most perfect form, and the colours range from the purest white to the deepest rose and carmine. The flowers are so vastly superior to the narrow petalled flowers of the varieties usually grown, that one can hardly believe them to be the same. The system of culture, adopted by Mr. James, is exceedingly simple. The seed is sown directly it is gathered, the young plants grown on briskly the first year without being dried off, and the old plants only allowed to rest for about a month in the summer. The compost used is moderately rich and open, and a liberal quantity of sand is added, to admit of the free development of the roots. We frequently hear of "spotted" Cyclamens so called, as if the character was fixed; whereas the spots on the light flowers is always caused by an excess of atmospheric humidity, and is evidence of improper management.

The first meeting of the Royal Horticultural Society, at South Kensington, for the present year, was held on the 18th of last month, and was one of the best winter meetings ever held by the society. The principal features were the grand banks of winter-flowering Orchids, staged by Lord Londesborough, Tadcaster, Yorkshire, and Messrs. Veitch and Sons, of Chelsea; Ivies, by Mr. Turner, of Slough, and Messrs. Lane and Sons, of Great Berkhamstead; and Cyclamens,^c by H. Little, Esq., of Cambridge Park, Twickenham, and Mr. Wiggins, of Isleworth. Novelties were, of course, scarce, but a few good things were shown. The most important were:—*Cypripedium vexillarium*, a pretty hybrid, between *C. Fairreanum*, and *C. barbatum*, with pale rose-purple, shading to white, sepals and petals, and a brownish lip, from Messrs. Veitch and Sons; *Ficus lanceolata*, a most beautiful erect-growing species, with lance-shaped, leathery leaves, averaging fifteen inches in length and two in width; and *Pteris serrulata gleichenifolia*, a most elegant variety of this fern, which has already been described in these pages, from Messrs. A. Henderson and Co., Pine Apple Place, Maida Vale, W., and *Adiantum capillus-veneris Admirabile*, and *Scolopendrium vulgare Consummation*, both very pretty, from E. J. Lowe, Esq., Hillfield House, Nottingham. All the above were deservedly awarded first-class certificates. Amongst the new plants shown that received no awards, mention must be made of a very bold, robust-growing variety of *Lomaria gibba*, which will no doubt be much valued for exhibition purposes, exhibited by Mr. Douglass, Loxford Hall, Ilford. At the same meeting, Messrs. Carter and Co., 237 and 238, High Holborn, W.C., exhibited fruit of the *Solanum ciliatum*, which promises to be of immense value for conservatory decoration. The fruit is quite round, averaging an inch in diameter, and is of a very deep red colour. The plants are said to be neat and compact in growth, and well adapted for pot culture.

The competition between Mr. Turner and Messrs. Lane and Sons, for the prizes offered by the Society for nine specimen Ivies was very spirited; the former, however, succeeded in carrying off the first prize with splendid specimens of the leading varieties. Mr. Turner also exhibited a very fine bank of Aucubas, comprising well-berried examples of the best varieties, and Mr. B. S. Williams, Victoria and Paradise Nurseries, Upper Holloway, exhibited a fine variety with yellow berries, which has now retained its character for the last five years. This is a most desirable acquisition because of the striking appearance it has when placed in conjunction with the scarlet-berried varieties.

Prizes were offered for kitchen apples and pears, three dishes of each, and the first prize in both classes was taken by Mr. Turner, who exhibited grand examples of Golden Noble, Blenheim Orange, and Alfriston Apples; and Vicar of Winkfield, Catillac, and Uvedale St. Germain Pears, all of which are first-rate for use at this season of the year. Fine collections in both classes were put up by numerous other exhibitors, but it would take up more room than could well be afforded, to give the names. The varieties staged in all the collections were chiefly the same as those enumerated above. Amongst

the miscellaneous fruit exhibited, occurred a dish of the Fairy Apple, a showy variety of the Siberian Crab, of which it is difficult to say too much. The fruit is rather small, very highly coloured, and as the trees are very productive, a few specimens placed in prominent parts of the shrubbery would have a very beautiful appearance during the summer and autumn.

It will no doubt interest many to know that grapes can be cut from the vine, and kept for several months, with the end of the branch inserted in water. Mr. Cole, the head gardener at Ealing Park, and one of the best grape-growers in the country, keeps a portion of his last crop in this way, and was able, last summer, to send fine plump samples of Lady Downe's Seedling to table as late as the middle of May. Soon after Christmas the bunches are cut with about nine inches of wood below the bunch, and the ends of the branches inserted in bottles filled with water, and suspended in the fruit room, where the berries remain plump until long after the crop in the first house is ready for table. The flavour does not suffer the slightest deterioration because of the wood being placed in water. The advantages of keeping grapes in this way are manifold; but the most important consists in enabling the cultivator to prune the vines before the sap is in active circulation, and avoid the evils arising from the loss of sap, which always occurs when the vines are pruned late. Grapes grown in a ground vinery may also be kept in the same way for a lengthened period. E. G.

THE GARDEN GUIDE FOR FEBRUARY.

FLOWER GARDEN.—The unoccupied beds should be trenched or dug up deeply, and have a liberal dressing of manure. Shallow digging and want of food are the principal causes of such subjects as verbenas and calceolarias failing in dry, hot summers. Any alterations that may be on hand should be completed without delay, for the ordinary routine of garden work will be quite sufficient to occupy the hands and head for the next two months. New turf should be laid down as speedily as possible, to enable it to get rooted before the dry, hot weather is upon us. This is a suitable season for making gravel walks and new box-edgings, as it gives the one time to get consolidated, and the other rooted, before summer. Complete the planting of deciduous trees and shrubs, towards the end of the month, if the weather should be mild and open, unless the situation is low and wet—in that case, it must be deferred until the soil gets into favourable condition.

KITCHEN GARDEN.—Continue to prepare the ground ready for the summer crops, so that there may be no delay in getting each crop in at its proper season. With this object in view, every plot of ground should be manured and dug directly it becomes vacant. It evinces a great want of neatness and order to see whole quarters covered with old stumps of broccoli and winter greens until the

moment they are required for other crops, apart from the injury arising to succeeding crops through the non-pulverization of the soil. Plant chives, garlic, horseradish, Jerusalem artichokes, rhubarb, and shallots, and also propagate perennial herbs by division and offsets. Towards the end of the month, sow in sheltered positions Walcheren broccoli, Brussels sprouts, Early York and Red cabbage, Early Horn carrots, chervil, leeks, lettuce, parsley, long and turnip radishes, Early Ulm savoys, spinach, turnips, and Windsor beans. Plant out autumn-sown cabbage and lettuce, if the soil is in a nice friable condition. Spread seed potatoes out to enable them to form hard purple sprouts by planting time.

FRUIT GARDEN.—The planting and pruning of all kinds of fruit-trees must be finished at once. In nailing wall-trees, use new shreds, and have them long enough to allow plenty of room for the shoots to swell when growing.

GREENHOUSE.—In frosty weather use just sufficient fire to keep the frost out, as the employment of a large amount of fire-heat at that time is injurious to nearly all the greenhouse plants. After two or three damp days, light a fire to warm the pipes, to allow the ventilators to be open, without the temperature being materially lowered, and at the same time set the air in motion, and drive out the stagnant atmosphere, which soon accumulates, without ventilation. A few fuchsias should be started in a genial warmth, to furnish cuttings for growing on for midsummer and autumn flowering. Autumn-struck plants of show and fancy pelargoniums should be potted in five or six-inch pots, without further delay, and they will then make fine plants for conservatory decoration. Camellias should be carefully watered, for, if allowed to get too wet or too dry, they will soon shed their buds. Ferns must be kept rather dry, as they are now at rest, and unable to absorb a large amount of moisture. Tie and train all plants intended for exhibition, whether hard or soft-wooded, if they require it, for there will be little time for this kind of work next month. Look after green-fly, thrip, and mildew. Fumigate with tobacco or tobacco-paper for the two former, and dust with sulphur for the latter. All hard-wooded plants require free ventilation, and soft-wooded kinds to be near the glass, with sufficient air, to prevent their drawing up weakly.

STOVE.—Ixoras, Rondeletias, Allamandas, and Francisceas intended to be cut back should have attention at once. They will break stronger, and the young growth will be more thoroughly matured than would be possible were the pruning left until they get into full growth. Plants of this class must not have more water than is sufficient to keep them in good health. Start Achimenes, Caladiums, and Gloxinias. Good fibry loam, peat, and leaf-mould, in equal quantities, with a sixth part of sharp silver-sand, will grow all these plants to perfection, if they receive good management in other respects. The Caladium pots should be covered with a layer of cocoa-nut refuse, to keep the soil moist without its requiring to be watered. Shake out ornamental-leaved Begonias, and repot in the same compost as above. Do all the watering in the morning.

FORCING.—Vines started last month should have a rise of about

five degrees, and those sufficiently advanced should be disbudded directly the bunches can be discerned, and tied in when necessary. Unless the vines are in flower, maintain a thoroughly moist atmosphere. Figs as they progress in growth must have plenty of moisture at the roots, and be kept well syringed. The temperature should range from 60° to 70° through the day, with a fall of ten degrees at night. Peach and nectarine trees in bloom must have plenty of air to insure the bloom setting. Those started earlier will now require disbudding. Begin with the foreright shoots first, and proceed gradually. Keep the trees regularly syringed, watch closely for mildew after easterly winds, and apply sulphur directly it makes its appearance. See that the inside borders are in a proper state as regards moisture. Cherries and plums must be started very slowly, and have an abundance of air when in bloom; 45° to 50° will be plenty high enough to begin with. Pines in fruit may have a rise of five degrees from last month, if the weather is mild and open; otherwise, let them remain the same. Succession plants must not be excited into growth yet, or they will suffer irreparable injury. Water when necessary, but guard against its getting into the hearts of the plants. Fresh batches of asparagus, seakale, and rhubarb must be put in for succession.

PITS AND FRAMES.—Where the frames are full of bedding plants, draw off the lights during the middle of the day, if the weather is open and dry, otherwise give an abundance of air by tilting the lights at the back. Make up a nice hotbed for propagating purposes, and raising seedlings. Bedding plants must now be propagated largely, as soon as the cuttings can be had, so as to give the plants plenty of time to get strong and well hardened off before the time for turning them out into beds.

TREE FERNS.—It is singular that no mention of the beautiful arborescent Ferns is to be found in the classic authors of antiquity; while reference is made to Bamboos, to the Banyan, or Indian Fig-tree, and to Palms. The first mention of arborescent Ferns is by Oviedo, a Spanish writer, in 1535, in describing the vegetation of Hayti. "Among Ferns," says this traveller, "there are some which I class with trees, because they are as thick and high as Pine trees. They mostly grow among the mountains, and where there is much water." Between the tropics, on the declivities of the Cordilleras, the true region of arborescent Ferns lies between about 3200 and 5350 feet above the level of the sea. They seldom descend lower toward the plains than 1280 feet. The mean temperature of this region is between 64° and 70° Fahr.

EVAPORATION OF WATER FROM PLANTS.—Some researches have recently, according to the *Quarterly Journal of Science*, been undertaken by Von Pattenkofer, on the amount of evaporation which takes place from the foliage of plants. The experiments were made in the case of an oak-tree, and extended over the whole period of its summer growth. He found the amount of evaporation to increase gradually from May to July, and then decrease till October. The number of leaves on the tree was estimated at 751,532, and the total amount of evaporation in the year at 539.06 cubic centimetres of water for the whole area of the leaves. The average amount of rainfall for the same period is only 65 cubic centimetres; the amount of evaporation is thus $8\frac{1}{2}$ times more than that of the rainfall. The excess must be drawn up by the roots from a great depth, and thus prevent the gradual drying of a climate, by restoring to the air the moisture which would otherwise be carried off by the drainage.

NOTICES TO CORRESPONDENTS.

TECOMA JASMINIODES.—*A Two Years' Subscriber.*—The plant in question should be grown in a greenhouse and trained up the rafters. It may either be grown in a large pot or planted out in a border, but it is not suitable for training over a trellis fixed in a pot. The most suitable compost is one consisting of loam, leaf-mould, and peat, with a sprinkling of sand. If the loam is full of fibre the peat can be dispensed with.

PRUNING JASMINUM OFFICINALE.—*A Subscriber.*—The growth should not be clipped back, as you suggest; but instead, thin out all the weakly shoots and fasten the others to the walls. The longest branches may be cut back to about half their length.

PLANTING FLOWER GARDEN.—*Dorset.*—The beds numbered 1, 2, and 6 ought to match, and we should recommend you to plant 1 and 2 with Geranium Flower of Spring, and Verbena Purple King; and 6 with Geranium Mrs. Pollock and Verbena Scarlet King. The bands across the centre of 3 and 4 ought to be the same; and you can employ either the Amaranthus or the Ageratum. A band of the Ageratum and an edging of Amaranthus would be decidedly preferable. A band of yellow calceolarias in each of the beds would also be suitable. In either case the edging of both beds should be alike, but whether it consists of the Golden Feather or the Amaranthus must be left to your discretion. The former will be the most suitable if the latter is employed in the centre. The three corner beds should have an edging of Maugles' Variegated Geranium, and Iresine Herbsti should be left out of the arrangement. The proposed planting of 5 is quite suitable. In planting 7 and 11 put the geraniums in the centre by all means, and unless your soil suits the Viola, we would advise you to edge both the beds with Lobelia speciosa. The other arrangements are quite right. Flower of Spring is much better for edging purposes, and if you have a sufficient stock of Bijou you will do well to employ it in 1 and 2, and the Flower of Spring in 9.

KAINIT.—*M. A. D., Northampton.*—The agent in this country for the genuine "Leopoldshall Kainit," to which allusion was made, is Mr. Meyerstein, 22, Queen-street, London, E.C. There are, we believe, several worthless imitations sold under the name of Kainit, therefore purchasers should be careful in buying this manure.

INDOOR FERNERY.—*M. A. D.*—You will find the desired information in the *FLORAL WORLD* for July, 1869. The "Fern Garden," published by Messrs. Groombridge and Sons, price 3s. 6d., contains a chapter on the construction of indoor ferneries.

LIME.—*M. A. D.*—Spread the lime over the surface of the ground and dig or plough it in as quickly as possible.

J. S.—You must prune all the shoots before vegetation becomes active, or the vines will suffer severely from loss of sap. No advantage would result from pruning in the manner proposed in your letter.

H. G.—No doubt the soil of your garden is congenial to roses upon the stock mentioned, and therefore you have nothing to fear.

MEALY BUG.—*P. S.*—Wash the plants thoroughly with a solution of Gishurst Compound, prepared according to the directions accompanying it. The vines, after the loose bark has been removed, and the canes well washed with the solution, should be painted with a second solution of the compound, to which a small proportion of sulphur, soot, and clay has been added to give it consistency. In preparing the Compound, adhere strictly to the directions, because if used too strong it will injure the plants.

ORNAMENTAL-LEAVED BEGONIAS.—*J. R. N.*—The following are very distinct and beautiful, and require the same treatment as *Begonia Rex*, namely: Comte Alfred de Limminghe, Marshalli, Charles Wagner, Queen of England, Keramis, Splendida Argentea. Could you oblige us with a few details with your name attached? They would be very acceptable to many readers who have only the convenience of a window for plant-growing.

DISEASED PELARGONIUMS.—*M. A. L.*—The soil in which the pelargoniums are grown has become sour, probably through the pots being imperfectly drained.

An Edinburgh Subscriber is informed that the prices can generally be obtained by application to the leading nurserymen.

S. K.—The chimney probably requires lengthening; a higher chimney fitted with a "mushroom" top would most likely prevent the down draught putting out the gas.

Mrs. S. P., Pembroke, is informed that the plant is *Acacia pubescens*, and can be procured at all the leading nurseries. The Americans cook the dry maize in a wire cage placed over a clear fire. The cage is similar in shape to an ordinary fire-shovel, but rather deeper. We cannot say whether the cage can be obtained in this country or not.

NAME OF PLANT.—*A Subscriber*.—We cannot undertake to name plants from leaves only.

CACTI CULTURE.—*Amateur*.—See the FLORAL WORLD for October, 1869. The other plants mentioned should be pruned slightly to prevent them becoming unsightly. The first series can still be had.

WALTONIAN CASE.—*R. S.*—Possibly the cuttings perished through improper management. One lamp ought to be quite sufficient. Geranium cuttings ought not to be struck in a closed case. Try the case again towards the end of the month. Joyce's Stove is the one we should recommend for your purpose.

J. F.—The high priced case is worth the extra cost. It is very simple and thoroughly effective. The weekly cost of working would not be much. Both are good cases.

A New Subscriber.—The plants should be repotted annually in the autumn. You cannot grow potatoes in a warm, dark cellar, but you may seakale and rhubarb.

FROZEN PLANTS.—*A Lady Gardener* is informed that it is quite too late now to do anything for the plants that were frozen. Should she be caught again, and the frost gets in, she must put mats over the glass, or adopt some other means to darken the house, and keep the temperature as near 32° as possible for at least a day, and then let it rise very gradually. But we cannot recommend syringing frozen plants with cold water, having seen it followed by the death of valuable plants that probably would have survived if thawed gently, and in the dark. Such things as hyacinths and tulips do not take much harm from a few degrees of frost.

POINSETTIA PULCHERRIMA.—*Ignoramus*.—This beautiful shrub is easily grown if it can have stove heat, but in a cool house comes to no good. The soil should consist of turfy loam, peat, leaf-mould, dung rotted to powder, and sharp sand, equal parts. If the cuttings are struck too early, the plants are apt to grow leggy, but if too late, they may not bloom as early as required, and they are usually required at Christmas. It is a good plan to keep a few old plants to cut from at Christmas, as the green leaves and scarlet bracts are of great value in dressing vases, etc., etc. To make nice young plants, take cuttings in March, and dib them into pans filled with sand, and place on a heat of 70°. Keep them rather dryer than cuttings are usually kept when in heat, but do not let them flag. When rooted, pot them in small pots, and put on the tank or tan bed again. Shift as required. Strike a few more in May, July, and August. Summer temperature 65° to 90°; winter temperature 49° to 50°, and the plants then to be rather dry.

SALTING ASPARAGUS BEDS.—*J. W.*—Asparagus may be poisoned by the excessive use of salt, as any other plant may, yet it will bear salting to a great extent without injury; and within a certain mark, salt is highly beneficial. The best mode of using salt is to sprinkle the surface of the bed every fortnight, merely applying sufficient to make a perceptibly white coating, commencing in the last week of March, and continuing the applications till the last week in July. If alternately with the saltings liquid manure can be applied, the growth will be much more satisfactory; indeed, it is by combining the two agents that the "giant" asparagus is grown for Covent Garden Market. Some cultivators apply a heavy coating of salt in March, and give no more till the stems are cut down in autumn; but this is an objectionable plan, because the plant has more salt than it can appropriate in the early period of growth, and scarcely any when it is in full vigour, and engaged in forming the embryo buds that are to furnish shoots for the next season. Where it is not possible to apply a thin sprinkling of salt every alternate week throughout the growing season, the system of heavy dressing in the month of March must be adopted, and the quantity applied should be at the rate of twenty-four bushels per acre.



EMBROIDERY BEDDING.

(With a Coloured Illustration.)

It is so common for critics of horticultural affairs to cry for novelties, that we must offer them enthusiastic congratulations on the inauguration of a new idea in bedding, the tone and purpose of which are fairly represented in the accompanying illustration. They have travelled from Dan to Beersheba, to find the land barren of ideas, though fruitful enough in geraniums, verbenas, and petunias, all disposed in accordance with the several degrees of good and bad taste that have prevailed for half-a-century. At last, after an infinity of grumbling, the accustomed flowers are superseded by leaves; and, in place of dots of colour of the primary class, with gaps of unclothed ground between, we have sheets of colour of the secondary and tertiary classes quite covering the ground, and bearing such a general resemblance to embroidery as to justify the name by which this system is to be henceforth known. Hitherto the best examples of the new system have been developed in the vicinity of the metropolis. The displays of embroidery in the "Subtropical Garden" at Battersea Park last season were remarkably rich and tasteful, and as meritorious for originality of design as for the splendour of the effect produced. A much less extensive, but, as regards colouring, equally artistic and effective, display was made in the nursery of Mr. John Fraser, Lea Bridge Road—the planting and general effect of which are faithfully reproduced in the illustration.

So many subjects press for attention now, that we must beg permission to deal with this subject more briefly than its importance deserves. Fortunately, however, there are but two important points that imperatively demand notice in connection with its leading features. The first of these is, that leaf-colours only are admissible—if flowering plants are employed, their heads of flower-buds must be nipped out as soon as they appear; for flowers of any kind, unless they happen to be quite inconspicuous, or are so profusely produced as to entirely hide their green leaves, only mar instead of heightening the harmony of the effect, which depends on breadths of solid unmixed colour, which flowering plants are quite incapable of producing. Thus, if we were to plant verbenas in one of the compartments of a scheme intended for embroidery, we should first have a thin field of green leaves, then dottings of colour upon it; and there is no possibility of ordering the matter otherwise—a mixed effect must be the result. On the other hand, by employing leaf-colours only, we secure oneness of effect in every line or block, and the colouring is the same from first to last, except as to intensity; and of course the utmost intensity occurs coincidentally with the complete development of the plants. In other words, the affair is in its best trim when the materials of which it is composed have acquired a free growth, and have quite covered the ground, and are still fresh and bright with health and their initial vigour. Another

point of importance is, that schemes of this kind require the neatest finishing; and for that reason difficult curves and angles should be avoided, because of the risk that the summer's growth may destroy their proper contour. It is not absolutely necessary to finish the boundaries with raised edges planted with *echeverias* or *sempervivums*, as for the most part has hitherto been done; but it is unquestionably a most artistic mode of procedure, and those who can do it should adopt the plan until they, or other fortunate people, shall discover something better. In the example before us, the edge of the embroidery stands up square and firm above the general surface of the ground, and is planted with two plants of the house-leek family, the result being a sharp line of glaucous-tinted rosettes, which no other edging hitherto tried can equal for beauty and completeness. The sharp edge is obtained by setting up planks on edge to mark the boundary, and forming against the inner side of the planks a brick-like line of earth by the process known to gardeners under the designation of "slopping in." We may be the better understood, perhaps, if we say that the edge of the bed is moulded to a firm, straight, square line by soaking the soil with water, and then pressing it in the form of mud against the board. When the work has acquired consistency, the planks are removed, and the edge is planted by scooping out holes for the plants, and inserting them just as they are taken out of small pots, without breaking the ball of soil.

As remarked above, the principal furniture for an embroidery scheme must be of leaf colours. Perhaps a few such plants as the "pumila" section of *Lobelias* might be used; but our advice to all is, to employ no flowering-plant at all for a display until it has been first tried in some obscure, out-of-the-way place experimentally. The colourist who will be content to begin with a few of the most easily-managed and strikingly characteristic of leaf plants will find it quite an easy task to produce a sumptuous display on this system. It is, in fact, a far easier matter to produce a successful result by leaf colours than with flowering-plants, for all the plants are amenable to the simplest treatment, and they produce their proper effect of colour (though, of course, not in proper intensity) on the very day that they are planted; whereas with flowering-plants the proper effect must be waited for, and if the season is unfavourable it may never be produced. Moreover, as the majority of the very best plants for the purpose are nearly hardy, and can be quickly raised from seed, this is a comparatively inexpensive system, and therefore makes a double claim for attention and appreciation on all who are in any way concerned about the colouring of the parterre. Amongst the more useful plants for leaf-colouring in embroidery, we may mention *Amaranthuses*, *Alternantheras*, *Perillas*, *Centaureas*, *Cinerarias*, the Golden Feather *Pyrethrum*, *Cerastiums*, *Coleus*, *Iresines*, *Sempervivums*, and *Echeverias*. The scheme represented in the illustration requires a border of about seven feet, and should be elevated about six inches above the level of the grass verge. The outside edging on the face of the raised edge was formed of *Sempervivum californicum*, and above it, on the edge of the flat, was a row

of *Echeveria glauca*. Next this was a solid line of Golden Feather, continued back in circles and arches, to mark out the principal lines of the pattern of the embroidery. In the centre of every circle was a plant of *Echeveria metallica*, surrounded with *Alternanthera amœna* and *Alternanthera amabilis*. In the front of each of the arches or semicircles were rows of *Amaranthus bicolor*, backed with two rows of *Amaranthus melancholicus*; and then proceeding towards the back, one row each *Centaurea ragusina*, *Iresine Lindenii*, *Coleus Verschaffeltii*, and *Cineraria maritima*. A hedge of *Arbor-vitæ* forms the boundary in the rear.

S. H.

MELONS.

BY GEORGE GRAY,

Head Gardener, Norbiton Hall, Kingston-on-Thames.



MELONS are supposed to be difficult to cultivate, because they cannot be brought round, when they have suffered from neglect or bad treatment, so quickly, if at all, as cucumbers and a few other things that could be mentioned. In reality, by attending to the plants at the right moment, it will be found that the difference in the amount of skill required to produce a crop of melons and a crop of cucumbers is by no means great. Having had considerable experience in melon-growing, both for market purposes and home use, and knowing the difficulties the young professional and the amateur horticulturist have to encounter, I have ventured to send a few notes on the subject. Before dealing with the details, it will be well to remark that they can be grown in either houses or pits heated with water, or in frames heated with or without fermenting materials. It, however, is only the late summer crop that can be cultivated without the assistance of artificial heat. When grown in houses, they should be trained to a trellis fixed at a distance of about twelve inches from the glass, and the fruit supported, to prevent an undue strain upon the vines. When grown in pits, they can be either trained to a trellis, or over the surface of the bed; but, when ordinary wooden frames, or "boxes," are employed, the latter is the most desirable method of training.

Let us first deal with growing them in houses; and, in doing so, it is necessary to state that the stock with which the house is to be planted should be raised in it. It is a very serious error, although very popular, to suppose that plants raised in the close, moist atmosphere of a dung-bed are suitable for planting in houses heated with hot water. The atmosphere of the house is too dry for them; and, although direct failure does not ensue, much time is lost. Indeed, without great care, the dry atmosphere will cause the leaves to curl up and perish; and, without a slight shade in bright weather, they will be completely burnt up. On the other hand, plants raised in

the house grow up and become accustomed to the somewhat dry atmosphere, and are consequently better able to battle with its uncongeniality. It is a most excellent plan to sow the seed singly in small 60-size pots, filled about half full of soil, and then to earth up the young plants until the pots are filled. It is very important not to keep the plants starving in pots, and everything should be in readiness for their being planted by the time the leader is fairly formed. The early crops must have the assistance of a genial bottom-heat, which can be supplied either by hot-water pipes along the bottom of the bed, or by fermenting materials. If fermenting materials are employed, they should be put in the bed before the seed is sown, to afford time for the bed to become thoroughly sweet and consolidated by the time the plants are ready for turning out.

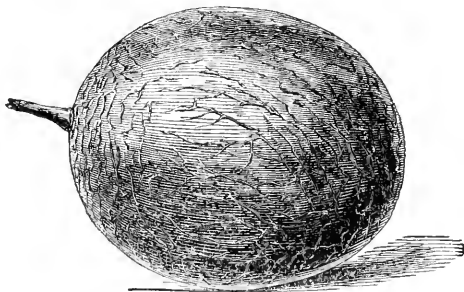
Prepare the compost by mixing a small portion of leaf-mould with sound turfy loam, just to keep it open. Manure must not be employed, as it encourages an over-luxuriant growth, and renders the plants liable to be attacked with canker, which is one of the worst enemies the melon has to contend with. When prepared, put the compost in a ridge of about fifteen inches in thickness, and about twenty inches in width, down the centre of the beds, and beat it very firm with the back of the spade. Plant when the soil has become nicely warmed; and, if the heat of the fermenting material exceeds, or is likely to exceed, 90°, lay a few strips of turf under the ridge, to prevent the possibility of the roots being injured by the heat. In a few weeks the roots will penetrate to the outside of the ridge, and then put about six or nine inches of soil, of the same temperature as that of the house, on each side; and repeat the operation as required, until the space allotted to the bed is filled.

Each plant must be trained up with a single shoot, and supported with a neat stake, until the trellis is reached; then nip out the point of each, and train the side-shoots regularly over the trellis, to afford each an equal amount of space. Allow each shoot to extend to the limits of the trellis, and then stop it. This will cause the production of laterals, most of which will show one or more fruit. If the trellis is likely to become over-crowded, thin out a few of the weakest laterals, reserving the final thinning until the fruit is set; but a large amount of growth must not be removed at one time. In fine, open weather in the summer, the flowers will generally become fertilized by insect agency; but, as a rule, the safest plan is to fertilize them artificially, by taking off the male blossom, and dusting the pollen on to the stigma of the fruit-bearing flower. The bed must have a thorough soaking of water just before the principal portion of the fertile flowers expand, and then no more must be applied until the fruit has attained the size of a small hen's egg, or they will turn yellow and fall off.

Ventilate freely whenever the air can be admitted without exposing the plants to cold draughts, which are most injurious, and at other times only admit sufficient air to maintain a pure atmosphere. Shut up early, and syringe the foliage with tepid water to keep free from red spider and thrips, and to maintain a healthy growth. A few cans of water should be thrown on the paths two or three times

a day, as time will permit, in dry hot weather, and also syringe in the morning, as well as in the afternoon, during the summer months. Syringing in the morning must be done early enough to admit of the foliage becoming dry before the sun shines upon it, because if the sun is allowed to act upon it when wet it will be severely injured. Syringing must be discontinued during the period stated for withholding the water, and also as soon as the fruit has reached its full size. If continued after the above-mentioned period, the fruit will crack, and of course be quite worthless.

When cultivated in ordinary wooden frames, it is necessary to have the fermenting materials well sweetened. A mixture of stable manure and leaves is better than all manure, as the heat is steadier and lasts much longer. The fermenting materials should be turned over several times, and watered if it appears likely to heat dry. The bed should be about three feet in thickness, and a little larger each way than the frame; and in making up must be beaten very firm with the fork, and also sprinkled with water, unless the materials are



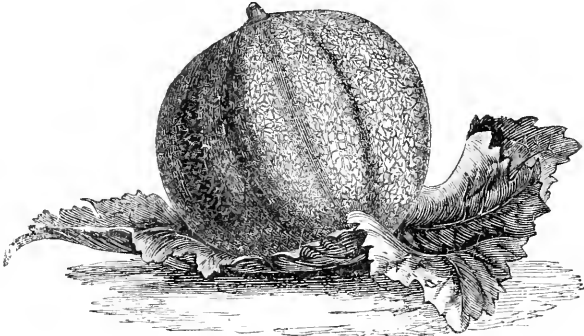
GILBERT'S IMPROVED VICTORY OF BATH.

very moist. Place the frame upon the bed, and put sufficient inside to raise the bed about nine inches when well trodden. Put the lights on, and tilt them at the back sufficiently to enable all noxious exhalations that rise from the manure to escape. In two or three days cover the whole surface with a thin layer of loam, and place a hillock of soil in the centre of each light, with a layer of turf underneath for the purposes stated above. In a few days the plants can be put out, one or two to each light, according to its size. Make one or two holes in the centre of each hillock just large enough to receive the pots, then turn the plants out, drop them in their places, press the soil firm about them, and water liberally to settle the soil. Then keep close for a few days, and shade lightly.

Stop the plants when they have four or five joints each, train out the side-shoots regularly over the bed, and stop them just before they reach the side of the frame, and deal with them as advised for managing them in the houses. Here let me state that the young growth, after the laterals are produced from the side-shoots, must be well thinned out, both in frames and houses, to prevent overcrowding. When the frame or trellis is filled with healthy growth

and the fruit set, the young shoots that are produced afterwards, unless specially required, should be removed with the finger and thumb as soon as they are two or three inches in length. In removing full-grown leaves, which will be necessary occasionally, pinch them off just under the blade, and leave the leaf-stalk, for when the latter is cut off at its base the stem frequently cankers and perishes. The laterals which have to carry fruit must not be stopped at all, whether in frames or houses. Fruit in frames must be elevated above the foliage by means of flower-pots turned bottom upwards. Syringing, watering, earthing up, and other details, must be carried out in the manner advised for the management of the plants in the houses.

I have frequently grown good crops in frames that are usually occupied with bedding plants during the winter, without any artificial heat at all. A few plants are put in eight-inch pots in April, and grown on in one of the houses, and the necessary steps taken to insure their being well hardened off by planting-time. Then, im-



COX'S GOLDEN GEM.

mediately the bedders are removed, two or three barrowfuls of the leaves or tan upon which they were placed is taken out from the centre of each light, and replaced with soil, prepared as advised for the houses. The frames are closed early in the afternoon to economize the sun-heat, and the plants syringed at the same time, excepting when the fruit is setting and after it has nearly reached its full size. It is important to give plenty of air when the fruit is setting, and in warm weather the lights may be drawn off for a few hours in the middle of the day. In all other respects the treatment should be the same as advised for frames where fermenting materials are employed.

As it requires from three to four months from the time of sowing the seed until the fruit reaches maturity, the cultivator must shape his course accordingly. For the early crops, when heat is maintained by artificial means, the temperature should range from 70° to 75°; but with sun-heat it may go up to 85° or 90° with plenty of air. The beds must not be kept in a constantly saturated state, but moist

enough to maintain a healthy growth. Watering must not be neglected until the soil is dust-dry, or the fruit will split when the bed is watered.

Four sorts are quite sufficient for an ordinary-sized garden. Probably the two best green-fleshed varieties in cultivation are Cox's *Golden Gem* and Gilbert's *Improved Victory of Bath*, now being sent out by Messrs. J. Carter and Co., of High Holborn. The former was raised by Mr. Cox, gardener to Earl Beauchamp, Madresfield Court, and the latter by Mr. Gilbert, gardener to the Marquis of Exeter, Burghley. Both are robust in constitution, free setters, and the fruit, which is of a large size, is very handsome in appearance and most excellent in flavour. There are several other good sorts, but with the above no other will be required. The best scarlet-fleshed varieties are *Mulvern Hall* and Turner's *Scarlet Gem*. As a rule green-fleshed melons have the finest flavour.

THE BEGINNER IN GRAPE-GROWING.—No. III.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.

VINERIES AND VINE BORDERS.



BUILDING a vinery without having a properly-prepared border for the reception of the vines may be put down as so much money wasted, excepting so far as the house is useful for wintering bedding plants. A "properly-prepared border" is not an extravagant affair, yet it is the rock upon which so many grape-growers founder. I could name dozens of gardens where the proprietors have built handsome and roomy houses, and have incurred a large outlay in the purchase of vines to plant them with, but directly the purchase of soil was mooted they buttoned up their pockets, and refused sufficient means to make the borders in a satisfactory manner. But I will refrain, as it would serve no useful purposes.

We will first speak of the vinery, of which it is not necessary to say much, because so much depends upon the means at disposal. As these notes are written entirely for amateurs, who naturally are anxious to be as economical as possible, I have selected for illustrating them some designs of "Paxton" vineries, erected in various parts of the country by Messrs. Hereman and Morton, 14, Tichborne Street, Regent Quadrant, London, who possess the exclusive right of manufacturing them. The cheapness, portability, and general excellence of these houses have been already described in these pages, therefore it is not necessary to enlarge upon their merits. It appears, however, desirable to state that the manufacture of Paxtonians is not confined to the plain forms here illustrated, which have been selected simply for their cheapness and utility, but can be had in the most artistic designs. For very early, or for very late work, lean-to

houses of a sharp pitch, as illustrated in Figs. 1 and 2, are the best forms that could be adopted. A much steadier heat can be maintained in a lean-to house than in a span-roof during the winter and early spring months, and late grapes keep better in them. Why

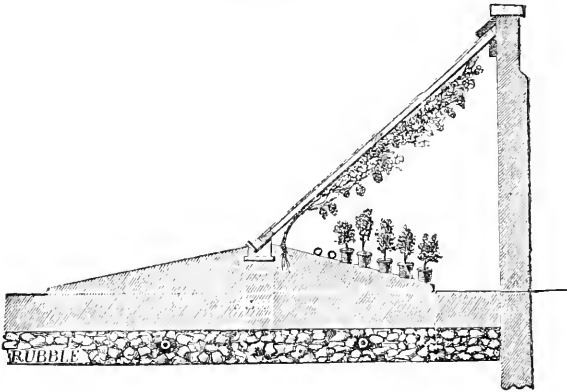


FIG. 1.—SECTION OF EARLY OR LATE VINERY.

this is so could be readily explained, but it would take up more space than can be well afforded, and for all practical purposes it is sufficient to put on record that such is the fact. The advantages of span-roofed houses over lean-to's consists in their being cheaper in proportion to their capacity. For instance, the same quantity of grapes may be grown in a span-roof house fifty feet long as in a

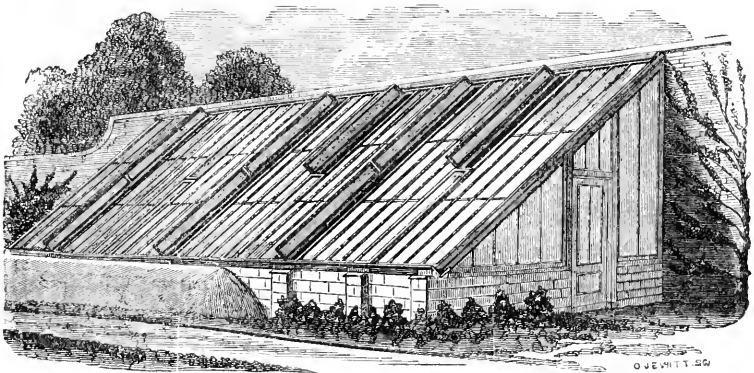


FIG. 2.—VIEW OF EARLY OR LATE VINERY.

lean-to double that length. Supposing the length of the roof to be the same in both cases, the expense of the back wall would be entirely saved, as the cost of the wood-work, glass, front walls, and heating apparatus would be the same for either lean-to or span. In

building lean-to-houses for early work, it is essential that the roof should have a sharp pitch like that shown in Figs. 1 and 2, because such a powerful fire is not required to keep up the proper temperature during a severe frost. The sun also shines more directly upon the roof during the short days, and the vines derive the fullest possible benefit from its rays. For the late summer and autumn crops a flatter roof is desirable.

In building span-roof houses, with roofs from twelve to sixteen feet in length, the walls must be stronger than those required for lean-to's, as the strain upon them is much greater. The ends should also face due north and south, although a slight deviation from that rule will not matter much. The roofs should have a sharper pitch than those of a smaller size. Fig. 3 is a fair example of the angle

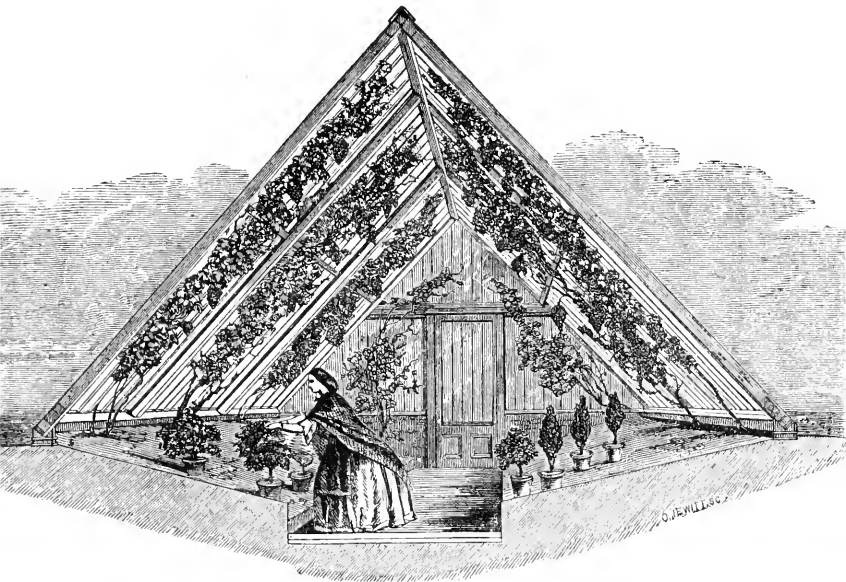


FIG. 3.—SPAN-ROOF VINERY FOR SUMMER AND AUTUMN.

at which they should be fixed. Front lights are not required for any of the houses, although there is no objection to their employment where the cost of the structure is of secondary consideration. It is, however, necessary in the case of houses ventilated at the top to have ventilators at the front, and for this purpose, small wooden shutters in the front wall will answer every purpose. The lights ought not to rest upon the border, as shown in the accompanying sketches, because it renders it extremely inconvenient to thin the branches at the lower part of the vines, and also to attend to the vines. The front walls, or walls and front lights combined, ought

to be about three feet in height, and they should be arched to enable the roots of the vines to extend to the outside border.

Heating must now engage our attention. The early houses must be heated efficiently, and lean-to houses like Figs. 1 and 2, twelve feet wide, and the same in height, ought to have not less than six rows of four-inch pipes, four rows along the front where the two are shown, and two next the wall at the back. Second early houses should have not less than four rows, and all others two. There will be no harm in having more pipes than here advised, because they will not require to be made so hot to maintain the desired temperature. It will be false economy to fix less pipes than here advised, as a stronger fire will be required to maintain the desired temperature, and the heat will not be so congenial. Span-roof houses, double the width of lean-to's, will require rather more than double the quantity of piping, because they are more exposed to the north and easterly winds. The pipes should be supported on pillars of brickwork that rest upon the concrete at the bottom of the border, or when the border sinks they will become displaced, the joints leak, and the rapid circulation of the water be impeded. During the erection of the houses active preparation of the materials for making the vine border should be going on. Where the border is to be entirely below the surface, the soil must be taken out to a depth of four feet, and the foundation of the walls should be rather below that, so that they are not interfered with in making the border. The bottom of the borders should be perfectly hard and unbroken, and for span-roof houses slope in the manner shown in Fig. 4, with drains at D, D, D,

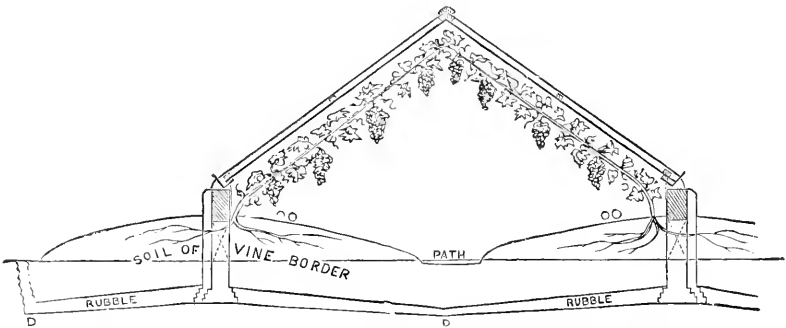


FIG. 4.—SECTION OF SPAN-ROOF VINERY (to show slope of border).

to carry off the water quickly; but the borders of lean-to houses should have a uniform slope from the back wall to the other side of the border, at the rate of half an inch to the foot. Inside the house, the surface of the borders must be perfectly level, for with the slopes shown in the illustrations it would be a work of difficulty, if not impossible, to water them properly. The water would run off as fast as it was poured on, and a very small quantity indeed would soak into the soil. If from any cause it is considered desirable to elevate the surface of the inside border above the level of the path,

a nine-inch wall, with a neat coping, set in cement, should be erected to keep the soil in its place. A wooden trellis, laid on the surface of the border is, perhaps, the most desirable path for houses exclusively devoted to grape-growing. The surface of outside borders should have a slope of two inches to the foot to carry off heavy rains quickly. The whole of the inside border, and three feet of the outside portion, should be made when the house is erected, and then it can be increased in width by the addition of three feet every second or third year; but the borders of houses, twelve feet wide, will not require the first addition until about the fourth year.

Concrete for the bottom of the border, to prevent the roots striking down into the subsoil, should be prepared by mixing gravel and hot-slaked lime together until it is of the consistency of mortar. It should be spread over the surface, about three or four inches in thickness, and sufficient time allowed for it to become hardened before the drainage is put upon it. Before the rubble, which should be about nine inches in thickness, is put in, a drain formed of ordinary tiles must be laid down in the lowest position to carry off all the water that collects in the bottom, and it must of course be connected with one of the main drains of the garden, unless the subsoil is of a gravelly nature, and then a dry well, at a distance of about twenty yards from the border, will suffice for receiving the surplus water.

In the preparation of the compost for forming the borders, it must be borne in mind that vines require a soil that will not run together in a close unctuous mass, but remain open and pervious to moisture at all times. Hence, the loam selected, should be taken from the surface, say to a depth of about four inches, of common or pasture land, so that it has a fair proportion of fibrous matter in its composition. To secure a thoroughly open compost, and one most suited to the production of good crops of grapes, add to every eight loads of loam, two loads of brick-rubbish, one of horse-droppings, and 250 lb. of inch bones. If the soil is of a rather tenacious nature, two loads of burnt clay should be added, and only one load of brick-rubbish used. Bones, besides being of immense service in furnishing the vines with food for several years after they are put in the border, materially assist in keeping it open. They are rather expensive, costing at the present time about £7 a ton, but they will more than repay their cost. Chop the loam up roughly, and well mix the other ingredients with it, and in filling in to a depth of three feet, tread the soil rather firm. Before filling the border, cover the drainage with a thinly cut turf, to prevent the fine soil running down between the stones and brickbats. The planting must be left until next month, as these notes have extended to too great a length to admit of that part of the subject having justice done to it without taking up more space than can be well afforded.

(In my last chapter, read in the eleventh line from the top of page 52, "to hand," instead of "too hard.")

GLEANINGS FROM CATALOGUES.

BY W. D. PRIOR, ESQ.



HERE are few more useful subjects connected with the literature of the garden than good catalogues. As these are at present arranged by the first-class firms, they are not merely lists of names, but contain a considerable amount of interesting and scientific information, as well as many valuable cultural directions. I have some for the present season now before me which suggest so many important considerations upon horticultural operations, present and to come, as to appear worthy of being placed before the readers of the FLORAL WORLD.

Lack of variety in the subjects used for the summer beds has long been felt to be a great defect, inasmuch as there are but few comparatively amongst first-class flowers that combine that union of qualities which the exigencies of the case demand. Flowers used for beds and borders, on the system of colour-planting which generally prevails, should be dwarf, compact, continuous in bloom, able to withstand uninjured equally the effects of sun or rain. Their colours, whatever the hue, ought to possess brilliancy in the highest degree. Moreover, simplicity, and readiness of propagation, and moderate cost must be added to their other qualifications. How many of the higher order of perennial varieties possess these features? Still fewer are the instances to be found amongst the annuals. Hence every novelty in this line deserves a comprehensive trial. Happy the hybridizer or raiser who succeeds in producing a really meritorious addition to the lists. Let him deservedly obtain hosts of customers, and be able to place a goodly balance to his credit at the bank.

Amongst select plants for outdoor purposes, the following appear deserving general attention:—

Centaurea Clementii, centres or edges of large groups, two to three feet high; silver grey, like other *Centaureas*; plume-like and downy.

Dicentra chrysantha (*Dielytra*), erect grape-like gold-coloured flowers; blooms in autumn.

Delphinium consolida flore-pleno candelabrum, a new dwarf race of larkspur, scarcely one foot in height; its name derived from throwing out curved branches like a candelabrum; mixed colours.

Mignonette, *Parson's White*, almost pure white; spikes six or seven inches in length. Another *mignonette* of great value is

Reseda odorata grandiflora ameliorata, pyramidal form; one to two and a half feet high; spikes reddish tint; suitable for pots, and grows quite a shrub in open ground.

Solanum hybridum, *Wetherill's New Hybrids*; produces plentifully orange-red berries during winter; a dinner-table plant.

Statice spicata, dwarf and spreading, elegant foliage, free flowers of lovely rose colour; beds or pots.

Viola lutea grandiflora, bedder; hardy, free-blooming; if sown in

a cold frame or greenhouse, and transplanted, soon grows and flowers freely.

Zinnia elegans, double white, valuable for cut flowers; nearly always true.

The price of these, according to the catalogue of a first-class house, varies from 1s. to 2s. 6d. per packet.

Besides the above, there are three varieties of *Celosia* worthy of attention, viz. :—

Celosia atrovioleacea pyramidalis, three to four feet high, furnished to the ground with branches and spikes of bright purple flowers, eight to nine inches long.

Celosia nana aurantiaca pyramidalis, dwarf species from Cochin China, one to one and a half feet; foliage light green and branching, every shoot terminating with a spike or plume of rich fawn colour.

Celosia pyramidalis versicolor, var. *hybrida foliis atrobrunneis*.

These *Celosias* are splendid for the greenhouse or conservatory in autumn.

Leptosiphon roseus, elegant new dwarf annual; flowers bright rose; height three inches.

Nemophila elegans, dwarf, free centre pure white, edged with dark chocolate.

Sweet Pea, *Invincible*, scarlet; glorious for a fence or mound.

Pyrethrum, *Golden Feather*, invaluable plant for edgings; greenish golden yellow.

Sanvitalia flore-pleno, bedder, bright golden yellow.

Tropaeolum compactum, Tom Thumb; dwarf bedder; various shades yellow and orange. *Crystal Palace Gem*, sulphur and maroon, dwarf. *Grandiflorum Brilliant*, climber. *Lobbianum*, var. *Lucifer*, bright scarlet, metallic leaves.

ORNAMENTAL GRASSES.

Arundo donax, variegata, Arundo conspicua.

Gynerium argenteum (Pampas grass) There are three varieties—the Common, with silvery panicles; the “Rosy,” with purplish-red panicles; the “Variegated,” with elegant striped leaves.

Avena sterilis, “Animated Oats.”

NEW BORECOLES WITH ORNAMENTED FOLIAGE.

Triple-curved Variegated perennial borecole, for pots, or ornamental shrub for the open ground; foliage a brilliant melange of purple, green, white, mauve, olive, and yellow.

Improved ditto, similar to the above. To keep them dwarf and compact, sow thinly in poorish soil in May; transfer at any time to winter garden.

FOLIAGE BEDDERS.

One of the most elegant and effective improvements in outdoor gardening that has been made for many years is the adoption of foliage plants as a means for ornament. There is a chaste beauty in the subdued tones of these plants highly satisfactory to the artistic eye, and in many cases their forms are so striking as to lend a finish

to certain situations which no other class of vegetable objects could supply. We will point out a few :—

Amaranthus bicolor ruber, bedder ; foliage plant ; bright fiery red, passing to dark bronze at the margin, sometimes tipped with yellow ; described as one of the most striking of its line known.

Amaranthus melancholicus ruber, very beautiful, and one of the most handsome of foliage bedders that can be raised from seed.

Beta cicla Braziliensis, bedder ; crimson leaves and golden stalks.

CANNAS.

Cannas are invaluable, and the following are all good :—

C. annei, *C. marginata*, *C. Bihorellii*, good dwarf for small gardens ; *C. coccinea vera*, *C. discolor*, *C. floribunda*, *C. elegantissima*, *C. grandis*, *C. gigantea*, *C. indica superba*, *C. musæfolia hybrida*, foliage silvery shading ; *C. Peruviana*, *C. P. nova*, *C. purpurea*, *C. spectabilis magnifica*, *C. Warcewicsii zebrina*, and *C. zebrina elegantissima*, striped.

Carduus (Scotch thistle), *acanthoides*, *benedictus*, *marianus*, *nigrescens*, remarkable for form.

Centaureas (silvery foliage), *ragusina compacta*, *Clementii*.

Cineraria maritima and *C. platanifolia*, silvery plants.

Chamærops humilis, a most elegant hardy palm.

Coleus (many varieties, of coloured and edged leaves, some of them almost rivalling the *anæctochili* in effect), *mollis*, *scutellaroides purpurea* (dark purple), *Verschaffeltii*, are invaluable.

Echeveria metallica, very bold, curious, and handsome.

Humea elegans, most charmingly elegant ; may be called a "grass," though it is not one.

Oxalis corniculata rubra, fine edging plant ; deep chocolate.

Perilla nankinensis, a good poor man's plant, being cheap and easily grown.

Ricinus, of various kinds, all remarkable in foliage ; grand objects in suitable positions. May be sown where they are to remain, in the month of May.

Wigandia caracasana, foliage picturesque sombre green ; noble habit, some of the leaves being three feet long by two feet broad, richly veined and undulated ; the stem has a crimson pilose covering.

In the selection we have thus given will be found the *materiel* for an almost endless variety of combinations for beds, for borders, or the subtropical garden. To attempt to give a detailed course of treatment for each would be to swell this paper to an inordinate length, and run the risk of being charged with unnecessary tautology, their culture having been so exhaustively treated, from time to time, in these pages. It will have sufficed to have called the timely attention of floriculturists to their broad character—a "word in season, how good it is!"—because seeds should be sown as early as conditions permit. It is not a light labour to wade through catalogues, and make anything like a varied and comprehensive selection therefrom. It is hoped the above will prove useful and acceptable.

BEDDERS AND BEDDING.—No. II.

BY A HEAD GARDENER.

SELECT BEDDERS FOR ALL PURPOSES.



DIRECTIONS were given last month for the preparation of the propagating pit, etc., etc., and provided they were acted upon, everything will now be in readiness for commencing the propagation of the stock in earnest. There is now no time to lose, and I will proceed at once to indicate a few of the best and most distinct in their respective classes for gardens of limited dimensions.

We will commence with

FLOWERING PLANTS.

AGERATUMS.—The three best are *Tom Thumb*, *Imperial Dwarf*, and *Prince Alfred*, the heights of which average four, eight, and fifteen inches respectively, and are very neat in growth. The flowers are all of the same delicate lavender-blue hue. They can be either raised from seeds or cuttings, but the seed must be sown immediately.

CALCEOLARIAS.—The most valuable of all the yellow varieties is *Golden Gem*. *Gaines's Yellow* and *Yellow Prince of Orange* are both good, but inferior to it. The best of the brown sorts is *Brown Prince*, but it is not effective enough for bedding purposes. Very little can be done in propagating calceolarias in the spring, unless a few plants were taken up and potted in the autumn, as the young stock cannot be placed in heat and forced into growth for the purpose of supplying cuttings in the same way as verbenas and petunias.

HELIOTROPIUMS.—The best of these are *Etoile de Marseilles*, *Jersey Beauty*, and *Miss Nightingale*, all of which have very dark flowers, combined with a compact habit.

LOBELIAS.—The best of the strong-growing varieties of *L. erinus*, of which the well-known *Speciosa* may be taken as a type, are *Blue King*, blue; *Indigo Blue*, deep blue; *Speciosa spectabilis*, very dark blue; and *Trentham Blue*, bright blue, with white eye. *Pumila grandiflora*, azure blue, is the best of that section; it is very compact in growth, and a most profuse bloomer. All the above can be raised from seed, which can be obtained from any of the leading seedsmen. The seedlings will not, however, be so regular in growth as those from cuttings, and the flowers will also vary slightly in hue.

PELARGONIUMS, ZONAL.—A vast improvement has been effected in these useful bedders within the last three or four years, yet many flower gardeners still propagate and grow *Tom Thumb* and *Trentham Scarlet* just the same as if there were no better sorts in cultivation. The following are the best of those obtainable at a cheap rate, namely, **SCARLET**, *Thomas Moore*, *Jean Sisley*, *Vesuvius*, *Omega*; and for large beds, *William Underwood* and *Warrior*. **LIGHT SCARLET**, *Excellent* and *Lucius*; and for very small beds, and for edging purposes *Tristram Shandy*. **ROSY SCARLET**, *Hector* and *Emily Morland*, both of which are good. **WHITE**, *Purity* and *White Wonder*. **PINK**,

Beauty of Lee, *Advancer*, and *Christine*. SALMON, *Gloire de Corbeny* and *Sensation*, but neither of the last two are of much value in the flower garden.

PELARGONIUMS, NOSEGAY.—The varieties belonging to this section surpass, in many respects, the preceding, although both are indispensable to a well-kept flower garden. The best of the older varieties tried here are *Charley Casbon*, orange scarlet, dwarf; *Morning Star*, same colour but taller, *Geant de Batailles*, dark scarlet, *Waltham Seedling* and *Bonfire*, bright scarlet: *Violet Hill Nosegay*, rosy scarlet, dwarf, and free. There are many other varieties that are good bedders, but the above are decidedly the best in the several colours.

PETUNIAS.—The following are all good: *Shrubland Rose*, rose white throat; *Miss Earl*, rosy pink; *Purple Bedder*, purplish crimson; *Spitfire*, very dark purple. Several of the varieties will come true from seed, but to insure their commencing to bloom early in the season, the seed must be sown immediately. In summers like that of last year, nearly all the varieties grown do well in the open borders, but they are soon injured by rough weather, and therefore they cannot be confidently recommended.

TROPEOLUMS.—The best of the compact growers are *Chater's Advancer*, brilliant scarlet; *Star of Fire*, bright orange scarlet; *The Moor*, blackish maroon. The two best trailing varieties are *Cooperi*, scarlet, and *Attraction*, yellow. The Tom Thumb varieties are too ephemeral to admit of their being recommended for beds; for groups in the mixed border they will be found very showy. They can be easily raised from seed, and, if desired, the seed can be sown where the plants are to bloom.

VERBENAS.—Eight varieties will be quite sufficient for any one garden, and of the immense number of varieties now in cultivation, I decidedly prefer the following—*Crimson King*, very bright scarlet; *Celestial Blue*, blue; *La Grande Boule de Neige*, white; *Spot*, pink; *Laura*, rose pink; *Karls Kleine*, maroon purple; *Purple King*, purple; *Nemesis*, crimson; *Polly Perkins*, magenta; *Victory*, scarlet.

VIOLAS.—The best bedders are *Perfection*, rich bluish mauve, and *Lutea grandiflora*, bright yellow. They should be employed with caution, as they do not do well in many soils and situations. The latter can be raised from seed sown in the spring.

ORNAMENTAL LEAVED PLANTS.—A few of the best only, and such as are likely to be of the greatest service in a small garden, will be enumerated.

SILVERY-LEAVED.—The variegated geraniums will be included in this section, to enable the planter to see at a glance what materials he has available in the same style of colouring.

CREAMY VARIEGATION.—Carter's *Snowdrop*, *Daybreak*, and *Flower of Spring* are all neat yet vigorous growers and very effective. They usually attain a height ranging from six to nine inches.

PURE WHITE VARIEGATION.—*May Queen*, *Princess Alexandra*, *Miss Kingsbury*, and *Paul's Snowdrop*, are all first-rate and of medium growth. The two best of the strong-growing variegated varieties are *Albion Cliffs* and *Bijou*.

Amongst miscellaneous subjects with silvery leafage that are indispensable, may be mentioned *Antennaria tomentosa*, a most valuable plant for edging or for carpeting the surface of beds filled with succulents, as it does not exceed an inch in height. It is perfectly hardy, and can be readily increased by division. *Achillea umbellata* is very useful for a narrow edging, but it is difficult to propagate, and of slow growth. The *Centaureas* are indispensable. *C. ragusina compacta* for edging, *C. ragusina* for second rows, and *C. gymnocarpa* for centres and back rows. These can be raised from seed sown in the autumn or early in the spring, or from cuttings taken at the same periods. *Cineraria asplenifolia* and *C. acanthifolia* are both very useful and effective for edgings and second rows; but they are not wanted, excepting for the variety they afford, where there is a good stock of *Centaureas*. For very hot and dry positions *Stachys lanata* will be found useful, but it is coarse in growth, and should not be planted where better things will thrive. The last on the list, and one of the best of its class for amateurs, is *Veronica incana*. The growth is very neat, seldom exceeding three inches in height, and the leaves are of a greyish white hue. It is perfectly hardy, and requires hardly any attention whatever to keep it in order. By dividing the tufts in the spring or autumn the stock can be increased to any extent, and it can also be propagated from seed.

GOLDEN LEAVED.—The following are all first-rate in their respective classes:—**GOLDEN LEAVED:** *Yellow Boy*, *Golden Banner*, *Crystal Palace Gem*, *Golden Fleece*, and *Jason*, for all purposes, and *Little Golden Christine* for edging only. **BRONZE ZONALS:** *Kentish Hero*, *Mulberry Zone*, *Crown Prince*, *Princess of Wales*, *Mrs. Lewis Lloyd*, and *Sybil*, all of which are first-rate, the first-named being the strongest grower, and therefore the best for large beds. **GOLDEN ZONALS:** *Florence*, *Louisa Smith*, *Sophia Dumaresque*, *Edwinia Fitzpatrick*, and *Miss Watson*; the latter being especially good for edging purposes.

Amongst miscellaneous subjects the following are especially good: *Abutilon Thompsoni* for centres and large beds; *Fuchsia Golden Fleece* and *Pyrethrum Golden Feather* for edgings. The latter should be raised from seed sown in a cold frame early in March, and when strong enough transplanted into its permanent quarters. The seed may be sown in the beds early in April, and the plants thinned out to the desired distance apart, but it is not such a good plan as to sow it in a cold frame as here directed. Many growers fail in realizing their expectations of this useful plant through sowing the seed too early, and by keeping the plants in a high temperature until they are two or three inches high.

DARK LEAVED.—The *Alternantheras* are too delicate to be of much service to amateurs, but it will not be out of place to mention that *A. magnifica* and *A. paronychioides* are the two best and most valuable for edging. *Amaranthus melancholicus ruber* is very distinct and effective, and can be multiplied by means of seeds sown in spring. The plants require a moderate amount of heat to push them along, and must be well hardened off previous to being put out in the beds. When it is necessary to keep them dwarf, they should

be stopped early, as they seldom present a satisfactory appearance when allowed to run up to a great height and then stopped back.

Iresine Lindenii is one of the most valuable acquisitions introduced for many years past; it is, in fact, the best dark-leaved bedder we have. The leaves and stems are of a deep rich sanguineous red, the growth is all that can be desired, and it will grow freely in cold situations, where the *Coleus* will hardly live. This reminds me that the *Coleus* must not be omitted, although they are not of much service to people who have no stove to keep them in during the winter. We have tried all the varieties here, and the best for bedding were *Princess of Wales*, *Emperor Napoleon*, and *Verschaffeltii*, all of which have rich chocolate foliage. A great many worthless sorts have been sent out of late years.

DAHLIAS.

BY JOHN WALSH.

DAHLIAS are not, perhaps, so popular as they were between twenty and thirty years ago, yet they are sufficiently appreciated to justify a friendly chat about them in these pages. The splendid stands of blooms staged at the Crystal Palace and provincial exhibitions, held during the autumn months, afford evidence that they are held in higher esteem than many florists, especially those that stay at home, suppose. It is not, however, desirable that I should occupy space so valuable as these pages in discussing this point, and I will

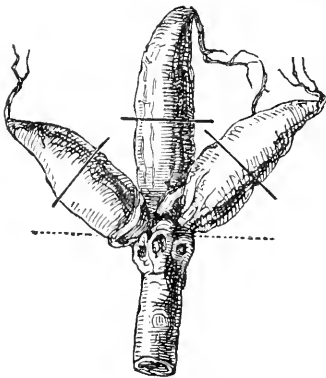


FIG. 1.

at once proceed to offer a few useful hints which, if acted upon, cannot be otherwise than of great value to the young beginner. The first step for the young beginner to take in the matter will be to procure a stock. Now the usual period for buying dahlias is the month of May, when they can be obtained at the rate of about four shillings per dozen. It is, however, a bad time to buy them, because they are generally very small, and in anything but a satisfactory condition for starting away vigorously when planted out. Instead of buying young plants in May, I should strongly advise the purchase of ground roots at once, and then propagate a stock from them. They will cost a trifle more; but as a large number of plants can be obtained from each, they will be the cheapest in the end. The cuttings strike very freely, and by ordinary management,

strong bouncing plants that will grow away freely at once, and commence to flower early, may be obtained. On the other hand, when small, weakly plants are put out, the summer is past before they can make much progress, and they are cut off by the frost just as they begin to flower in earnest. These, then, are my reasons for recommending the purchase of dry roots in preference to young plants. In the case of new varieties, there is no choice in the matter, because dry roots cannot be obtained, and the trade cannot well have the stock ready for distribution before the period mentioned above. This, however, is not of much consequence, because a little nursing when they come to hand will do wonders; but of course what would be an easy matter in dealing with two or three plants, would be practically impossible with the whole stock.

First of all it must be stated that the assistance of a genial temperature, between 60° and 70° , is indispensable to start the roots into active growth. It matters not whether they are put into a greenhouse, vinery, cucumber-frame, or a properly-prepared pro-

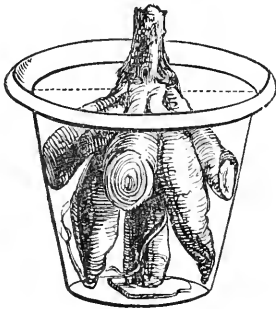


FIG. 2.

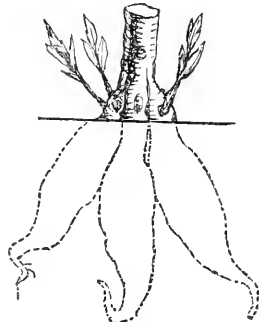


FIG. 3.

pagating pit, provided they have the assistance of a temperature between the two extremes. Perhaps the best way to start them would be upon a bed of leaves, covered with an ordinary garden-frame. Put a layer of soil over the interior, then pack the roots rather close together, and fill the space between with fine soil. The soil should be moderately moist when used, and the surface be within about twelve inches distance of the glass. This will insure a stocky and firm growth; but provided they can have a moderate share of light it is not of much consequence if they are started at a distance of eight or ten feet from the glass. The manner in which the roots should be prepared is admirably shown in the accompanying figures, which the publishers have placed at my disposal for illustrating these notes.

In starting the roots in a bed of soil, or in shallow boxes, with a considerable number in each, cut the ends of the tubers off where the lines are drawn through them in Fig. 1, and bury them in the soil to the depth indicated by the dotted line. Those that are to be started in pots should be trimmed so that they fit nicely, as shown

in Fig. 2. The tubers will bear a considerable amount of cutting about without injury. Some growers propagate their stock by dividing the roots down the centre, with one tuber to each, and then shorten the latter to admit of its being put in a rather small pot. This is a very simple method, but it is not one that can be recommended, excepting when they are required exclusively for home decoration, and the cultivator has only a greenhouse or cold-frame to start them in. When the young shoots, which start from the crown, have attained a length of about three inches, as shown in Fig. 3, take them off with a small heel, and put them either singly in small pots, or several round the sides of pots of a larger size. When five or six-inch pots are employed, a large or small "60" should be turned bottom upwards in each, a layer of small crocks then put on regularly, and the remaining space filled with soil, consisting of at least one-half either silver or clean river-sand. When the cutting-pots are prepared as here directed, the danger of the cuttings damping off is reduced to the lowest possible minimum, because of the comparatively small amount of soil employed. Small pots should have a good layer of crocks in the bottom, and the cuttings be placed in the middle. Place the cuttings in a warm corner of the house or frame, and partly plunge the pots in bottom-heat, if available. Water cautiously, because if kept too wet, a large number will damp off; but they must be sprinkled overhead often enough to keep them from flagging. They must also be shaded with thin canvas or paper, when necessary, and sufficient air admitted to keep the atmosphere pure. The cuttings produced by roots started in a low temperature, may be struck under a hand-light, placed in a warm corner of an ordinary greenhouse.

When nicely rooted, put them singly into three-inch pots, and after the second or third day, begin to harden them off gradually, and at the earliest moment possible transfer them to a frame, where they can be efficiently protected from frost. The tops can be taken off, and struck if required. It will be necessary to keep rather close for a few days after the stock is removed to the frame, but the frame should be well ventilated, as they become hardy enough to be exposed freely to the air. When sufficiently hardened, draw the lights off altogether during the day in congenial weather. It is a most excellent plan, although few growers adopt it, to shift the whole stock into six-inch pots as soon as those in which they were first put are well filled with roots. The difference at planting time between those shifted and the others that are kept starving in small pots is incredible, and more than sufficient to doubly repay the extra labour.

A complete list of the best of the established sorts was published in the December number of last year, which buyers cannot do better than take for their guide. Those who are anxious to speculate in the new varieties, will find in the recent issue of the "Garden Oracle" the names and descriptions of the best that will be sent out in the ensuing spring.

POINSETTIA PULCHERRIMA AND EUPHORBIA JACQUINIFLORA.

BY J. W. SILVER,

Head Gardener, The Laurels, Taunton, Somerset.



THE relationship of these plants is close enough to admit of their being here linked together, without an apology being required for the act. Both belong to the same natural order, *Euphorbiaceæ*, bloom at the same time, and have bracts in one case, and flowers in the other, of the same hue. To praise them beyond their deserts appears difficult, because the brilliant display they are capable of producing in the winter, when nearly all the other stove plants are at rest, is something wonderful. They are, however, seldom seen in good condition in gardens of considerable pretensions, and in small gardens they are very rarely met with at all. This state of things is, no doubt, mainly owing to a want of knowledge of their requirements, and believing this to be the case, I am induced to offer a few practical remarks on their cultivation. It must, however, be understood that they are penned expressly for the guidance of amateurs, and others whose knowledge of them is of a limited character.

Let us first consider the pretty *Euphorbia jacquiniflora*. This plant has a natural tendency to become leggy, and if the cultivator does not use his best endeavours to counteract this bad habit, he will have plants resembling willow wands, surmounted at the top with a few flowers and leaves. One of the most frequent causes of their becoming leggy, is due to their being propagated too early, and another cause is due to their being placed too far from the glass when in full growth. We usually strike the cuttings here in May, and the results are such as to show that it is a most suitable period for the work. A short stubby side-shoot should be selected; if not obtainable otherwise, the tops of the leading branches are taken off. In either case, insert the cuttings in small 60's, at the rate of three to each, and put them rather close together in the middle of the pot. They will strike much quicker if the pots are plunged in bottom-heat, but it is necessary to add that they will strike very well indeed without that assistance. Directly they are nicely rooted, place them near the glass, and do not shade them, excepting in the brightest weather, as an abundance of light is essential to keep the wood short-jointed, and to insure its being well matured by the end of the season. When the pots are well filled with roots, and not before, shift them into six-inch pots, without dividing or otherwise disturbing them. They will only require one shift, as this size is quite large enough for them to flower in, and it is also very convenient if they are required for table decoration, for which purpose they are well adapted. Red spider is rather partial to the foliage; therefore, to prevent the possibility of that pest doing any mischief, give them the advantage, during the summer, of a moderately moist atmosphere, and syringe them overhead once or twice a day. A very high

temperature is not at all necessary, and with the aid of a cucumber-frame, or house, for the summer season, and an intermediate house for the winter, they can be grown most satisfactorily.

The compost used here is prepared by well incorporating together equal parts of turfy loam, fibrous peat, and leaf-mould, with sufficient silver sand to make it feel gritty to the hand.

Euphorbia splendens is useful to cut from for furnishing flowers for the hair, or the hand bouquet, during the winter months, but it is far less useful and brilliant in colour than the former species, and it must have plenty of room, because the formidable spines with which the stems are armed will lacerate the leaves of all plants they come in contact with. The sap of these plants is poisonous.

For the assistance of those who care to possess it, it is necessary to add that, instead of propagating a fresh stock every year, as advised for the other species, the plants should be potted on, and neatly trained to stout stakes fixed in the pots. A couple of specimens will be quite sufficient for a moderate-sized collection of plants, but *E. jacquiniflora* should be grown by the dozen wherever a bit of brilliant colour is appreciated in the winter.

The cultivation of *Poinsettia pulcherrima* differs somewhat from that of the *Euphorbia*, and we will now describe it. The cuttings should be struck at the same period as advised for the latter; but, although they may be grown in the same way, it is decidedly preferable to have only one plant in each pot. In taking the cuttings, select the strongest shoots, put them singly in small 60's, and place in a warm corner of the stove, or cucumber or melon-trame. When well-rooted, shift into five-inch pots; and, if they grow away freely, shift, repot, and use pots one or two sizes larger, as may appear the most desirable. If they do not make very rapid progress after they are put in five-inch pots, it will not be wise to shift them again, because, if over-potted, they will present but a sorry figure at the end of the season.

If the conservatory is lofty, a few cuttings should be struck earlier, and grown on as vigorously as possible; for tall specimens with large whorls of bracts have a wonderfully showy appearance intermixed with other plants.

The best compost in which to grow *Poinsettias* that I have yet tried is one consisting of two-thirds turfy loam and a third part of equal proportions of leaf-mould and well-decayed cow-dung. A liberal sprinkling of sand must be added, and the pots well drained. In summers like those of 1868 and 1870, the plants may be placed upon a bed of coal-ashes, made up in the open, for about two months.

Both the *Poinsettia* and *Euphorbia*, as they go out of bloom, should be packed rather close together in a warm, dry corner, and very little water administered to the roots, as a long season of rest is most essential. After they have been kept dry for a short time, prune them back, and start into growth about the middle of April. When the young growth is about an inch in length, turn the plants out of the pots, shake nearly all the soil from the roots, and repot in pots of the same size as those from which they were taken out. Train out the growth, as it becomes necessary, with a few neat

stakes. The safest time for twisting the growth of the Poinsettia is just as it begins to harden, which is usually about the end of August. The plants intended for furnishing a supply of cuttings should not be shaken out until after the cuttings are secured, and not then unless the stock is short, because it is much better to throw them away.

MAIZE, ITS USE AND CULTURE.

BY THE REV. TH. C. BREHAUT,

Of Richmond House, Guernsey.



At the meeting of the Royal Horticultural Society in December, 1870, Mr. Brehaut exhibited a large and interesting collection of Maize, grown in his garden in Guernsey. It was accompanied by an interesting paper on its uses and culture, of which we give an abstract:—

An experience of three very dissimilar seasons has been gained since 1867. A certain number of varieties have been discarded, either as too small, too coarse, or as ripening at too late a period of the season to make them generally serviceable. It was to be expected that the sorts which ripened the earliest would become most in demand, but there were other conditions to be fulfilled before Maize could be able to hold its ground against so many new and known vegetables. It was not so much a variety which should serve for cattle, or poultry, or even for grinding into flour, which was required, for such are now commonly imported more cheaply—at least, so it seems at present—than they can be grown in our climate; but it was sought to popularize the manner of eating Maize so common in the States of America, and in other regions of the world (including even Southern Europe), as “green corn,” *i.e.*, in a semi-ripened condition, when the grains had acquired the consistency and size of good Marrowfat peas. The addition of a table vegetable of this delicious and nutritious nature—the food of millions of the human race—and yet, for want of experience of the sorts adapted to our climate, so strangely unappreciated here, seemed of no inconsiderable importance, the more so as it ripened in the late autumn, reproducing then the lost flavours of the early pea and of the asparagus. For this the ordinary yellow Maize is not suited, so that its culture becomes of little value. But the collection here exhibited claims not only to be the most complete which has probably ever been presented in Europe, but it also shows varieties which greatly excel the Maize known in this country and in France in size and in flavour, while they still fulfil the special conditions required in earliness. More than this, these ears are grown from seeds acclimated by three varied seasons in the Channel Islands, and are even immediately sprung from seeds of plants growing in the damp and sunless season of 1869, which plants were prostrated to the earth when at their fullest and most critical season of growth, on Sept. 12th, under the weight of a

hurricane of 55 lb. pressure per square foot. The perfectly ripened specimens exhibited attest the vitality of Maize when treated with common care. A few observations must now be made on the

USES OF MAIZE.—It would be without interest here to speak of the numerous purposes to which this most valuable plant is put when in a dried state, in tropical regions. The drought of past seasons shows the need of adding to our resources, if possible, whatever green fodder can be grown. There are certain kinds of Maize better adapted by their growth than others to fulfil this object, being hardy and rapid in increase, and at the same time abounding in saccharine juices, which animals will devour greedily. Even the stalks when hard can be utilized by slicing them, so that there is really no waste. Mention having been made of these varieties in the French scientific journals, a pressing request was sent here for a large quantity of seed for Brittany, there to be cut down and used as forage during the drought.

CULTURE.—The seeds should be sown in common raisin-boxes during April—early in the month in the south, and later in the north of England. In the Channel Islands they were sown in boxes very early in April, and planted out three weeks after. These boxes should be placed in a cool vinery, orchard-house, or pit, and the plants hardened off before planting. This would be best in May, earlier or later according to the season or locality, which a short experience would decide. The risk of the young plants is common to other vegetables—that of suffering from spring frosts; a little protection would obviate all this. But this season Mr. Dancer, of Chiswick, we are told, sowed a quantity of Maize in the open ground in March. It was cut down by the frost, sprang up again from the root, and yielded a heavy crop.

By the end of July our Maize plants were already seven feet high, and were then secured from high winds by stout stakes at intervals, and thin cords stretched between them, to which the rows were easily tied. Not being able to give waterings, which materially aid the growth of a plant which luxuriates in the rich alluvial valleys of tropical countries, we had planted in shallow trenches filled with manure, and three inches of soil above it. These trenches retained the casual showers, and were gradually earthed in. As for celery, the manure kept the roots perfectly fresh, and two slight waterings of liquid manure were given during the very dry summer. This attention is not greater than is always given to peas and other vegetables. Failures are traceable to a neglect either of some, or even of all, of these means.

It is not quite so easy to ascertain the exact time to take the ears as “green corn” for the table. A day or two makes considerable change in their consistency. When as large and as hard as Marrow-fat peas, from twenty to thirty minutes’ boiling is enough. Serve with fresh butter to spread over them, and they are thus ready. All the uses made of peas for soups and stews are common to green Maize. The ears can also be roasted before the fire. When dry, these fine white varieties would produce good flour for pastry, etc.

Maize, in our climate, requires five months to mature the seeds

for sowing, being one month more than in California. Some sorts ripened here in August. The stalks reached to ten feet, a height only excelled in rich tropical soils. Where several sprang from the same root, the ears ripened soonest. Experiments were made in hybridizing, with some results, and also in mutilating the male panicle of flowers, with a view to increase the size of the ear. After several generations of mutilated plants had been experimented upon, it was found that the ears were increased sensibly in size. The produce of seed was at the rate of ninety-five bushels the acre, gathered as it was, not from selected plants, but from numerous varieties, some being too small.

REMARKS ON THE VARIETIES.—The pure white Maize from Georgia is the most delicate for table use; it ripened this season at the end of September, and is an early sort, and the most valuable in every respect. The Improved Common Yellow and the Giant Red are also good. It remains only to add that seed for sowing can be obtained in gardens in warmer districts, and always from such places as the Channel Islands; while Maize, to be eaten green in the autumn, can be grown anywhere with common attention. The same may be said of its use for foliage.

HOME-GROWN LILY OF THE VALLEY.

BY A MARKET GROWER.



ALTHOUGH the Lily of the Valley is a favourite amongst all classes, and has been cultivated both in pots and in the open ground from time almost immemorial, it appears that its culture, speaking in a general manner, is not well understood. Even at public exhibitions it is seldom that more than sixty per cent. of the plants are shown in a satisfactory condition. They are either all flowers or all foliage, instead of having equal proportions of both. The causes of these defects are not far to seek, and can be easily explained. The deficiency of foliage is due to their having no new roots, and to forcing them in too much heat, and the deficiency of flowers is due to the bulbs being immature. It is not, however, my intention to say much about their management in pots, as I am anxious to deal more especially with their cultivation prior to their being potted up for forcing. The reason for my being desirous of directing especial attention to this part of the subject is to show that we are not only independent of the Dutch growers for the bulbs, but that more satisfactory results can be obtained from those grown in the cultivator's garden, because they can then be potted at the right moment. As a large grower for Covent Garden, I find it more profitable to grow my own bulbs, although the rent paid for the ground is simply enormous. Surely, then, those who have a garden attached to their residence would find it more economical to grow their own bulbs, because, excepting a few shillings for manure, they cost practically

nothing. Even supposing the cost in each case to be the same, the balance would be in favour of those grown at home, because after the foliage has died down they do not make any roots until they are in bloom and the leaves full grown. Hence the leaves and flowers have to be produced entirely with the aid of the nourishment laid up in the bulbs the previous season, and if they are pushed along too fast, especially those started early, they produce flowers but no foliage. It is very easy to maintain a regular supply of strong bulbs for forcing if a batch is planted every season.

The situation selected for the beds should be moderately open and cool; but they are by no means particular, provided they are not planted in a south or north border, for the first is too hot and the second too cold. The ground set apart for their culture should be determined upon at once, and liberally nourished with equal parts of leaf-mould and partly-decayed stable manure. The dressing of manure should not be less than six inches in thickness. Then trench or dig the bed to a depth of about eighteen or twenty-four inches, and regularly incorporate the manure with the soil, and leave the surface as rough as it is possible to leave it. This work should be done early in the autumn where the soil is rather heavy. It is too late to talk about autumn trenching now, but it is necessary to say that in stirring soil deep in the spring, the bottom spit must not be brought to the surface. Presently, when the plants, now in the conservatory, go out of flower, place them in cold frame and gradually harden off, but do not expose to frost; and in the next paragraph we will consider what must be done with them.

About the middle of May dig the bed lightly with a fork, and if the leaf-mould can be spared spread a moderate layer over the surface previously, to assist them to become established quickly. When the bed is quite ready, turn them out of the pots, divide carefully, and plant the crowns either singly or in small tufts according as they can be divided without breaking them about. The rows should be fifteen inches apart, and the crowns twelve inches apart in the rows. Water liberally, and then cover the surface of the bed with short grass, partly-decayed leaves, or manure, or whatever loose material can be spared for the purpose. A thorough soaking of water once a week for the first four weeks, if the weather happens to be dry, will be of immense service, but afterwards they will be able to take care of themselves. They must be allowed to remain in the bed until July of the second year after they are planted; but by planting a batch every year, a regular succession can be maintained after the first lot. Some growers recommend planting the crowns in clumps of five each, but it is certainly not a good plan, for with the same care and attention I could never obtain such finely-developed crowns as I can when they are planted singly.

In July of the second year after planting, prepare a proper number of six or eight-inch pots by crocking them carefully, and sufficient compost by mixing together three parts mellow turfy loam, and a part each of old hot-bed manure and leaf-mould, and the first dull moist day after the middle of the month lift them carefully

and pot as quickly as possible. Remove the weakest bulbs that are not likely to flower from each clump, and then put the latter rather closely together round the outside of the pots, as they do much better than when put in the centre. The number of clumps in each pot must be regulated by their size, but generally speaking four for the smaller and six for the larger size will be quite sufficient. When the potting is completed, place them in a shady position, water liberally to settle the soil, and then sprinkle the foliage slightly once a-day to assist them in becoming established at once. They should be kept in the shade until the roots have taken possession of the new soil, which can be readily ascertained by turning one of them out of the pot in a careful manner, and then they should be removed to a position where they will have full exposure to the heat of the sun.

The stock potted in the summer as advised above will fill the pots with fine healthy roots before the foliage has died down, and be in grand condition for forcing early. On the other hand, those potted after the leaves have perished will not make a single root until they have flowered, and they will have to rely exclusively for sustenance on the food laid up in the bulbs previous to their being taken from the open ground. The only matter to which special importance is attached in connection with summer potting is to put them into the pots immediately they are taken up, and to keep them in the shade with occasional sprinklings overhead, until established. The offsets should be planted for stock in preference to putting out plants that have been forced. They must of course be planted without delay, and well watered occasionally, and for the first week or so they should be shaded by means of a mat placed over them during the day, or a few branches of evergreens, or spruce fir, fixed permanently in the ground so as to screen from the sunshine, and they may be allowed to remain until the end of August. By following the directions here laid down, the most inexperienced amateur may make himself entirely independent of the Dutch grower, and have a profusion of those beautiful flowers throughout the winter and spring.

LONDON GARDENERS IN THE OLDEN TIME.—The following may be interesting, as illustrative of the manners of the gardeners in the olden time. In 1345 (19 Edw. III.) “the gardeners of the earls, barons, and bishops, and of the citizens of the City of London,” petitioned the Mayor, John Hammond, that they might “stand in peace in the same place where they had been wont in times of old, in front of the church of St. Austin, at the site of the gate of St. Paul’s Churchyard, there to sell the garden produce of their said masters, and make their profit. But the Mayor, finding that “the scurrility, clamour, and nuisance of these traders and their servants there selling pods, Cherries, vegetables, and other wares to their trade pertaining, daily disturbed” the priests in the church of St. Austin, well as the reputable inhabitants, ordered that henceforth the gardeners “should have as their place the space between the south gate of the churchyard of the said church and the garden wall of the Friars Preachers (Black Friars) at Baynard’s Castle.”—*City Press*.

SWEET PEAS.



SWEET Peas are so ornamental and effective in appearance when in bloom, and yield such a profusion of blossoms for furnishing vases, etc., during the summer months, that they cannot well be grown too extensively. We are fond of having vases of cut flowers in all the principal rooms when we can obtain the flowers, and we certainly find the sweet peas our very best friends during the principal part of the season. In reality they require no skill to grow them well, yet many amateurs fail in cultivating them satisfactorily. They are generally treated as half-hardy annuals, and are consequently short-lived, and do not continue in bloom so long as they otherwise would do. For many years we used to raise them in pots in heat and plant them out when about six inches in height; but at last the demand upon our frames became so great that we determined to sow the seed out of doors and let them take care of themselves. We were at first afraid that the spring frosts would injure them, but of course our fears were groundless, because they are quite as hardy as the hardiest of the peas grown for culinary purposes. We now make two sowings, one in November for flowering early, and the other in March to succeed them. Where, from the unfavourable character of the soil, it is not considered desirable to sow peas of any kind in the autumn, the first sowing may be made the first week in February, or as soon afterwards as the weather and the state of the soil will permit.

There is another point in their culture worthy of mention, and that is, to insure a continuous supply of flowers during the longest period possible, they must be grown in comparatively rich soil. We usually have a few clumps down the middle of a mixed border, at a distance of about ten feet apart, and a long row in the kitchen-garden expressly to cut from. We have entirely given up planting them in the narrow borders in front of the shrubberies, because the roots of the shrubs draw so much of the moisture and goodness out of the soil, that after a week or two of dry and hot summer weather the leaves begin to turn yellow and the flowers to cease to make their appearance. In many gardens the shrubbery border is selected for growing a few sweet peas, and consequently they are considered to be short-lived. The soil cannot be too rich, and we sow those in the kitchen-garden in trenches prepared in much the same manner as for celery. We first have thrown out the top spit on one side of the trench, and the man then breaks up the soil underneath to a depth of not less than eighteen inches, mixing with it as he proceeds not less than six inches of manure. When that part of the work is completed, the soil thrown out of the trench is returned to it, when the peas are to be sown in the autumn; but for those sown in the spring a portion only is returned, so that the surface of the soil where they are sown shall be two or three inches below the general level. When sown in a shallow trench they can be watered very easily, and the roots are not so soon affected by dry or hot weather.

A layer of short grass or other vegetable refuse may be placed on each side of the rows, to keep the soil cool, and check the rapid evaporation of moisture which usually occurs in hot weather.

A small portion at one end of the row, or a single clump in the mixed border, should be set apart for furnishing a supply of seed for the following season, and the seed-pods regularly removed from all the others, because nothing puts a stop to the growth and the supply of flowers so quickly as allowing the pods to remain. It shortens their flowering season at least six week or two months.

The sorts grown are, *Invincible Black*, *Invincible Scarlet*, *Painted Lady*, and the *Common White*. Upon a trellis, in a rather secluded part of our garden, we have The Everlasting Pea, *Lathyrus latifolius*, and *L. latifolius albus*, which also flowers very freely. They occasion us hardly any labour to keep them in order. In fact, the only attention they receive is, thinning the young growth out a little, removing the seed-pods, and cutting them down in the autumn. In return for a little labour they spring up every season, and present us with flowers of surpassing beauty for a lengthened period during the summer.

HARRIET TETTERELL.

THE GARDEN GUIDE FOR MARCH.

FLOWER GARDEN.—The planting of trees and shrubs must be finished off at once. Clear out shrubberies by cutting away the dead wood, and raking up the leaves. Herbaceous plants ought to have attention this month; the borders should have a slight dressing of thoroughly decayed manure, and be carefully pricked over with a fork. Plants required to be increased may now be taken up and divided, and replanted; where they are growing wild it is a good plan to take the whole lot up, manure and trench the border, and re-arrange them. These plants should have annual attention, and not be allowed to smother each other, as is generally the case. Pinks, Picotees, Carnations, Pansies, Hollyhocks, Phlox, and Pentstemons, that have been preserved in cold frames during the winter, should be planted in their respective quarters, about the middle or end of the month, if the ground is in proper condition for their reception.

KITCHEN GARDEN.—This is the most important season in the whole year in this department, for the kitchen supplies are ruled throughout the whole year by the way the operations are conducted now. Continue to turn up every quarter directly it becomes vacant. In light warm soils get in the main crops of Potatoes towards the end of the month. In cold damp soils, the middle of next month will be preferable. Sow and make new beds of Asparagus. Sow for main crops Borecole, Brussels Sprouts, Cabbage, Cardoons, Carrots, Cauliflowers, Chervil, Leeks, Lettuce, Onions, Parsley, Parsnips, Peas, Radishes, Savoys, Scorzonera, Spinach, and Turnips. Plant Globe and Jerusalem Artichokes; clear the former of dead leaves and protecting material. Make fresh plantations of Horseradish, Rhubarb, and Shallots, if not already done.

FRUIT GARDEN.—Pruning and training must be completed, and grafting set about in earnest. Wall-trees coming into bloom must be protected. Nets, tiffany, or fir branches can be used for protecting purposes; the first two are the best.

CONSERVATORY.—This is a trying time to the occupants of this structure, as the outbursts of bright sunshine are so generally accompanied with cold, keen, drying winds, that it is impossible to ventilate freely enough to keep the temperature to its proper height. Shading must be resorted to, or the plants in flower will soon lose their freshness and beauty. Air, however, must be freely admitted when the weather will admit of its being done, as nearly the whole of the hard-wooded plants will now be making their growth, and unless they have plenty of air the young wood will want that firmness which is so essential to an abundance of bloom. Camellias growing out of shape should be pruned and placed in a nice genial growing atmosphere, and well syringed with tepid water, to induce them to break well. Pelargoniums of all kinds that need a shift must have it at once, or not at all; plants that have filled the pots with roots will be benefited by alternate waterings of weak manure water. Primulas and Cyclamens going out of flower must be placed in a light airy place to ripen their seed, if it is intended to save any. Shift all plants that need it as fast as they go out of flower. Plants coming from the frames should have a smoking before they are brought into the greenhouse, as there are many plants now in bloom, and flowers of all kinds receive considerable injury from smoke.

STOVE.—Shading must now be resorted to during bright flashes of sunshine, as it is impossible to give sufficient air to keep the temperature down to its proper level without injuring the plants. To maintain a moist growing atmosphere, sprinkle the paths and walls twice a-day, and give the plants a good syringing overhead once, with the exception of those in flower, which must be kept dry.

FORCING.—Air-giving must be attended to with care during the whole of this month, in all the departments. Vines in flower must have rather a drier atmosphere, but not so parching as is generally advised. Disbud, train, and thin out the bunches as required. After the fruit is set, keep a thoroughly moist atmosphere, and paint the pipes with sulphur to prevent red spider making its appearance. Slightly increase the temperature, and stop one or two eyes beyond the bunch. Peaches and Nectarines, as they go out of bloom, must be well syringed to clear them of the dead flowers; also raise the temperature to 50°. Plums and Cherries will require plenty of air, and moisture at the root. Strawberries as they begin to colour should have less water, and be exposed more freely to the light and air. Sow Melon seed, and plant out as soon as strong enough.

PITS AND FRAMES.—Auriculas, Pansies, Carnations, and others of the same class, must have plenty of air. Propagate Verbenas, Lobelias, Iresene, Heliotropes, and Petunias. Bedding Calceolarias should be turned out into a bed of rich soil, about four inches apart, and covered with old light straw hurdles, or mats.

NOTICES TO CORRESPONDENTS.

An Old Subscriber.—The plants mentioned would do very well, and would cost from six to nine shillings per dozen, according to the sorts. They should be planted as quickly as possible. The answer to the second question is No.

E. G. R.—You cannot do anything to prevent the occurrence referred to. The cause of the flowers not expanding is entirely due to the roots not being in a healthy condition. In thinning the buds, leave the most prominent, and remove the others.

NIGHT-SCENTED STOCK.—*E. T. G., M.D., Grosvenor Square.*—Seed of the two species mentioned by our correspondent is offered in the catalogues of Mr. B. S. Williams, Upper Holloway, Messrs. Barr and Sugden, 12, King Street, Covent Garden, and several other metropolitan firms, therefore you ought not to experience any difficulty in obtaining a supply.

VERONICA CANDIDA.—*John Cooper, Dresden, Staffordshire.*—Seed is offered by Mr. J. J. Marriott, Highfield Nurseries, Matlock, and it can, we believe, be obtained of a few other nurserymen. Plants are plentiful in all good nurseries. Seed of the other subjects named cannot, so far as we are aware, be purchased, but plants can be obtained at a very low rate. The Veronica you mention is a different thing altogether.

F. H.—Many thanks for your communication. We regret not having room for it this month. The following are four of the most suitable climbers for the position mentioned:—*Tacsonia Van Volxemi*, *Passiflora Imperatrice Eugénie*, *Cobea scandens variegata*, and *Kennedyia coccinea*, or *Hoya carnea*.

EARLY FORCING.—*S. S.*—In proportion to the heat should be the amount of moisture, as also the circulation of air. We infer from your statement that the atmospheric moisture is much deficient. Is there, however, any source of bottom-heat which produces atmospheric moisture? Roses, and, in fact, most shrubs emerging from a state of partial torpidity or rest, are very averse to what is termed dry heat. Our advice is to use as much atmospheric moisture in the afternoon, in combination with a circulation of air, as will deposit dew on the leaves. A much less amount may be used from daylight until noon. Plunge gesnerias in bottom-heat, and treat them as achimenes. Use a little water, increasing it with increased vigour. Your temperature is rather too low; if sunshine occurs, run the glass up to 75° or even 80°, provided there is a little motion in the air. A cold greenhouse will suffice for camellias.

CHRYSANTHEMUMS.—*B. J.*—Cuttings are made from January to April, and for some purposes as late as June or July. Those made in February and March usually produce the finest plants, and of necessity they are then struck in heat, which must be moderate, and the cuttings must be in full daylight. In stopping, the point of the shoot is pinched out with the fingers; but if a shoot takes the lead and goes ahead of all the rest, it may be cut back two or three or more joints, and made a cutting of.

PRIMULA SEED.—*W. S.*—It is time now to sow the first pinch of seed. The surest way to proceed is to nearly fill the pans with manure that has been two years rotted and then sifted. Sprinkle the seed upon the surface, and do not cover the seed with soil, but lay over the pan a sheet of glass smeared with clay to render it nearly opaque. If the soil becomes dry before the seed sprouts, put the pans in a vessel containing one or two inches depth of water till the soil is quite moistened. A warm house or hot-bed is the proper place for the seed-pans. As soon as the plants appear, remove the glass, and soon as possible pot them off separately.

ARTILLERY PLANT.—*Miss Mary.*—The plant is *Pilea allitrichoides*, or Pistol plant. It is a native of the West Indies, and a very elegant and interesting subject for stove and greenhouse culture. We have frequently used it to furnish indoor cases, for which purpose it must be grown to a good size in pots, and be plunged in the place it is to occupy, and it will continue to grow and bloom from May to October in the temperature of a dwelling-room. The minute, fern-like leaves and reddish pins'-head sort of blossoms, fit it well for association with fine-leaved plants. It is named the Artillery or Pistol plant, because, when sprinkled with water on a hot, sunny day, the flowers emit little puffs of pollen like discharges of smoke from fire-arms.

SALSAFY.—*R. W. B.*—This excellent root is not sufficiently appreciated, or it would be much more commonly grown. Any ordinary good sandy loam will suit it, if deeply dug some time ago, and laid up in ridges to the frost. In the event of having to prepare ground for it now, trench two feet deep, and put manure at the bottom of the trench. Sow in April, in drills fifteen inches apart; when the plants are up, thin to six inches in poor soil, and to nine inches in rich soil. The roots are usually taken up in November, and stored the same as carrots; but some cultivators leave a few in the ground for the sake of the shoots they produce in the spring, and which, if cooked before they become stringy, are by many highly esteemed. To convert the root of salsafy into vegetable oyster, it must first be boiled till tender, then be mashed up with butter, and lastly be fried a nice brown. It is then said to resemble oyster patties. It is certainly a very tasty dish, without any reference to its imitation of oyster.

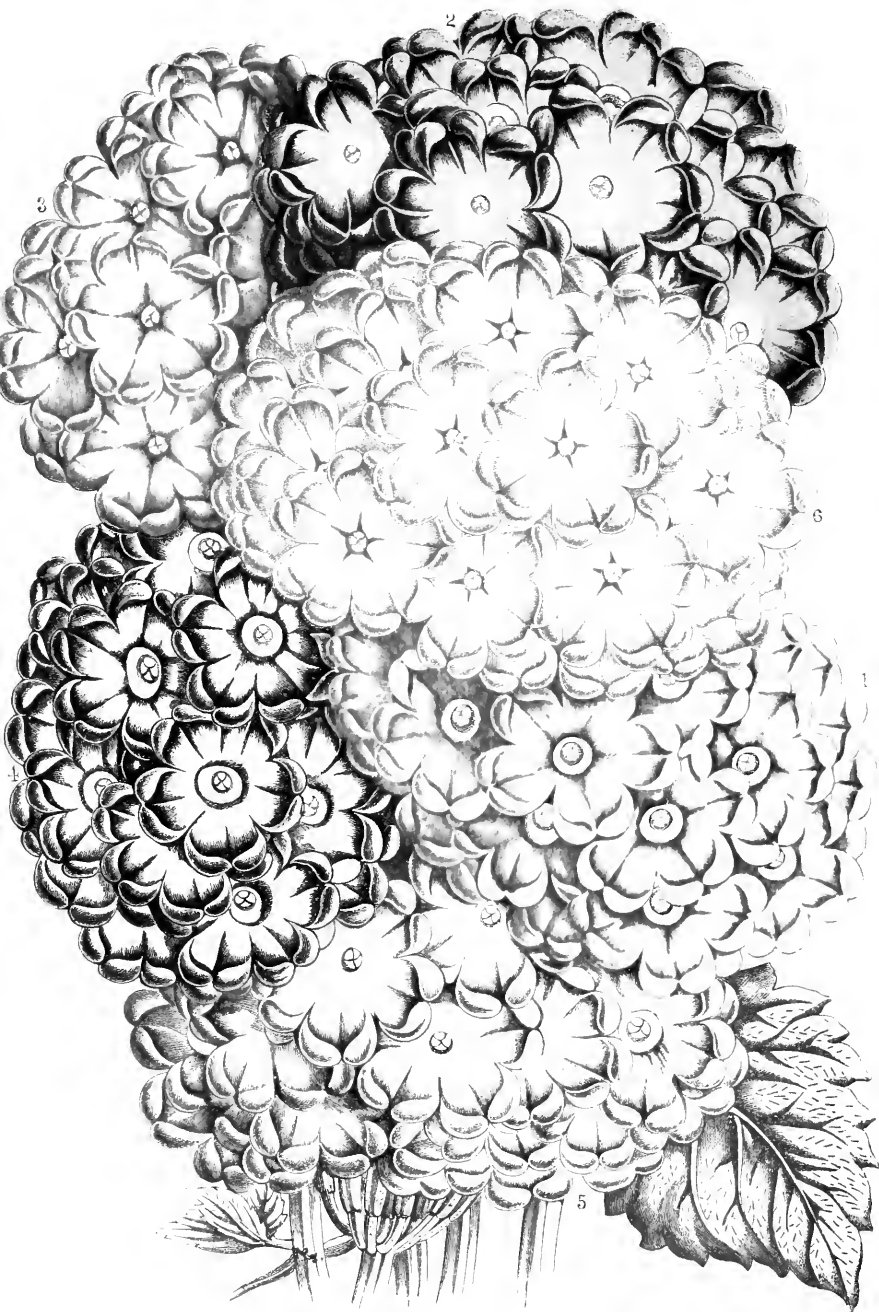
PLANTING A GROVE.—*Sir G. S.*—In the planting of a grove, a great variety of trees is not desirable; indeed, we should consider a variety fatal to the oneness of effect, which is the best and principal feature of a grove. One kind should predominate, whether oak, beech, alder, or what else, and there are not many kinds of trees suited for forming a grove. Regular planting, too, should be avoided. A grove must not be made to imitate an avenue, nor should it be a coppice or a thicket. Over some spaces the trees should be dotted with some degree of uniformity; in some others they should stand far apart, to allow of open spaces between, and from these open spaces should be seen some bold rounded groups, well defined, differing in outline, and in some one direction thickening together into a mass, to give deep shade and a rich wall of leafage. A few distinct kinds towering up above the general mass will improve the skyline, and prevent the insipidity that results from tumeness, but this must be sparingly and cautiously done, for repetition is an essential feature of a grove, which it is impossible to plant as an arboretum.

IVY EDGINGS.—*A New Subscriber.*—The tree-ivies would make good edgings in time in skilful hands, but the trailing kinds are best, and there is none to equal the common Irish grandifs, if a rich effect is required to be produced quickly. To make one of these edgings, a good breadth must be allowed, the ground must be deeply dug, and if poor, manure must be added; then the lines should be pegged out for the planting. Whatever sort it is intended to use, the best way to obtain the plants is at some good nursery, where usually plants three or four years old, with long rods, may be found in pots. These carefully turned out, and pegged down, make a good edging at once. They may be a yard apart if the edging is from one to two feet wide; but if wider, two feet apart would be better, because a thick growth is required, which necessitates cutting back the longest shoots. Any of the strong-growing green-leaved varieties of the English ivies may be used to advantage, as they make fine edgings. Still more beautiful—in fact, remarkably beautiful—are the variegated ivies. In preparing the ground for the variegated kinds, do not apply any manure; they are more beautiful in a poor than a rich soil. As these are slow growers, plant them a foot apart.

HOUSE CASE.—*J. B. G.*—The following will be found very useful, namely:—*Andromeda floribunda*, *Aucuba limbata*, *A. fœmina viridis*, Evergreen Tree Box, *Ligustrum japonicum*, *Osmanthus ilicifolius*, *Pernettya mucronata*, *Raphiolepis*, *Skimmia japonica*, *S. oblata ovata*, *Laurestinus*. For the back plant *Hedera helix* minor, and *H. h. digitata*. The demands upon our time are too great to admit of our answering correspondents through the post.

C. H., Bath.—*Cineraria acanthifolia* would be a good substitute, but the seed is rather expensive to purchase in quantity. *C. maritima* would also do, and the seed is cheaper. If a golden plant would be admissible we should recommend *Pyrethrum Golden Feather*, because of its effectiveness and the ease with which a stock can be raised. *Ageratums* will flower the same year if sown early, as also will *Delphinium formosum*. The *Dianthus*es are useful for bedding purposes, but the other plants named are not. Prune the *Datura* at once.

PLANTING POTATOES.—*J. W.*—The sooner the heavy ground is dug the better; let it be laid up ridge and trench by a good workman. At planting time, instead of dibbing in the sets, lay them in the trenches and throw the soil from the ridges down upon them. This plan produces a well-pulverized and aerated seed-bed. Of course the trenches should be as far apart, or half as far apart, as the rows are to be.



NEW VERBENA.

ECKFORD'S VERBENAS.

(With Coloured Illustration of six New Varieties.)



FOR several years past Verbenas have not enjoyed a large share of popularity among flower gardeners, yet in no other period has the advance towards perfection in the size, colour, and form of the flowers been so great as it has been during the last four or five years. This improvement is, in the main, due to the labours of Mr. C. J. Perry, Castle Bromwich, and of Mr. H. Eckford, the able head gardener to the Earl of Radnor, Coleshill House. Notwithstanding the unpopularity of this flower, these two earnest cultivators proceeded with the work of improvement, but in different ways. Mr. Perry devoted his energies to raising varieties with flowers of the finest form and colour, without reference to habit, or their adaptability for flower garden decoration. Mr. Eckford, on the other hand, has paid especial attention to the habit and constitution, whilst, at the same time, labouring hard to combine with a good constitution and habit, flowers of fine form, and possessing colours that are not easily affected by brilliant sunshine and other uncongenial weather. That he has been eminently successful there can be no doubt, for many of the varieties raised by him, and which have flowers of grand form, occupy a high position amongst the best of the bedders yet sent out.

As Mr. Eckford has contributed a short paper on the management of Verbenas for flower-garden decoration, it is quite unnecessary to allude to the cultural details here, but we are bound to say that the views expressed by Mr. Eckford with reference to the chief causes of failure coincide entirely with our own experience; at the same time we are anxious to say that with a liberal course of management, such as that recommended by Mr. Eckford, failures would be remarkably rare, and the Verbena would once more occupy the high position in the flower garden to which it is now so thoroughly entitled.

The varieties here figured are a portion of a batch of fine novelties, selected from the Coleshill seed bed, that are to be sent out by Mr. John Keynes, Castle Street, Salisbury, on the first of next month. We have much pleasure in figuring these varieties, because of their high excellence, and for the purpose of showing the immense improvement that has been effected in these useful flowers within the last three or four years. The names and colours of the varieties here figured are as follows:—

1. *Peter Williams*.—Deep scarlet; eye pure white, large, and circular; the pips large in size and of good form; the trusses large and bold. One of the showiest and most valuable of the group, and likely to prove a first-rate bedder.

2. *Blue Bell*.—Well deserving of its name, for the colour is of a peculiarly bright rich shade of cobalt blue; pips large, stout in substance, very smooth, and of grand form, with large circular white eye; trusses large, globular, and well proportioned. A very beauti-

ful variety, which deserves appreciation as much for its distinct colouring as for the superb form and finish of the flowers.

3. *Grand Monarch*.—Very brilliant, rich deep orange-scarlet; centre deep crimson. Although there are many good scarlet-flowered varieties, this is a most valuable acquisition, because of the grand form and perfect finish of the flowers, in addition to its many other good qualities.

4. *George Peabody*.—Clear bright plum colour; eye pure white; pips large and smooth, and of the finest form; truss large and bold; very distinct and most effective in appearance. A valuable variety for exhibition purposes, which will hold a high place amongst Verbenas many years hence.

5. *Rose Imperial*.—Delicate but bright rose-pink, of the same hue as that of the flowers of the well-known Christine geranium; pip and truss large, smooth, and of grand form. A decided acquisition, and will, there can be no doubt, be much appreciated by growers of this class of flowers, whether for culture in pots for the conservatory, or for exhibition, or for cut flowers.

6. *Mrs. Dodds*.—Tint clear bright flesh, of a peculiar delicate hue; centre rich crimson; pips and truss large, and of the finest form; a most distinct and beautiful variety for all purposes, but more especially for associating with those of a darker hue.

The other varieties to be sent out at the same time as the above are: *Miss Charlotte Mildmay*, clear blush, with deep pink centre; pips very large, stout, and smooth, and well arranged in the truss. *Mrs. Knight*, pale rose; pips and truss large, and of grand form. *Lavender Queen*, bright clear lavender; pips large, and stout, and smooth, and arranged so as to form a bold striking truss; a superb bedder.

We regret very much that our artist, usually so truthful, has failed in reproducing the peculiar rich and striking colours of the varieties here figured, for in every case the colours of the flowers are far superior to what they are shown in the plate. The plate must, therefore, be taken as illustrative of the grand form and superb finish of the flowers, and as suggestive of the colours. The descriptions are taken from notes made when the flowers came before us upon several occasions during the summer and autumn of last year, and, therefore, no difficulty with respect to the colours, will be experienced by intending purchasers.

Of the older varieties of Mr. Eckford's raising, the under-mentioned can be recommended, with every degree of confidence, namely: *Eclipse*, crimson scarlet, fine bedder. *Harry Eckford*, deep crimson, white eye. *Pearl*, fine white. *Sensation*, deep rose, with lemon eye, surrounded with a ring of crimson. *Ace of Trumps*, rosy salmon, crimson centre. *Conspicuous*, crimson, with white eye. *Mrs. Stuart Low*, pure white, grand bedder. *Lotty Eckford*, rich plum, with lemon eye, fine and distinct, and a good bedder. *Bravo*, clear delicate rose. *Polly Perkins*, cerise suffused with salmon, fine bedder. *Isa Key*, rose shaded violet. *The Cure*, rose purple, with crimson centre. *Imperial Purple*, the best of all the purple varieties, both for bedding and pot culture. *Coleshill*, bril-

liant scarlet, with lemon eye. *Fanny Martin*, clear rose. *Earl of Radnor*, rosy scarlet, with pale lemon eye. The above, with the new varieties, would form a very nice collection for a young beginner, and as the price is only a trifle more than charged for the commonest sorts, there is no valid reason why they should not be grown in preference to varieties that are now, comparatively speaking, worthless.

With respect to the price and other particulars respecting both the new and old varieties, we must refer our readers to Mr. Keynes.

NOTES ON VERBENAS.

BY HENRY ECKFORD,

Head Gardener to the Earl of Radnor, Colleshill House, Colleshill, Berks.



THE principal reason for my devoting special attention to the improvement of the Verbena, was to see what could be done in raising a race strong enough in constitution to carry them through uncongenial weather, whilst at the same time possessing flowers of a large size, fine form, and rich and effective in colour; but how far my efforts have been successful it is not for me to say. There can, however, be no harm in my stating, that from the first my aim has been to vindicate the claims of this flower to an important and prominent position in the flower garden, and to prove that with proper management, failures would be exceptional instead of being, as unfortunately they are at present, the rule.

The causes of failures of verbenas in the open air are not far to seek, and can be easily explained. The most frequent cause is undoubtedly putting out plants that have been starving in small pots several months previous to the planting seasons. It is a most grievous mistake to propagate the stock for bedding early in the season, although it is generally supposed that early propagation is necessary to secure strong healthy plants by planting-time. When struck early, and necessarily kept starving in pots for several months, the constitution becomes impaired so much that they are unable to resist, with any degree of success, the attacks of red spider, thrips, and mildew—three most formidable enemies they have to contend with. From close observation extending over many years, I am convinced that the month of April is quite early enough for striking verbenas intended for bedding purposes. The tops of the healthy shoots should be taken off in the early part of the ensuing month, struck in a brisk bottom-heat, and potted into store pots, and carefully hardened off; these planted out as early in May as the weather will permit, will grow away freely, and the beds in which they are planted will soon become a blaze of colour. The compost in which they are potted should be rich and nourishing, and for that reason nothing suits them better than a mixture of good turfy loam and

decayed hot-bed manure, mixed together, at the rate of two parts of the former to one of the latter, and a sprinkling of sand added to keep the compost open. Plants planted in a compost prepared as here directed will present a different appearance at planting-time to those which, according to a general, but very objectionable custom, are put in the refuse soil from the potting bench.

Verbenas are not at all particular as to the position in which they are planted, provided it is moderately open. If there is any difference in the positions most congenial to a healthy growth, preference must be given to an open situation, where the plants would be slightly screened from the rays of the midday sun. We plant here in all situations with the most satisfactory results, and there is no occasion for cultivators to trouble themselves much about the selection of the most favourable situations.

The most suitable soil is a rich loam, rather inclined to be heavy than otherwise, but they will do well in almost all soils, however light, if they are liberally enriched with manure some time during the winter season. In very light soils the surface of the beds should be mulched during the summer with a layer of half-rotten stable or other manure, to keep the surface comparatively cool, and to check excessive evaporation from the soil. The beds should also have a few thorough soakings of water during a period of drought. If it is intended to exhibit cut blooms, the plants should be put rather farther apart than would be desirable when planted for ordinary bedding purposes, so as to admit of their being covered with hand-glasses a day or two before the show day if necessary. The protection is merely required to shelter the trusses from heavy rains, and also to screen them from the sun, to preserve the outside pips until those in the centre are developed. The hand-glasses must of course have a mat, or a piece of canvas thrown over them during the hottest part of the day; the caps must, however, be elevated sufficiently to admit of a free circulation of air at all times about the foliage. The trusses must also be secured to neat sticks, to prevent the wind injuring them.

FUCHSIAS FOR THE CONSERVATORY.

BY J. JAMES,

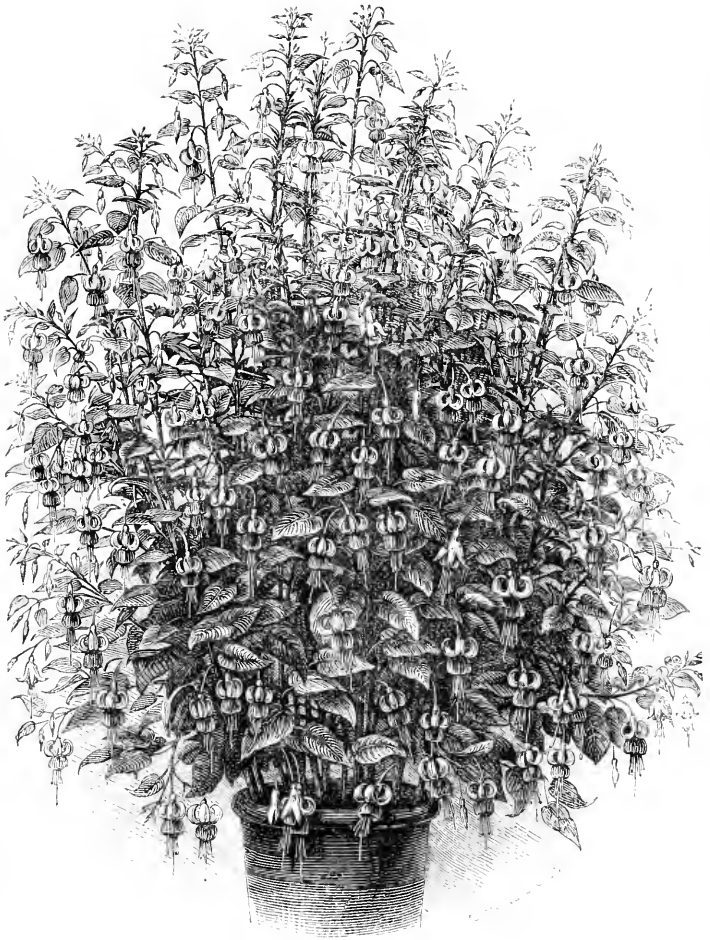
Head Gardener, Redlees, Isleworth.



PO cultivate Fuchsias successfully, they must be pushed on vigorously when once started into growth; therefore it is a mistake for amateurs and other growers with limited accommodation for plant-growing, to start them into growth much before the greenhouse and pits are cleared of the bedding plants with which they have been occupied during the winter months. Fuchsias are seldom wanted in the conservatory before quite the end of the summer, and as they are in every way better if grown on quickly from the first, the ensuing month presents a very favourable moment for taking them in hand in earnest.

I shall not say much about striking the cuttings, because those who have not the command of a hotbed will save themselves much trouble and anxiety by expending a few shillings in the purchase of a stock of young plants or rooted cuttings from those who grow fuchsias extensively, and sell them at a cheap rate. Where the conveniences exist for striking the cuttings, of course the work of propagating the stock is very simple. Select short, stubby, and firm shoots, and take them off with four or five joints, then trim off the two lower pair of leaves, and insert the cuttings deep enough to admit of the base of the leaves at the third joint to rest upon the sand, to avoid the check experienced by cuttings where several are put in one pot and divided. When rooted put them singly in small pots, as they can then be shifted into larger pots without injury to the roots. To assist the quick development of the roots, partly plunge the pots in the hotbed, and if placed in a large house cover them with a hand-glass to maintain a close damp atmosphere about them, but when in a frame no hand-glass will be required. Shade from the sun and sprinkle overhead when necessary, but they must not be kept too moist, or a large proportion will damp off. When rooted expose them more freely to the light and air, and shift into pots two sizes larger, as soon as the cutting pots are nicely filled with roots. It will be necessary to keep the house or pit rather close for a few days after they are repotted, to assist them in becoming established quickly. Afterwards more air and light will be required to insure a short-jointed and firm growth.

In dealing with old plants that were pruned in the winter, and are now starting into growth, it will be necessary to first turn them out of the pots, and then to remove the greater part, if not all, the old soil from the roots, and repot them in a fresh compost and in clean pots not larger than those from which they were taken. They may still be pruned, but there is a danger of the strong-growing sorts suffering from a loss of sap when pruned hard thus late in the season. The roots of specimens two or three years old may be shortened if required, but with few exceptions the plants from cuttings struck last year should be potted with their roots intact. Prepare the pots by putting a rather large piece of crock over the hole, then a layer of smaller pieces; and to keep the soil in its place, put a layer of rough turf or flaky leaf-mould over them. Upon this put a handful or two of the compost, then spread out the roots regularly over it, and put a few handfuls of the finest part of the compost immediately over them, and strike the bottom of the pot on the bench to shake it down amongst them. Then fill in with the soil, and press it moderately firm. After they are potted, remove them to a structure where they can be kept close and shaded. Syringing them lightly twice a day is the best means of checking undue evaporation until the roots are established in the new soil, and able to take up sufficient moisture for the support of the plant. Afterwards it will not be desirable to syringe them so frequently, as one good washing will be decidedly preferable to half-a-dozen light sprinkles. Air-giving, shading, and watering must be regulated by the weather, but it may be stated that fuchsias, when growing freely



SPECIMEN PLANT OF FUCHSIA.

require no more air than is really necessary to insure a firm growth and maintain a pure atmosphere. With respect to shading, it may be stated that they must have full exposure to the light at all times, excepting when the sun is shining brightly, and then the foliage must be screened from its influence by means of tiffany or canvas blinds. It is impossible to lay down any precise rule with respect to watering, as each plant will differ more or less in its requirements. They must be supplied with sufficient water, and no more; that is, the soil must not be allowed to become dry, or be kept in a state of saturation. Healthy specimens, however, will, if the drainage is perfect and the pots full of roots, require very liberal supplies. After they are shifted into the pots in which they are to flower, and are well established, water alternately with weak liquid manure. Those who have not the conveniences for making liquid manure from horse or sheep's droppings, may make a stimulating liquid by mixing one ounce of guano and a five-inch pot full of soot, with three gallons of soft water a sufficient time before it is wanted, to allow of its becoming clear before used. A thorough wash overhead occasionally will be highly beneficial, but the best means of providing them with a proper share of atmospheric humidity is to sprinkle the stages and walls, and pour a few cans of water upon the floor two or three times a day.

Sound turfy loam should form the staple part of the compost, and to every three parts of loam should be added one part of peat, one part of thoroughly decayed hotbed manure, dried and run through a coarse sieve, and a third part of silver-sand. The loam and peat must be broken up moderately, the manure and sand then added, and the whole mass well incorporated together. The soil used when the old plants are shaken out should be made rather finer, and have a larger proportion of sand than advised above; which is quite sufficient, by the way, for all subsequent shifts. The only matter remaining to be mentioned here is that the plants must be shifted on until they reach the size in which they are to flower as soon as the pots are nicely filled with roots, before they become pot-bound, because every check they receive tends to throw them prematurely into flower.

The best style of training is that shown in an illustration of a specimen fuchsia in the catalogue of florists' flowers, published by Mr. Cannell, of the Fuchsia Nursery, Station Road, Woolwich.* The specimen there figured is one of a fine collection exhibited by Mr. Cannell at one of the great summer shows of the Royal Botanic Society, Regent's Park, last year. He is undoubtedly one of the most successful trade cultivators and exhibitors of the fuchsia in the country, and is, so far as I am aware, the only trade grower who makes a specialty of this most beautiful and useful plant, and has for several years past distributed the beautiful varieties raised by that veteran raiser, Mr. Banks. The plants exhibited by Mr. Cannell upon the occasion referred to were from cuttings struck in the spring

* Through the kindness of Mr. Cannell, we are enabled to present our readers with an illustration of the fine specimen to which Mr. James alludes.

of the preceding year, and the foundation was laid by stopping the young shoots when required during the first year. In the early part of the year in which they were exhibited they were pruned into shape, and when they were growing freely the young shoots were thinned out where they were likely to be too close together when full grown, and the growth towards the top pinched once or twice to prevent their robbing the lower branches of their proper share of nourishment. The young growth was not stopped so excessively as is usually practised, and the results are certainly such as to prove that Mr. Cannell's style, which is intermediate between a bush and a pyramid, is one worthy of general adoption. Pyramidal specimens are produced by training up a single stem, and stopping it when necessary to promote the production of side-branches, which in their turn should be stopped two or three times in the course of the season.

Of the newer sorts that can be recommended, the following are, perhaps, the best:—*Splendour*, *Pride of Woolwich*, *Perfection*, *King of the Stripes*, *Will Sell*, *Vesta*, and *Beauty of Kent*. Of the older varieties the following can be recommended as being the most desirable in the several classes:—*Enoch Arden*, *Try Me O*, *Lizzie Hexham*, *Killiecrankie*, *Brilliantissima*, *Lustre*, *Beauty of Shobden*, *Beauty*, *Lady Heytesbury*, *Conspicua*, *Bland's Floribunda*, *Pieturata*, *Mrs. Ballantine*, *Henderson's Avalanche*, *Lord Calthorpe*, *Harry Felton*, *Champion of the World*, and *Blue Boy*. There are many other good varieties, but the above are sufficient to form the nucleus of a collection.

DAHLIAS.—No. II.

BY JOHN WALSH.



F the directions given in these pages last month, under this heading, were carried out, the cultivator will now be in a position to proceed with the preparation of the bed for the reception of the plants, and a little advice upon that part of the subject will doubtless be peculiarly acceptable. If it is intended to exhibit blooms in the autumn, a favourable position must be selected for the bed; but if merely intended for the decoration of the flower-garden, they should be planted wherever room can be found for them at the back of the mixed borders.

Although I shall give a few directions for the preparation of the bed for plants that are to furnish blooms for exhibition purposes, I should certainly not advise those who take them in hand for the first time to exhibit in the forthcoming autumn. There are so many things to learn respecting the management of the plants and the preparation of the blooms, before first-rate flowers can be produced, that can only be learnt by working at them for a year or two. Therefore, the chance of the novice occupying a high position

on the prize-list is so small, that it will be well to wait for a year or two, until flowers that are likely to do honour to the cultivator are produced. This remark applies with equal force to exhibiting plants and flowers of all kinds, and we should have more thoroughly good growers and better exhibitions, were growers to wait until they had mastered the cultivation of the subjects they take a fancy to before bringing them before the public; because, when a young grower is thoroughly beaten or laughed at on account of the inferiority of his products, he loses all heart, and the exhibition list knows him no more, excepting as a spectator.

The situation selected for the dahlia beds must be open, but, if practicable, slightly sheltered from rough winds; for, when planted in an exposed position, the branches are liable to be snapped off during boisterous weather. Very heavily-manured ground is not desirable, because, in ordinary seasons, it encourages an excessively luxuriant growth, and a very small percentage of flowers. On the other hand, if the soil is poor, there will be an abundance of flowers, but they will be small in size and poor in quality, besides the additional risk of the foliage becoming infested with red-spider, if the season happens to be rather dry. Ground that was manured and trenched rather deep in the autumn, and left rough on the surface, will now be in the best possible condition for planting, and the plants can be put out without further trouble after the third week in May. There is, however, plenty of time for preparing quarters that, from any cause, were dealt with in the manner suggested above, but no time must be lost in preparing ground now. Dress the surface with two or three inches of rotten manure, according as it can be spared, and dig it in regularly, and not put all of it into the bottom of the trench, as some writers advise. It is also a good plan to apply a dressing of maiden loam in addition to the manure; but, as good loam is so expensive in most districts, it appears desirable to say that good blooms can be produced without its aid. Even at this late period the surface should be left rather rough, as the action of the weather we usually have during April and the early part of May will pulverize it sufficiently to secure a good earth by planting-time.

It has been already said the planting should be proceeded with after the third week in May, and it only now remains to be said that, from that period to the end of the second week in June, planting may be most successfully performed. It is not desirable to defer the planting for any length of time after the first of the last-named month, because the plants have then such a poor opportunity of becoming established before the hot weather sets in. There is no danger attached to planting as early as the second week in May, because the plants can be protected from morning frosts by means of flower-pots turned over them the last thing the previous evening. As it is important that every plant should have sufficient space for its full development, they should be put at a distance of not less than five feet apart. The proper distance is six feet. The distance at which those in the mixed border are put apart must be regulated by circumstances, but in no case is it desirable to overcrowd them.

When growing for exhibition, two plants of each sort should be grown, and the number of varieties grown should be nearly double the number of blooms it is intended to stage. The stakes should be put in the proper positions before planting, to prevent the possibility of their injuring the roots when driven into the soil, and they must be stout enough to support a considerable strain upon them. Water about every other day, until well established, if the weather happens to be dry for a time after they are put out. Here we must quit the subject; but directions for the summer management shall be given in time to be useful.

The block of Fig. 1, page 82, was unfortunately put bottom upwards by the printer; but I do not suppose for a moment that any inconvenience has been felt, as the letterpress and the position of the other cuts are sufficient to show that the first cut was reversed by mistake.

SUMMER CUCUMBERS.

BY GEORGE GRAY,

Head Gardener, Norbiton Hall, Kingston-on-Thames.



CUCUMBERS are most assuredly of greater value and more highly appreciated in the summer months than they are during the winter season, independent of the vast difference of the cost incurred in their production; yet it is exceptional to meet with anything bearing on the management of the plants during the former period. Treatises on the cultivation of winter cucumbers are so plentiful that I am afraid to say how many have made their appearance during the last four or five years, for fear of being considered guilty of exaggeration, whilst, at this moment, I can only call to mind one paper in which the management of summer cucumbers is specially dealt with. Writers upon cucumber-growing have, apparently, made the mistake of supposing that the production of a summer crop is so easy that few require any advice in the matter. Consequently, they confine themselves to describing the way in which they should be managed at a season when few people have the inclination or means of growing them. For my own part, I am convinced that a few practical remarks on the management of cucumbers during the summer months will be of considerable service, and accordingly offer them herewith.

For securing a regular supply throughout the summer months expensive appliances are not at all necessary; but if a structure has to be erected especially for cucumbers, a low span-roof house, from nine to twelve feet in width would be decidedly preferable, because of its value for wintering bedding and other plants. My object, however, at the present moment, is not to enter into a discussion respecting the erection of cucumber-houses, but to show how a

plentiful supply of cucumbers may be secured throughout the summer, with the means and appliances already at hand. As a rule, the frames and other structures employed in wintering bedding plants are idle during the summer, instead of being turned to account in cucumber and melon growing. In frames and pits the soil can be placed upon the floor, but in greenhouses and similar structures, it will be necessary to make up the beds upon the side-tables. Now, instead of laying a few boards upon the stages, and making the bed of soil upon them, the staging should be removed altogether, and the plants grown in boxes or in tubs, capable of holding a considerable quantity of soil. It will not be necessary to remove the supports of the stage, but if all the woodwork is allowed to remain, and the soil placed thereon, whether in boxes or not, it will be in a constant state of saturation, and will, consequently, soon decay. The boxes can be made of the commonest material, so that their cost need only be most trifling, and those who have not the time, or are not handy in carpentering, can purchase old egg-boxes, which are admirably adapted for this work; the medium-sized deep boxes will hold just sufficient soil for one plant, and the long shallow boxes, if deepened by knocking the lids to pieces and adding them to the sides and ends, will hold two plants comfortably, although having the plants in separate boxes is decidedly preferable. In houses where the side-tables consist of rough boards, covered with sand, gravel, or ashes, or slate, stone, or other imperishable material, the soil can be put upon them, and kept in its place by means of a few pieces of board fixed on both sides. Bottom-heat is neither necessary nor desirable, and the only matter the cultivator has to study in laying the foundation of the bed is to provide means for the escape of the superfluous moisture. This will not be a difficult matter, for if the bottom is perfectly solid, the water will drain away quite fast enough at the sides, if the boards are not fixed too close at the bottom.

With respect to preparing the beds, it is necessary to state that two parts of turfy loam, one part decayed manure, and one part of leaf-mould, if procurable, will form a most excellent compost. Prepare by chopping the loam up rather roughly, and then add the manure and leaf-mould, and well mix together. The soil must be used in a lumpy state, and a layer of the largest lumps should be thrown in the bottom of the box or bed previous to putting in the bulk. Boxes should be filled to within about six or eight inches of the top, to afford space for earthing the plants up after they are established, and in the case of beds, both in houses and frames, the soil should be put in a ridge down the centre, and more added as it becomes necessary, until the bed has been made large enough for the requirements of the plants. Towards the middle or end of the summer, the beds may be covered with a layer of manure if the plants show signs of exhaustion; but so long as they grow vigorously no top-dressing will be required.

The planting must be regulated by the time the houses and frames are emptied of the bedding plants, but they should be planted as early in May as possible, because no matter how early they are planted they will continue to bear until the autumn, so that every

week is a real gain. The best way for an amateur to procure a stock would be to purchase a few plants at a neighbouring nursery, unless he can beg them from a gardener who has them to spare. This plan will save considerable trouble, although it is not at all difficult to raise a stock from seed. The seed must, however, be sown without a day's delay, and to get it up quickly, sow in small pots, and put one seed in each, and place them on a shelf where they will be exposed to the full blaze of the sun, and water with tepid water. After the plants are up they must not be so fully exposed, but they must have the advantage of the warmest corner the greenhouse affords.

After the plants are put out, keep the temperature as near as possible to 75° by day, but as no fire-heat will be used, the heat must be regulated by the ventilators. The house must, however, be shut up early in the afternoon, even if the thermometer rises to 90°, so as to husband as much heat as possible for the night. The foliage should be syringed rather heavily once a day at least, and the soil not allowed to become dry at any time, or the growth will be checked, and the foliage quickly become infested with red spider. The water used, both for syringing and applying to the roots, must be tepid, and the supply for morning use should be put in the house over-night, and that for the afternoon placed in the full sun in the morning.

The directions given for training melons will apply with equal force to the cucumbers, excepting that the fruit laterals should be stopped at one or two joints above the fruit when it is about one or two inches in length. To avoid the necessity of having to remove a large quantity of the growth at once, a judicious system of stopping must be practised, and the shoots not likely to be wanted should be pinched off when a few inches in length. It will, however, be necessary to cut out a portion of the old wood occasionally, to maintain a supply of bearing wood.

The best sorts for an amateur to grow for the table are, *Sutton's Berkshire Champion*, *Rollison's Telegraph*, and *Master's Prolific*, of the white spine class; and *Godfrey's Black Spine*, and *Kirklees Hall Defiance*, of the black spine section.

THE CULTIVATION OF THE ROSE.—No. VI.

HOW TO PRUNE ROSES.



SOME people prune their roses with a knife and fork; that is a practice I strongly object to. Some do not prune them at all, and that modus I approve of generally, for a rose not pruned will be sure to flower, and a rose badly pruned may have all the flower-buds cut out of it. If it is a toss-up, I cry for no pruning, because Nature intends that roses should flower, and will accomplish that without our help, but *judicious* pruning is to be advised, both for the regula-

tion of the growth and the production of fine flowers. The subject of pruning admits of both general and particular treatment. As a matter of course we dispose of generalities first, and, with the reader's kind permission, will suppose that the reader knows nothing at all about pruning. Now, in the absence of technical knowledge, common-sense is sometimes useful, and any one ignorant of the niceties of rose-culture may make a pretty safe guess about the pruning of a rose by the aid of common-sense alone. Suppose it presents a number of very long whip-like shoots, we should say Nature intended those long shoots for some useful purpose, and to cut them all away would be murder. But we might observe in one part of the growth two or three of these long shoots entangled and crowded, and it might occur that to remove one or two, in order to leave ample room for the full development of the others, would be sensible; so far common-sense might suggest, and science would respond in approval. Next we might turn to a rose of short, stubby, twiggy growth, and be perplexed about the pruning in this case. It may have been observed that, on this rose, the finest flowers were always produced on young, vigorous, and rather greenish shoots, and this would suggest the advisability of getting rid of some of the old hard, dark-coloured wood, bristling with little twigs, on which roses were borne long ago. This would be just the course that science requires, for the essence of the subject may be summed up in this—that the pruner should, as far as possible, promote perpetual renewal of the tree, and look to the latest growths for a display of flowers.

All roses that have free-growing bushes, such as the Hybrid Perpetuals, Gallicas, and Bourbons, may, when grown on their own roots, be left altogether unpruned, and they will be splendid objects from year to year. This is rank heterodoxy, I know, but it is true, and I confess I have always enjoyed a great bank of roses, of about a dozen different kinds, that have never once been pruned during the past fifteen years, but have become huge bushes, that, in their season, are literally smothered with flowers. This system, however, must not be followed if flowers fit for exhibition are required; indeed, to insure high quality, we must practise pruning by rule, and be content with a few flowers. Probably, nine-tenths of all our readers would prefer a brave show of garden roses to the production of a few flowers of the most perfect form, and beyond the average in size, and to all such we commend the simple plan of planting the most robust-habited and free-flowering sorts on their own roots, and leaving them to grow almost wild, and in happy ignorance of the pruning knife, and without a stake or tie to disfigure their natural gracefulness. We will now treat of particular modes of pruning, taking the families in the same order as they are treated of in the "Rose Book."

CABBAGE ROSES should be pruned rather close, all the longest shoots being cut back to about a third of their original length. They will then, from the half dozen buds left on each plump shoot, put forth noble clusters of flowers.

MOSS ROSES require to be pruned in the same manner as advised for cabbage roses.

DAMASK ROSES make handsome standards and fine free bushes on their own roots. In pruning, remove by a clean cut to the very base a few of the oldest shoots, but not to the impoverishing of the tree. The young vigorous shoots should be shortened to two-thirds their original length, and the smaller twiggy growth be well thinned out.

GALLICA or FRENCH ROSES have a compact, upright growth, and consequently do not make handsome standards. They require rather close pruning, the strongest shoots to have seven or eight buds left, the weaker shoots only two or three, and the small wiry wood should be cut clean away.

ALBA or WHITE ROSES constitute a peculiar class with green shoots, light glossy foliage, and white flesh or pink-coloured flowers. These are among the very best of roses to be grown in the form of bushes without any pruning at all. The proper way to prune them is to cut back to about half its length every strong young shoot, and to within two or three buds of the base all the weaker shoots. The wiry wood must be removed entirely.

HYBRID CHINA ROSES require careful pruning, or they will not produce their flowers profusely. One important duty of the cultivator is to promote renewal constantly by cutting out a few of the oldest of the long rods to make room for younger rods that will take their place. The finest show of flowers will be secured by leaving a few of the longest shoots altogether unpruned; but, as tidiness of appearance is an object, the shoots may all be slightly shortened, and they must be thinned out where crowded. Indiscriminate hacking and cutting will simply ruin these roses, therefore they are not to be pruned without a little first consideration of their habit.

HYBRID BOURBON ROSES, of vigorous habit, should not be severely pruned, but those of close-growing habit should be cut in rather close, leaving an average of half a dozen buds on each shoot. All the wiry spurs that produced flowers last season should now be cut clean away.

AUSTRIAN BRIER ROSES require careful pruning, the strong shoots to be only slightly shortened, and the wiry twigs to be left untouched, except they happen to be crowded; in which case they must be thinned.

SCOTCH ROSES do not require pruning at all, except to keep them in some sort of order, and, as a rule, they are most enjoyable when allowed to run riot in the utmost disorder.

AYRSHIRE ROSES ought never to be pruned except to regulate their general outlines, and admit light and air amongst their branches.

MULTIFLORA ROSES should never be pruned, except to keep them in order, and occasionally renew them by substituting new shoots for old ones.

EVERGREEN ROSES should never be severely pruned, except to promote renewal, and keep them in proper order.

BOURSAULT ROSES scarcely require pruning, but they must be kept in order, and from time to time the oldest shoots should be cut clean out.

BANKSIAN ROSES should be carefully pruned immediately after flowering, and at no other time; then the grosser shoots should be cut clean out, and the twiggy branches should be shortened and moderately thinned. If never pruned at all, the worst that will happen to them will be crowding of the growth.

HYBRID PERPETUAL ROSES vary so much in habit that the pruner must operate in accordance with their style of growth. They may, however, be all left unpruned, and will grow and flower superbly. But to insure flowers of fine quality, and keep the trees in formal trim, pruning must be systematically performed, and there can be no better rule for it than that given at page 44 of the "Rose Book." It is given in these words:—"As for the pruning of these roses, cut back to a plump bud, so as to remove the light spray which has produced flowers, and cut the moderate growers closer and more severely than those that grow vigorously. When shoots as thick as a carpenter's pencil are produced, six to ten buds may be allowed, upon an average, to each shoot; if these are cut back to buds placed outwards, the growth will always be of a nature to keep the head open, and for this purpose all shoots that crowd the centre should be removed by a clean cut to the base. To make the most of these roses they should be freely but carefully pruned during summer." As the Hybrid Perpetuals are most commonly grown, so they are the most commonly abused and ill-treated, and their too-general fate is to be pruned destructively by jobbing gardeners, who think the more they cut the better is the work done, and hack and slash accordingly. Happy the amateur who can prune his own roses, or, at least, stand by and direct; for when Nature has kindly produced a fine spreading bush of ripe hard wood for the production of noble flowers, it is murder to cut this useful wood away, except by real artistic rule, the first requirement of which is that enough of it shall be left to prove that the rose is the Queen of the Garden.

BOURBON ROSES should never be severely pruned, but the twigs on which last year's flowers were borne should be removed, and the young growth shortened and thinned, with a view to produce compact symmetrical heads. The more robust the habit the less must they know of the knife.

CHINA ROSES of small growth require to be pruned with a view to keep them neat and compact, and hence the shortening of the longest shoots is usually sufficient. Where planted to make belts and masses, they may be left almost unpruned with advantage; but where neatness is required, they must be just kept in shape and nothing more.

TEA-SCENTED ROSES vary much in habit, and require to be pruned in accordance with their degrees of robustness. A few strong-growing kinds make rods of great length and thickness, while at the other end of the scale we have little wiry mites that may always be covered with a peck measure. The long rods should be left nearly their full length, but they may be shortened to half their length, without pruning the bloom out of them. Periodical renewal from the base must be encouraged, and if the trees are well fed they will be always throwing out new and vigorous shoots. The small kinds

need regulating and careful thinning, and may be pruned close without harm.

NOISETTE ROSES may be left to grow wild without any pruning, and will make a glorious show. But where order is the gardener's first law, they may be pruned in the same way as advised for the Tea-scented.


MACARTHEY ROSES are grand things for walls, in sheltered situations; they scarcely require any pruning, but must be kept in order and the growth as evenly distributed as possible.

THE TIME TO PRUNE is not sufficiently understood. Save and except the pruning that should be done in summer, instantly upon the decline of the first bloom, the proper time to prune is some time in the months of March or April, and, as a rule, the *later the better*. In a sheltered spot, where spring frosts rarely do mischief, pruning may commence in January to promote an early bloom. But for the average of climates in these islands, it is well to allow the trees to make a little growth before pruning them. If late frosts occur, this growth is injured, but presently afterwards the pruning-knife removes it, and a new and more vigorous growth starts from the lower buds left by the pruner. To be in undue haste to prune roses is to expose to risk and injury by late spring frosts. S. H.

BEDDERS AND BEDDING.—No. III.

BY A HEAD GARDENER.

PREPARATION OF THE BEDS.

N the two last numbers of the FLORAL WORLD, the propagation and selection of the best bedders was briefly dealt with, and we will now offer a few suggestions respecting the preparation of the beds for their reception, and then indicate the most suitable situations for the different classes of plants employed in the embellishment of the flower garden. The advice, with respect to turning up the beds in the autumn, and then leaving them in a rough state until the following spring, still holds goods where it can be carried out; but where the beds are filled, as they should be, with spring-flowering plants, it is impossible for them to be prepared for the summer until a late period in the spring. Hence, what follows is strictly seasonable. A few years since it was commonly supposed that flowers could be grown without the assistance of manure at all; and it was not until after repeated failures of such things as calceolarias and verbenas, that a large proportion of flower gardeners could be convinced to the contrary. It is now, however, generally admitted, thanks to the teaching of our Editor here and elsewhere, that without the assistance of manure, in some form, flower gardening cannot be carried on successfully with any more success than would be

attendant on an attempt to grow vegetables without maintaining the fertility of the soil by means of liberal dressings of fertilizing matters. This point being conceded, all that need be said can be summed up in a very few words. First of all, it is necessary to decide upon the arrangements without delay, if not already done, to avoid delay and confusion at planting-time, and also to insure the beds being prepared in a manner most congenial to the subjects with which they are occupied during the ensuing season. The arrangements being determined upon, and the way in which each bed is to be planted duly entered in a book, the work of preparation must be proceeded with as fast as the beds are cleared of their winter occupants. All the beds should be dug up as deeply as it is possible to dig them; but if all receive an equal dressing of manure, the manure will be worse than wasted; because plants that do best in poor soil will grow too luxuriantly for them to flower well, whilst others that require a very liberal share of nourishment, will be partially starved for the want of food. Bedding geraniums of all kinds, with but few exceptions indeed, do much best when planted in newly-manured ground, as also do centaureas, the dwarf tagetes, and a few other things that could be mentioned. On the other hand, violas, calceolarias, and verbenas seldom do well unless the ground has been liberally dressed with half-rotten manure. For such things as petunias, ageratums, heliotropiums, and most of the ornamental-leaved plants used for bedding, an intermediate course is desirable, so as to maintain a healthy and moderately vigorous growth without encouraging excessive luxuriance. The best manure for plants of this class is either well-rotted leaf-mould, or decayed or charred vegetable refuse used in a rather liberal manner. Few gardeners care to take the trouble of regulating the dressing of manure according to the requirements of the plants; and the general rule, so far as my observations, which have extended over a rather wide area during the last half century, is to dress all the beds in the flower garden alike. Consequently, the behaviour of the plants is far from satisfactory, even if they do not fail altogether. In clearing the beds in the spring, everything, excepting bulbs and plants required for propagating purposes, should be dug in instead of being wheeled to the rubbish heaps to poison the air of the whole neighbourhood with the noxious exhalation arising therefrom. By burying the matter in the beds, a vast saving of time and fertilizing matter is effected, independent of the objection of having a heap of vegetable refuse in a state of decomposition in the garden.

In making the arrangements for the forthcoming season, due regard should be paid, as far as practicable, to putting each class of plants in the position most congenial to it. In planting a group of beds, primary importance must, of course, be attached to the grouping of the colours, but where the beds are dotted about on different parts of the lawn, much might be done in this respect. This, I have no doubt, appears a trivial matter to many, but the failures arising from the mistakes of putting shade-loving plants in the full sun, and *vice versa*, are so numerous, and cause so much dissatisfaction every season, that no apology is necessary for alluding to it here.

As a guide to the inexperienced I will classify the most important genera employed in flower garden decoration according to the positions in which they do best. But it must be borne in mind that a very large proportion of the bedders will do moderately well in almost any position. Amongst those flourishing in a cool and partially shady situation we must include *Ageratums*, *Calceolarias*, *Variiegated Geraniums*, *Fuchsias*, *Lobelias*, *Heliotropiums*, *Verbenas*, and *Violas*. Amongst those that do well in a dry hot position, are *Alternantheras*, *Bouvardias*, *Coleus*, *Centaureas*, *Zonal Geraniums*, *Iresines*, *Lantanas*, *Petunias*, *Tropæolums*, *Veronicas*, and succulent plants of all kinds, and nearly all the Subtropicals.

KITCHEN GARDEN ROOTS.



THE tap-rooted plants grown in the kitchen garden cannot usually be sown with advantage until the month of April, although in forward seasons parsnips may be sown with safety in the month of March. Important as these crops are, there is really not much to be said about them, though what little should be said is as important as the roots themselves; for good crops of roots make a great return for the labour bestowed upon them, and to secure good crops we must practise good cultivation. As, in a periodical work, we are bound to begin somewhere with reference to the passing time, we shall now suppose that those of our readers who grow garden roots have plots of land made ready for them by deep trenching, and that it depends on the weather for a nice friable top-crust on which the seed can be sown. Taking this for granted, we proceed to offer a few practical advices, which we hope will to many prove useful.

THE CARROT is the most important of all the garden roots, the potato alone excepted. Two supplies of carrots should be arranged for in every garden. A dish of small, tender carrots constitutes one of the elegances of the table during the summer and autumn, and large carrots are in demand all the winter, and, indeed, as long as they can be obtained throughout the year. Fortunately, both sorts can be grown in any garden that will produce a cabbage; but first-class winter carrots fit for exhibition can only be grown in a deep, well-pulverized loam, or nourishing sandy soil that has been long in cultivation. In common with all other crops, deep digging some time in advance of sowing is necessary to insure a heavy production of handsome roots; and the best plot of ground that can be selected for sowing carrot-seed on is one that was heavily manured last season, and well trenched up before winter. To incorporate fresh manure with the soil in making preparations for the cultivation of the carrot, is bad practice; but in the case of a worn-out plot being required for this crop, it may be trenched two spits deep, and a good bed of manure may be laid in the trench as the work proceeds. It is of the utmost importance to have the surface soil dry and pulverulent, and it is better to wait for fine weather and a

good seed-bed than sow when the ground is cold and pasty. Carrot-seed is light, chaffy stuff, requiring careful handling to distribute it regularly in the drill. It is the custom of some cultivators to mix it with sand, to render it more tangible, but the practised hand needs no such aid. The drills should be drawn very shallow, at a distance of six to nine inches apart for the smaller kinds, and a foot apart for the larger. It is usual to sow rather thick, and to thin severely; and as the seed is cheap, we need not find fault with the common practice; but, with good seed, thin sowing is certainly better than thick, because seed is saved, and there is less thinning to do afterwards. The thinning of the crop should commence as soon as the plants are large enough to handle, and, at the same time, if weeds are rising with them, the scuffle-hoe should be employed between the rows, to keep the ground clean. A few very nice dishes of tender summer carrots may be obtained by careful thinning of the beds sown for winter use. But the proper carrot for summer is the *French Horn*, a small, elegant root, which may be stored for winter, but is most useful to draw when young for immediate cooking, when it is peculiarly tender and delicate. This small carrot is sown for an early crop on beds of light rich soil, made up with foundations of half-exhausted fermenting material, such as stable manure or leaves, and covered with frames. A proper hotbed would force them too rapidly, but a gentle warmth of soil and judicious sheltering, with plenty of air as weather may permit, are the conditions under which an early supply may be most surely secured. The first sowings are made in this way in January and February, and these are succeeded by sowings on open borders, in warm and sheltered spots, in March and April, and on any piece of ground that may be vacant in July. As a rule, the *Horn* carrot should be sown in very small breadths, or there will be a superabundant supply; but as the requirements of families differ immensely, a general caution against "overdoing it" is all that can be offered here. In our garden we always grow more than suffices for the kitchen, and so the cattle come in for a pleasant variation of their daily food.

The best of all the sorts for use in winter and spring is the *Long Surrey*, which is the handsomest and best flavoured. A more profitable, but a thoroughly coarse variety, is the *Altringham*, which has an objectionable green crown. In gross weight of crop this will always surpass the *Long Surrey*, and, though coarse and ugly, it is a good carrot. A most valuable variety for shallow soils is *James's Intermediate*, which has every good quality that can be desired except beauty, for it is short and club-like, but in colour and flavour excellent.

THE PARSNIP thrives in any soil, with or without manure, provided it is fairly prepared for by deep digging some time in advance of sowing the seed. It is, perhaps, the most profitable of all the roots grown in the kitchen garden, but it is less generally esteemed, and is therefore less generally useful, than the potato. No one who cares to eat this sugary root need be deterred from growing it by untoward circumstances. We have grown a crop in a field of stones, in a sterile district, where we had to carry sand in to cover

the seed, and the roots at harvesting time were only a little thicker than a big man's thumb, yet, when slowly cooked in a small quantity of water, they were as marrowy and sweet as the finest of the Jersey parsnips; indeed, we are inclined to believe they were a few degrees better. However, though small roots are not to be despised, large ones are most valued, and a rich, deep soil will produce them with just no more trouble than deep digging and sowing the seed, for they scarcely want weeding, and the thinning may be performed in almost no time. If, however, extra large roots are required, the way to secure them is to trench two spits deep, and put a good bed of fat manure in the bottom of the trench—the roots will find it in good time, and the result will be satisfactory. But manure dug in with surface-digging is more harm than good, for the roots, instead of going straight down, make all sorts of ugly forks and fibres, and a very large proportion of the whole bulk is wasted in preparing them for cooking. Therefore, if the labour of trenching and putting manure at the bottom of the trenches is too great, do not employ manure, and be content with smaller, but more usable roots. In any case, however, deep and earnest stirring of the soil is a proper preparation for this crop. Hard work, more than "fine words," tends to the buttering of parsnips.

Sow fresh seed in March, or early in April. The seed bed should be fine and dry. If large roots are desired, sow in drills, fifteen to eighteen inches apart, and thin to a foot; if the ground is poor, sow twelve inches asunder, and thin to nine or six inches. Distances depend on conditions, but a mistake will not ruin the plantation: for if parsnips are rather crowded, it does not much matter; but the size of the roots will of necessity depend upon the space allowed them. During showery weather in July and August, a final thinning may be made of roots that elbow each other, and they will be found exceedingly marrowy and delicate when cooked.

BEETROOT should be available every day throughout the year; but like other roots it can be grown only during summer. Where the demand is unremitting, the cultivator must secure early crops for use in autumn, and must store well and plentifully for supply in spring and summer. We have found it tolerably easy work to do this until July, and then the old beets were becoming fibrous, and the young ones were too small to pull, and there was the shadow of a hitch sometimes. But it can be done, and wherever salads are in request all the year round, beetroot must be provided for them. Our practice is to sow a few rows on half-fermenting beds in frames in February, as advised for the early production of Horn carrots, and this plan enables us to supply the kitchen with fine roots at the end of June and throughout July, when the roots in the store are acquiring an undesirable toughness. As the subject of storing comes before us properly here, we may as well dispose of it. A bed of earth in a shed of any kind, safe from frost, answers the purpose well. Better is it, however, to store the roots in dry sand in a place where neither moisture, nor frost, nor the warmth of spring, can reach them. Our best store is a shed built of brick in a north aspect; it is safe from frost, and the spring sunshine has but little

effect on its temperature. Some time in March the whole stock should be taken out, and the new roots and shoots rubbed off and the stock pitted again. The roots should be laid horizontally, as that position affords a slight check to growth. But once a month at least—if late keeping is important—they should all be looked over, and every sign of growth removed, for if allowed to make roots and leaves they soon become worthless.

As for the cultivation, it is the simplest matter in the world. Sow in shallow drills, putting the seed as nearly as possible singly six inches apart. As nearly as possible, mind, and do not waste valuable time about it, because if you sow too thick, it is no great task to thin the rows to nine inches or a foot apart, when the plants are large enough to handle. It is not desirable to grow large beets as a rule, but if they are required, proceed in the same way as recommended for the production of large parsnips. For open ground crops, where especial earliness of production is of no consequence, sow in April and May, and take up in November. When storing them, cut off the tails and some portion of the crowns, but be careful not to wound any part of the usable fleshy root, for there should never be a puncture in a beet until it is cooked and cold—in fact, the cook who would put a fork into a beet to try if it is “done,” ought to be disarmed without the honours of war. But careful topping and tailing is to be advised, as it promotes close storing, and prevents growth in spring. All the varieties of beets have been grown again and again in the Experimental Garden at Stoke Newington, and, as a matter of course, we find that very few are needed in any ordinary garden. The three best are *Sutton's Dark Red*, *Nutting's Dwarf Red*, and *Henderson's Pine Apple*. If large and handsome roots are desired, grow *Dell's Short Top*, and *Whyte's Black*. For particularly small and delicate roots of fine flavour, grow *Carter's St. Osyth*. If the soil is shallow, and the production of handsome roots doubtful, sow *Egyptian Turnip Rooted*. Beet is occasionally grown in the flower garden for the sake of the deep colour of its leaves. In this case, a green-leaved variety will not do, so, therefore *Barr and Sugden's Crimson-leaved* is the best.

SALSIFY is sometimes called the “Vegetable Oyster,” because, when properly dressed, its flavour reminds lovers of that favourite mollusk of the joys that belong to months in which the letter R occurs. I must confess that, although I have enjoyed many a dish of salsify, I have never yet found it a sufficient substitute for the buttery bivalve, and am content to know it as salsify simply, without aid of a comparative designation. This root has a natural tendency to forkedness, which it is the duty of the cultivator to correct, by treating it precisely as recommended for the production of extra large parsnips—that is by trenching, and putting a good bed of manure in the bottom of the trench. It would be vain to talk of growing salsify extra large, for the fact is, it is never large enough, and is, therefore, seldom worth having unless grown with especial attention to its fullest possible development. Be liberal with it, therefore, or do not grow it at all. Prepare the ground in autumn, manuring as advised, and sow in April, in rows a foot apart at least.

If the ground is extra strong and liberally manured at the bottom of the trench, sow in rows fifteen inches apart, always remembering that you cannot grow the root too large. Thin to nine inches or a foot when large enough. Take up in November, and store in dry earth or sand; one row may be left in the ground to furnish a dish of spring vegetable. This is obtained from the rising flower-stems, which are to be cut early or they will be stringy, and cooked in the way of sea-kale. The proper way to cook salsify roots is to boil them until tender in a very small quantity of milk, and then mash them and fry them in butter with salt and pepper. But it may be cooked in the same way as parsnips, which, you will remember, should be boiled slowly in the smallest possible quantity of water, until they are almost in a melting condition. If boiled fast in plenty of water, the flavour of parsnips and salsify is all washed away, and lost for ever.

SCORZONERA is cultivated as salsify, but, being a stronger grower, needs rather more room. S. H.

A NOTE ON BEDDING COLEUS.

BY AN AMATEUR.



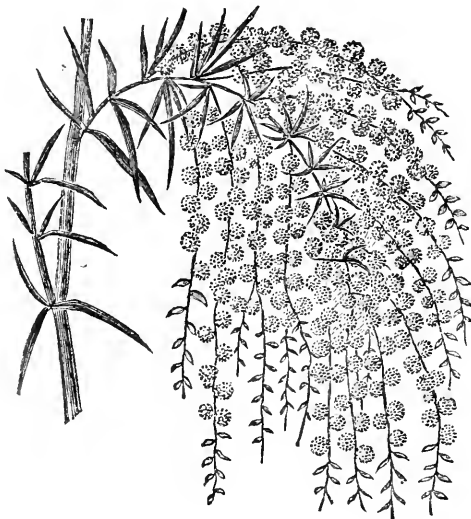
OLEUS are very valuable for bedding purposes, but they are very often omitted in lists of bedding plants, chiefly because many are under the impression that they cannot be kept without a stove to preserve them during winter. This is a mistake, for, with little or no trouble, they may be kept in an ordinary greenhouse or plant pit. The way that I should recommend is that cuttings be taken about the middle of August, and inserted closely together in six-inch pots or pans, partly filled with crocks. Use a compost of light leaf-mould and loam, with a little silver sand. Then plunge the pots into a slight bottom-heat until the cuttings are well rooted. From thence transfer them to a shelf in the greenhouse, keeping them in a temperature of about 40° to 45°, and the atmosphere as dry as possible. Water them about once a fortnight, merely to keep them alive. In February, put them into three-inch pots, when they will soon make excellent plants. The sorts best suited for bedding are, *Princess of Wales*, *Verschaffelti*, and *Emperor Napoleon*, but I consider *Verschaffelti* is the best.

This is not, perhaps, the most seasonable period for giving advice for wintering Coleus, but I have called attention to the matter now, so that those who like them can buy a stock now, and enjoy their beauty during the coming summer, and also have plants for furnishing a supply of cuttings in the autumn. A rather warm position should be selected for planting the Coleus.

NEW PLANTS.



ACACIA RICEANA (*Bot. Mag.*, t. 5835).—This is by far the most beautiful of the Tasmanian Acacias, and it appears to be confined to the southern parts of that island, growing like a weeping willow on the banks of the streams that fall into the Derwent. We entirely agree with Dr. Hooker, that "It is remarkable that so fine a greenhouse ornament should be comparatively rare in cultivation, for its deep green perennial foliage, its long whip-like pendant branches, clothed with golden flowers, the facility with which it can be trained over columns and arches, and the length of time during which it remains in flower, render it one of the most desirable acquisitions for a conservatory." At Floors Castle, a glazed corridor, fifty feet in length, is festooned with a single plant, and when it is in flower, from March onwards, the effect is indescribable. Flowering branches, many feet in length, and a mass of bloom, were exhibited before the Royal Horticultural Society on the 15th of March last, and they attracted a considerable share of attention. Without doubt, it is one of the most valuable plants for covering pillars and training over the roof of greenhouses and conservatories yet introduced to this country. Standard specimens in pots would have a charming appearance, intermixed with other sprig-flowering plants.



ACACIA RICEANA.

Considering the great value of this acacia, we have much pleasure in recording the fact that Messrs. Hooper and Co., Central Avenue, Covent Garden, W.C., are offering seeds at a remarkably cheap rate. Acacia seed can be readily raised in an ordinary greenhouse with but little trouble.

APHELANDRA AURANTIACA (*Floral Mag.*, t. 517).—A magnificent stove-plant, with superb foliage, and large heads of brilliant crimson and orange-coloured flowers.

CATALPA SYRINGÆFOLIA AUREA.—A golden-leaved variety of one of the noblest garden trees. Messrs. Cripps and Son, of Tunbridge Wells, have lately introduced this interesting novelty to cultivation, and it well deserves the attention of those who appreciate choice trees. This variety is distinguished by the rich golden hue of its leaves, which are of a purer and deeper shade of yellow than the well-known Golden Feather pyrethrum. When it attains to some size in a suitable position, it will, we have no doubt, prove to be one of the most distinct and beautiful of garden trees in cultivation.

CATLEYA MAXIMA (*Illust. Hort.*, 29).—A magnificent species with flowers of a delicate rosy-mauve tint. *Cattleya maxima* is a native of the forests of the Rio Grande, where it attains to gigantic dimensions and makes a remarkable display of its exquisitely-coloured flowers.

GODETIA WHITNEYI.—This splendid species is distinguished by its dwarf habit and huge flowers, which are produced at the summit of the stems and branches in

crowded clusters. The flowers are nearly four inches across when fully expanded; the petals blush-coloured, marked in the centre with a handsome crimson stain

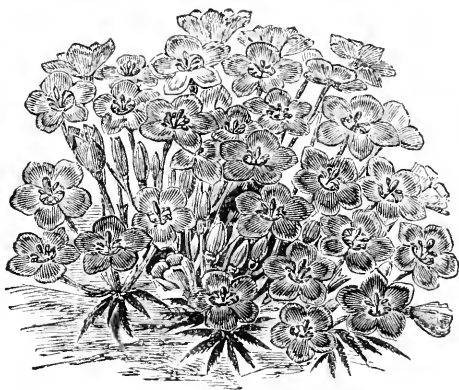


GODETIA WHITNEYI.

varying in size, but very conspicuous, and frequently visible externally, when the flower is closed. It is usually erect in growth, rarely exceeding twelve inches in height, but occasionally it assumes a much dwarfer, almost tabular, form. It received the award of a First-class Certificate from the Royal Horticultural Society, when exhibited last autumn, and it excited a very large amount of attention and was much admired. It is, without doubt, one of the most valuable annuals introduced to this country for several years past. Like many more of our best annuals, it is a native of California. For the opportunity of figuring this grand acquisition, we are indebted to Messrs. Hooper and Co., of Covent Garden. The seed can be sown in a cold frame, or in the open ground, and transplanted when about an inch high, in the same way as other hardy annuals. The plants

should be put about nine inches or a foot apart, for without they have sufficient space for their full development, much of their beauty and effectiveness will be lost.

LEPTOSIPHON PARVIFLORUS VAR. ROSACEUS.—This lovely little annual closely resembles in habit *L. aureus*, but the flowers are larger and of a rosy-red hue. It was introduced from California, and when exhibited before the Royal Horticultural and Royal Botanic Societies in June last, it was awarded a First-class Certificate upon each occasion. In growth it is very dwarf, ranging from three to six inches in height, and produces its flowers in terminal clusters. Altogether it is a most valuable acquisition, and one of the loveliest dwarf annuals known. We have to thank Messrs. Hooper and Co. for the opportunity of presenting our readers with a portrait of this gem.



LEPTOSIPHON ROSACEUS.

THEMISTOCLESIA CORONILLA (*Illust. Hort.*, 32).—An elegant ericaceous plant with red flowers. In all essential particulars it is a vaccinium, and the most valuable acquisition for the heath-house and cool conservatory. It was discovered by M. Linden, in 1843, in New Granada, and was first described as *Ceratostema coronarium*. It is extremely neat in growth, with small ovate-oblong leaves and bell-shaped flowers of a brilliant vermilion hue.

THE GARDEN GUIDE FOR APRIL.

FLOWER GARDEN.—The planting of evergreens should be completed early this month. Stakes must be put to those newly-planted to keep them firm, and prevent their being loosened with the wind. A good thick mulch over the roots will be of immense service. Sow seeds of biennials and perennials, and annuals for late blooming; thin out those already up, and transplant or throw away. Finish dividing and planting herbaceous plants. Prepare in readiness the beds for ordinary "bedding stuff," dahlias, etc. Box, thrift, *Stachys lanata*, and other plants for edgings, may be planted early in the month. Walks should be thoroughly rolled to make them firm for the summer; and grass plots dressed, to give everything an air of neatness and order.

KITCHEN GARDEN.—Like last month, an unusual amount of forethought and activity are required in this department just now. Old stumps of winter greens, that are likely to produce a few more gatherings, should be taken up, and laid in by their heels in some spare corner, and the ground they are now occupying turned up. Plant out cabbage and lettuce raised in cold frame. Cauliflowers from the frames should be planted out the first week of this month; sow for late autumn supplies. Sow for main crops, beet, broccoli, cabbage, cardoons, carrots, celeriac, celery for late crop, chicory, endive, parsnips, salsify, scorzonera. For successional crops—lettuce, radishes, cress, mustard, spinach, turnips, peas, and other vegetables; plant out crops from the seed beds when large enough. Keep the hoe at work amongst crops of all kinds. Earth up and stick peas, to prevent their being blown about. Seeds of sweet and pot-herbs that still remain unsown must be got in at once. Those sown in heat should be pricked off into small pots or cold frame, to well harden off before planting out. Prepare trenches for celery, and put at least six inches of good rotten manure in the bottom, and just cover with soil. The spaces between the rows may be occupied with lettuces and radishes. Get in all crops that ought to have been sown last month as early as possible, for every day adds to the risk of the crops coming to perfection. All salading, such as lettuce, endive, and radishes, must have rich soil after this season, otherwise they will make a slow growth, and of little value. Small salading is of little service through the summer, unless grown in a shady position, in a cold frame, or under handlights. Potatoes in heavy cold soils must now be planted. Protect early kinds now peeping through the ground, by drawing a little soil over them.

FRUIT GARDEN.—All pruning ought to be finished before this, with the exception of the fig, which must be done early this month. Continue to protect peaches and nectarines; care, however, must be exercised, so that the young growth is not drawn weak and spindly through too thick a covering. If blinds of tiffany or canvas are used, roll them up during the day, but where branches of fir or fern are used, about half the quantity should now be taken off. When coddled too much, the young shoots suffer considerably when

fully exposed. Thin out apricots, and disbud; but proceed cautiously and gradually, so as not to produce too great a check. Lay long litter from the stable between the strawberry rows, which will serve the double purpose of strengthening the plants with the salts washed out of it, and at the same time keep the fruit clean. Remove all runners that are not wanted for layering; they only rob the plants, impoverish the soil, and take up more time in clearing them away after they once get rooted into the soil.

CONSERVATORY.—Very little fire-heat must be used here now. Give plenty of air to prevent the plants drawing, and shade during the bright sunshine, to enable the flowers to retain freshness as long as possible. Plants of all kinds will now require increased supplies of water; those in flower must not be allowed to suffer for the want of this element, or the flowers will soon drop. Sow primulas and cinerarias for early bloom, and place the seed-pans in a shady corner until the plants are up. *Cytisus* should be pruned into shape immediately they go out of flower, and directly they break, repotted. Autumn-struck and old plants of fuchsias will require shifting into larger pots; cuttings put in in March will now want potting off. Keep the whole of the plants in a brisk growing temperature, well syringed and pinched, as required. Remove cinerarias going out of bloom, if offsets are required, into a cold frame, and keep them properly watered, when they will soon begin to start. Verbenas and petunias struck now, and grown on, will be useful for flowering in the autumn. Pot hard-wooded plants that require a shift, and harden off those that have finished their growth, preparatory to going out of doors for the summer.

STOVE.—Cut down begonias that are out of flower, and repot. Shift on the ornamental-leaved kinds. *Achimenes* and *gloxinias*, repot before they get pot-bound. Keep the former near the glass, to prevent them drawing. Continue to shift orchids that require repotting, and divide those, the stock of which it is desired to increase. Maintain a thoroughly moist atmosphere by throwing plenty of water on the floor, but avoid syringing them for the present. Shut up early, and use as little fire-heat as possible. Train specimen plants of a climbing habit, such as *Stephanotis*, as fast as they make new growth, to prevent their getting out of form. All the plants that require a shift must have it at once, as better growth will be made in the fresh soil than in that which is now worn out.

FORCING.—Cucumbers and melons must be carefully handled just now. Hang mats or canvas over the openings during the prevalence of north or east winds. Shut up early in the day, and give the foliage a moderate syringing before doing so. See that the bed is a proper degree of moisture throughout its depth, and if it requires watering, use water at a temperature of 75°. Where the bottom-heat is supplied entirely by fire-heat, particular attention must be paid to this point in their culture. Pay frequent attention to stopping, training, and regulating the shoots. Fertilize the female flowers of the melon. The temperature of the various vineries must be gradually increased as the days lengthen, and the

sun gains power. As the fruit of the figs begins to swell, increase the moisture and heat. Peaches and nectarines will now be making considerable progress. The night temperature should now range about 60° or 65°, with a rise of ten degrees during the day. Disbud, tie in the shoots, and thin the fruit, as may be necessary. The last operation must be performed with a sparing hand, as the stoning process is a critical time for these fruits to go through. Syringe twice a day, and keep the borders properly watered.

PITS AND FRAMES.—Auriculas will now require more water; shade from strong sunshine. Turn out the whole of the bedding plants into cradles, where they can be protected with mats, if the frames are required for other purposes; if not, draw off the lights, except during frosts. Herbs, tomatoes, vegetable marrows, etc., must receive full exposure to the external air, to enable them to go out sturdy and strong. Prepare the frames for growing summer cucumbers, melons, and chilies. Plants requiring to be grown on briskly should be shut up early, and have a skiff with the syringe before the lights are shut down for the night.

HORTICULTURAL NOTES.



THE occurrences most worthy of note during the last two months have been the Royal Horticultural Society's Exhibition of Lycastes and Chinese Primulas on the 3rd of February; of Camellias, Lilies of the Valley, and Flowering Shrubs, on March 1; and the exhibition of Hyacinths and other spring-flowering plants, on March 15; and the Royal Botanic Society's Hyacinth Show, March 22nd and 23rd. I will not weary my readers with full details of the several exhibitions, but content myself with mentioning the most important features, and a brief notice of the most valuable of the new flowers and plants brought forward.

At the first of the Kensington meetings, the first prize for Chinese Primulas was most deservedly awarded to Mr. Goddard, gardener to H. Little, Esq., Cambridge Park, Twickenham, for the whole of the plants in the collection were marvels of cultural skill. They were not, perhaps, remarkable for size, but they were so neat and healthy, and had such magnificent trusses of bloom, that one could hardly hope for anything better. Mr. Goddard also exhibited a superb group at Regent's Park, on the 22nd and 23rd of last month, and again occupied the foremost position on the prize-list. It is worthy of remark that the plants were not only well grown and superbly flowered, but the flowers were of the finest quality. Considering that plants with pale-coloured, or flimsy, ill-shaped blooms require just as much attention and house-room as those having the finest flowers, it appears remarkable that they are so frequently met with. Mr. Goddard, of course, saves his own seed, and there is no valid reason why other private growers should not

do the same, and make sure of what they are growing. Good seed is, however, plentiful in the trade, but it cannot be sold, without loss, at sixpence or a shilling per packet. At the same meeting, Mr. Tomkins, of the Sparkhill Nurseries, Birmingham, exhibited a group of *Primula Princess Louise*, a grand new white-flowered variety, with flowers of an immense size, superb form, very wax-like in texture, with age the flowers changing to a delicate blush. This was awarded a first-class certificate—an honour to which it was justly entitled. *Gastronema flammea*, a pretty bulbous plant, with orange-red flowers, not unlike those of the useful *Vallota purpurea*, to which the plant is closely allied, from Mr. Bull, of Chelsea, also received a similar award.

Dessert apples and pears were shown in capital condition and considerable quantities. It appears unjust to omit mention of the names of the exhibitors of the most meritorious fruit, but all that can be done here is to give the names of the varieties in the best state of preservation. Of the apples, the best were Cox's Orange Pippin, Cornish Gilliflower, Ribston Pippin, and Reinette du Canada; and, amongst pears, the best were Bergamot d'Esperen, Winter Nelis, Easter Beurré, Beurré Rance, and Knight's Monarch—all first-rate sorts.

At the Camellia Show on the 1st of March several stands of very fine blooms were staged, but they contained nothing new, the leading sorts being the old Double White, Cup of Beauty, Conspicua, Imbricata, Chandleri elegans, Kelvingtonia, Monarch, Eximea, Saccoi Nova, Variegata, Antica, and Countess of Orkney. Lilies of the Valley were contributed in superb condition, but by far the best were the specimens exhibited by Mr. Howard, gardener to J. Brand, Esq., Bedford Hill, Balham, who, for many years past, has occupied the first place with these beautiful flowers. First-class certificates were, at the same meeting, conferred upon *Pelargonium Mr. Rutter*, a grand golden zonal variety, which, for brilliancy of colour, vigorous constitution, and perfection of form, is unsurpassed; also upon *Odontoglossum retusum-latro*, a wonderfully distinct kind, with brilliant orange scarlet flowers; to a New Fern, from Mr. Denning, gardener to Lord Londesborough, Tadcaster; and upon *Masdevallia elephanceptis*, exhibited by Mr. Pilcher, gardener to S. Rucker, Esq., Wandsworth.

The Hyacinth show on March 15 was the most important event we shall have to chronicle. The number of exhibitors was not large, but those who did exhibit acquitted themselves well, and the extra collections staged by Messrs. Veitch and Sons, of Chelsea, and Mr. W. Paul, of Waltham Cross, were so large and so fine in quality, that the exhibition was one of, if not the best displays of Hyacinths and other bulbous plants yet held at South Kensington. All the first prizes for Hyacinths, with one exception only, were carried off by Messrs. Veitch and Sons, although it was the first occasion upon which they have exhibited these flowers. In the class for eighteen white-flowered varieties they had superbly-finished examples of Madame Van der Hoop, La Candeur, Alba Superbissima, Baroness Van der Duin, Grand Vainqueur, Orondates, Snowball,

Leviathan, Madame de Staël, Paix de l'Europe, Queen of the Netherlands, La Grandesse, Prince of Waterloo, Mont Blanc, Grandeur à Merveille, L'Innocence, Alba Maxima, and Lord Shaftesbury; and in the class for eighteen varieties of any colour they staged Haydn, Macaulay, Leviathan, Grand Lilas, Garibaldi, La Grandesse, L'Innocence, King of the Blues, Koh-i-noor, Alba Maxima, General Havelock, Feruck Khan, La Grande Ressemblance, Charles Dickens, Ida, Laurens Koster, and Blondin, which are the best varieties in the several classes. Several new varieties were staged, but, as shown, they did not surpass, and in several instances did not equal, varieties already in cultivation, and obtainable at a cheap rate. The names and colours are as follows:—Robert Lowe, pale yellow; Lord Derby, dark purple; Marquis of Lorne, mauve; George Peabody, bright carmine-red; W. M. Thackeray, deep maroon-crimson; Lilacina, very light lilac; Princess Louise, single white; and Princess Louise, double carmine-pink.

Tulips were also fine; the best and most distinct in the competitive groups were:—Fabiola, Rose Aplatis, Vermilion Brilliant; White Pottebakker, Proserpine, Keizer Kroon, Jaght van Rotterdam, Duc d'Arenberg, and Joost van Vondel, all thoroughly good and useful sorts.

A magnificent collection of roses, in medium sized pots, was shown by Messrs. Veitch, and a group of *Marquise de Castellane*, a continental variety introduced in 1870. This was exhibited by Mr. Bennett, of Salisbury, and was deservedly awarded a first-class certificate. There can be no doubt of its being a first-rate pot rose.

The following new plants received certificates, namely, *Cyclamen persicum Snowflake*, from Mr. Goddard; *Amaryllis Chelsoni*, a superb variety, with large crimson flowers of fine form; *Primula Boviana*, one of the varieties of the Abyssinian Cowslip, with pretty yellow flowers, from Messrs. Veitch; *Davallia clavata*, a pretty little fern, from Messrs. Rollisson and Son, Tooting; and *Areca regalis*, a noble-growing fern, with beautiful pinnate fronds.

To each of the meetings fine collections of Orchids were contributed by Mr. Denning and Messrs. Rollisson; of Stove and Greenhouse Plants by Mr. B. S. Williams, Upper Holloway; and of Hardy Herbaceous Plants by Mr. T. S. Ware, Hale Farm Nurseries, Tottenham. I should like to speak more fully than space will permit of the lovely plants staged by the last-mentioned exhibitor. The collections consisted exclusively of hardy-growing plants of moderate size, and they were much admired, especially by the lady visitors. One of the most remarkable of the exhibits at the last meeting was the fine Brown Cos Lettuce and Green Curled Endive exhibited by Mr. Benjamin Looker, Norbiton Potteries, Kingston-on-Thames, which had been grown in the "Acme" frame, of which he is the inventor, without any further protection than that afforded by the glass. The endive was good, but the lettuces, considering the winter we have had, were wonderfully fine, for they were of considerable size, very crisp, and had nice white hearts. I can fully vouch for the fact that both lettuce and endive were grown in the "Acme" frame, as stated, for I saw them growing in Mr. Looker's garden

some time before they were exhibited. One of the smaller-sized frames was, in the early part of the winter, put over a portion of a double row of lettuce that had been planted out in the ordinary way, and the difference between those under cover and those unprotected was certainly remarkable, for, with the exception of a little speck of green here and there, all the plants that had been exposed to the weather were dead, whilst those in the frame were as fresh and as green as they usually are in the summer, although not so large. At the retail price charged for lettuce during the last two months those in the frame were worth at least sixpence each, and would have nearly paid for the cost of the frame.

The exhibition of the Royal Botanic Society was also remarkably good, but as the exhibitors and subjects were chiefly the same as those at Kensington the week before, it is not desirable to enter into details. The cyclamens were unusually fine, and the first prize for a collection was taken by Mr. James, gardener to W. F. Watson, Esq., Redlees, Isleworth, with specimens that have, probably, not been surpassed, either as regards the size of the plants or the high quality of the flowers. Mr. James also carried off the first prize for *Cinerarias* with handsome specimens. G. G.

POTATOES.—In a valuable article on the growth of the potato in the January number of the *FLORAL WORLD*, I see the almost universally received statement made “that the potato is a very exhaustive crop.” When I was rector of Llandough, near Cowbridge, Glamorgan, I observed that an old parishioner, named Thomas Jones, grew his potatoes in the same plot of ground for several consecutive years, and on asking him how long he had done so, he said, ever since he came to the cottage, which was fourteen years before, that he had quite as good crops as at first; that he had little besides road-scrapings for manure. Since I came to this parish, I have discovered a still more extraordinary case: An elderly woman, named Elizabeth Matthews, whose word I can perfectly rely on, assures me that she, and her mother before her, whom I knew very well, have grown potatoes in the same piece of garden ground, and on the *same spot* for upwards of *sixty years*, and she finds no diminution or deterioration of the crop. She has nothing but coal-ashes from her cottage for manure, on which she throws all the soap-suds when she washes. The soil is a very sandy loam. Thinking this might interest some of your readers, I venture to trouble you with it.

Rector of Nustor, Nottage.

E. DODDRIDGE KNIGHT.

A NOTE ON THE WINTER.—On Christmas-morning, 9 a.m., my minimum (Negretti) thermometer indicated a temperature of 5°, and the lowest registered during the night was 1.50. The thermometer was placed on a stand fully exposed to the sky, and four feet from the ground. I knew this will be doubted, but I at once got out some other superior thermometers, and they all registered within one degree of each other. About a dozen yards from this stand, under a north wall, planted in a peat-bed were some camellias. They have been there two winters. Not a bud has been injured upon them, although a few of the top leaves look a little brown. Last year the first bloom opened on the 15th of March. A plant of *Hedera Regneriana*, near them, is quite spoilt in foliage. On a raised dry rockwork, with a south aspect, *Opuntia Rafinesquiana* appears quite uninjured, that also stood out last winter. *Chamaerops Fortunei*, on the lawn, is quite dead; it was only a five year old plant. As I could not risk (on account of the situation it occupied) a plot of *Arelia Sieboldi*, I put a mat over it during the severe frost, and it is now exposed again, and quite uninjured. I have left *Melianthus*, *Cannas*, etc., under heaps of clinker, and will, if it interests you, write on the return of spring, a report of their condition. I expect they are dead. I find *Odontoglossum uro Skinneri* is as hardy as *Cypripedium insigne*. Both were last winter in a greenhouse very often down to 35° and yet bloomed well.

Near London.

F. H.

NOTICES TO CORRESPONDENTS.

AN OLD SUBSCRIBER.—*Salop.*—Seed of the second plant on your list is not, so far as we are aware, plentiful in the trade. See answer to Mr. Cooper in the March number at page 95. With respect to the other matter, write to Mr. Cannell, Woolwich.

C. M.—We do not know of any firm who devote especial attention to the subjects mentioned in your letter, or we should have been glad to have assisted you.

KAINIT AND SUPERPHOSPHATE.—*G. K., Parrickmacross, Ireland.*—Mix in equal proportions, and apply at the rate of 7 cwt. per acre. The letter was too late to admit of its being answered last month, and we cannot make any exceptions to our rule of not answering correspondents privately.

POTATOES ON TILES.—*Clericus Hortensis.*—The method of growing potatoes is fully explained in the FLORAL WORLD for February 1869. We regret the answer was accidentally omitted from last month's number.

TAN.—*G. K. P., Worcester.*—Tanners' bark may be employed for making hot-beds for the cultivation of cucumbers during the summer, but it must have the aid of a few boards round the outside of the bed to keep it up. It would be a good plan to have the bed partly below and partly above the surface. Take out the soil to a depth of two feet, and the same size as the frame. Then drive in four stout stakes, one at each corner, to support the frame at a height of about two feet above the level. Nail rather stout boards to the uprights, and as soon as the framework is completed, the tan can be put in and the frame put upon the uprights. Tread the tan firmly, and allow a few days for it to settle before putting on the soil. After the frame is in position, a few barrowfuls of tan, sufficient to reach from six to twelve inches above the lower edge of the wood, should be added.

PROPAGATING CASES.—*S. F. S. S., Dublin.*—Miss Maling's plant case is manufactured by Mr. Gray, Horticultural Works, Danvers Street, Chelsea, London. We figured and described an excellent case in the FLORAL WORLD for August, 1870, which is manufactured by Messrs. Barr and Sugden, 12, King Street, Covent Garden, W.C.

DATE OF SHOW.—*W. Brown, Carmarthen.*—The first or second week in August would be suitable for holding a horticultural exhibition principally supported by amateur growers. No matter what the date of the exhibition may be, it will be too early for some of the exhibitors, and too late for others.

NAME OF FERN.—*D. M.*—*Adiantum Æthiopicum.*

DESTROYING COCKROACHES, CRICKETS, AND WOODLICE.—An esteemed correspondent, resident at Halifax, sends the following particulars respecting these pests. He says, "Between three and four years ago I entered the house I am now residing in, which was then quite new. A short time after we took possession, the cockroaches made their appearance, and were soon followed by crickets, which I thoroughly detest. We at once took measures for their extirpation, and happening to hit upon the right method, we did not have so much trouble as we anticipated. We commenced by putting down a few white shallow pots, such as are used for potted fish and meats, and then half-filled them with water and treacle. This mixture settled the cockroaches, but the crickets skimmed about on the surface like so many water-spiders. Treacle alone was then employed, which held them fast enough. The whole surface was covered, and then we turned up the pots, and brushed them into a vessel of boiling hot water. As a rule, we emptied them every morning. The same plan was also tried with woodlice, and, I am happy to say, with the most satisfactory results. We have now completely cleared the house of every one of these pests, and the trouble has been so small, that really it is not worth mentioning. Treacle is known in some parts of the country as molasses, and the ordinary price is from two to three pence per pound. I feel assured that if those who are bothered with either or all of these pests adopt the method here described, they will not regret having done so."

BEGONIA FUCHSIODES FOR FLOWERING IN AUTUMN.—*John Harris.*—Most certainly this fine begonia can be flowered in the autumn. Several years since, we used to have it very fine in the autumn months, and always managed it as follows:—cuttings were put in in April, and grown on liberally all the summer in the stove, and kept moving all the next winter, and the following spring until June,

when, if they had gone on well, they were in 12-sized pots, and fine pyramids six feet high, well furnished with branches from the pot upward. The first week in June they were set in a corner where they were sheltered from the sun and wind on the south and west by a nine-foot wall, and from the north and east by a thick shrubbery. Here they remained till the first week in August, when they were set in the greenhouse, with gloxinias, achimenes, cockscombs, and other things. In this situation they began to show flower immediately, and before the end of the month they were one mass of bloom, and so remained until the beginning or middle of October, when they were thrown away, as others were coming on for the next season. We attributed their abundant flowering to the partial rest they obtained the two months they were out-of-doors, and the sudden excitement caused by being placed in a large airy greenhouse, under the grateful shade of vines, which partially covered the roof.

HARDY SPRING-FLOWERING PLANTS IN THE PARTERRE.—*W. S. B.*—Prepare a piece of open ground, rather sandy if possible, and this should be your nursery. On this ground plant out the various subjects, whether raised from seeds or cuttings, clear the beds of the geraniums, verbenas, etc., as soon as they begin to decline in autumn, say early in October, and then transfer, by simple transplanting, the herbaceous plants from the nursery piece to the parterre, and so arrange them that their colours in spring will make a tasteful display. When they have due blooming, say in the middle of May, take them up and plant them again in the reserve ground, and so on from year to year, taking care occasionally to get up fresh stocks from seeds and cuttings, that the old plants may be destroyed. As for subjects, the best are to be found in such genera as *Iberis*, *Arabis*, *Alyssum*, *Cheiranthus*, *Saponaria*, *Phlox* (alpinus section), *Myosotis*, and *Primula*.

RENOVATING OLD LAWN.—*A Country Curate.*—In sowing grass-seeds to mend an old lawn, the best mode of procedure is to have the bare places dug over and enriched with good rotten manure, and all the stones and lumps raked off preparatory to sowing. Then sprinkle the seed pretty thick, and cover with fine earth. It is a good plan, when the job is only a small one, to sift the earth over the seed; but when there is a large space to be operated on, the workmen have a few good heaps of fine soil, and throw it with the spade. In a majority of cases old lawns may be revived by simply sprinkling with nitrate of soda two or three times in the season. The best proportion in which to apply it is at the rate of 3lbs. to one square rod. Lawns that were patchy and sour have with this dressing become soft and springy with the abundance of fibre produced, and the sward acquired a beautiful freshness and closeness of growth. Until we had used this large quantity, and patiently waited for the result, we advised the use of only 1lb. per square rod; and that we can say is enough to work wonders, but the dose should be repeated at least twice—say three dressings in all, in April, May, and June. On some lawns there is plenty of grass and no clover, and during very hot dry weather such lawns become burnt and unsightly, whereas clover does not quickly burn. To promote the growth of clover, any of the salts of lime may be used. Even siftings of lime core from the builders will be good as a top-dressing, but a quicker result may be obtained by the use of superphosphate of lime in the same proportions as we recommend the use of nitrate of soda; that is, from 1lb. to 3lbs. per square rod, according to the state of things to be remedied.

BASKET PLANTS.—*B. S. H.*—The easiest and most effective basket plants are easily discovered. All the trailing *Tropæolums*, and especially those of the *Lobbianum* race, are suitable. *Campanula garganica* makes a beautiful blue fringe on the edge of a basket. *Pilogyne snavis* and *Mikania scandens* make elegant green wreaths four or five feet long. *Thunbergia alata* is peculiar as well as elegant. There is nothing else like it either in style or colour. Then there are the ivy-leaved geraniums, and the pretty variegated geranium called *Manglesii*, with petunias, verbenas, and *Lobelia erinus*, all suitable for baskets.

HEATING SMALL GREENHOUSE.—*H. F.*—A small conical boiler, and pipes of two or three inches diameter, would produce the kind of heat you want. The boiler would have to be outside, and coke would be the proper fuel. The fact is, these small houses cannot be heated satisfactorily; and when correspondents expect us to settle the matter in a word like magic, they expect an impossibility. Nor can we advise you about the height and pitch of your house. If you wish to grow great plants, have the roof high enough for them; if little plants, have it high enough for yourself.





HYBRID CLEMATIS.

(With Coloured Plate of Cripps' "Star of India.")



THOUGH many times mentioned, described, and eulogized in the *FLORAL WORLD*, the new Hybrid Clematis may fairly allege against us that they have not yet had what the world would call their "meed of praise." It is greatly to be feared they cannot have it now, though the publication of a figure of a fair sample of the race affords the opportunity, and the subject is peculiarly seasonable. The hybrid clematis are indeed equally interesting, useful, and beautiful, and it is one part of the debt we owe to them to say that in absolute merit they far exceed our powers of eulogy. It is a most curious circumstance that this new race of plants should come upon us, as it were, with a rush. Nobody expected them, nobody wanted them; very few practical florists would have conceded the possibility of their production; and now that the race comprises scores of magnificent varieties, it is almost past belief that they exist at all, so splendid are they as compared with the parent plants from which they have been derived by systematic crossing.

Premising that these plants produce a long succession and a great profusion of large handsome flowers, varying considerably in colours, but in every case extremely beautiful; and the next most important of their characters is hardiness, for they need no protection under glass, but may take their place in the flower-garden and remain there to illustrate in an agreeable manner the hackneyed phrase, "beautiful for ever." But where is their place in the flower-garden? Strange to say it is in a certain sense everywhere, for most versatile are their talents, if we may so speak of them. They may be trained to walls and trellises to make glorious sheets of leaf and flower. They may be allowed to fringe the overhanging brow of a rockery; cover a gaunt sunny bank with a drapery of startling magnificence; or furnish in the fashion of bedding plants large compartments on the lawn, and in the wilderness where an even growth and sumptuous flowers are indispensable. The fact is their thread-like shoots can be trained up or down, or on a dead level. Many a lover of flowers who has seen a grand *Pleroma* at a flower show, and sighed to enjoy the ownership of such a treasure, may now be at peace and cease to envy the wealthy. The hybrid clematis make glorious specimen plants for the conservatory, and no *Pleroma* or *Franciscea* can surpass them—perhaps cannot equal them—when the best varieties are managed in the best way.

The hybrid clematis will thrive in any good garden soil that is well drained, and, generally speaking, adapted to bedding plants. But the soil which suits them best is a light, rich, sandy loam; the lighter the soil the better, but it cannot be too deep or too well drained. They are hardy enough for all except the bleakest climates in these islands, but a warm sheltered position and full exposure to sunshine are conditions that conduce greatly to their prosperity, and, conse-

quently, to their abundant flowering. The best way to multiply them is to put down layers in August, but half-ripe shoots may be easily struck in summer under hand-glasses or in frames.

When grown as bedding plants the hybrid clematis should be planted two to three feet apart in large clumps. A number of varieties may be mixed, as they all present shades of crimson and purple, but the most decided effect will be produced by employing one showy variety for a bed, or a number of varieties distinctly arranged in bands or rows. Some time in June the beds should be covered with two inches depth of half-rotten manure put on carefully. The plants will soon cover and hide it, and will enjoy the moist surface it will ensure them during the heat of the summer. As the plants progress they must be pegged down a little higher than verbenas, and quite as regularly. All the growth they make should be left until the month of April following, when the whole of the plants should be cut back to within six inches of the ground.

When employed to cover walls and trellises, it is not well to tie them in from top to toe, as a drill-sergeant would, if he dared, tie in his young recruits. Take them up a certain height properly; make them very secure, and then let them fall over improperly; just as a bit of grand old ivy will tumble from the top of a tower, and suddenly stay in mid air, as a magical fringe to a harsh ungainly outline. As it is desirable to cover walls and trellises quickly, secure strong plants and do justice to them. If a border must be made for them, say turfy loam, sand, and rotten manure equal parts, and the border to be three feet wide and two feet deep, and the plants not more than six feet apart; better if three feet apart to begin with, to ensure a quick investment.

When grown on rockeries and rough banks, they should not be pruned at all. Give them a deep bed of light rich soil in well chosen positions, and for ever after, so far as regards cultivation, forget them.

When grown as conservatory specimens, pot them in 11 or 13-inch pots in a good light loamy compost, and grow them out of doors until they begin to flower. The best form in which to train them is the pyramid, or a blunt cone, but that is a matter of taste, and they may be as easily trained to a watch-glass form as a verbenas or chrysanthemum. The trellis must be adapted to the form required, and in some cases hazel rods, in others stout wires will be necessary. It is of the utmost importance in the cultivation of the plants in pots or tubs to keep them regularly watered, and occasionally syringed with clean soft water.

Though so new to our gardens, the varieties of clematis already exceed all average requirements, and it is necessary in connection with this paper that we should make a selection. We shall be content with only twelve, though we might find fifty varieties worth growing. Those who want more than we recommend can easily obtain them, but we must beg that they will secure our lot first, for we believe them to be stars of the first magnitude in the constellation Clematis.

Star of India must have first place as the subject of our figure. It is but poorly represented in the plate, though the portrait is truth-

ful, and hits the truth of nature as nearly as art can do. The flowers are four or five inches in diameter, the colour richest violet purple, with a reddish purple band in the centre of each petal. It is probably the finest clematis yet raised.

Lady Caroline Nevill produces flowers of great size, often seven inches in diameter. The colour is a most delicate lavender-tinted blush, with broad purplish lilac band in the centre of each petal.

Tunbridgensis has flowers averaging five inches in diameter; the form perfect; the colour dark blue, shaded with purple. The neat growth and abundant flowering of this variety render it a first-rate bedding plant.

The three foregoing splendid novelties are now being offered for the first time at 21s. per plant by Messrs. Cripps and Son, the Nurseries, Tunbridge Wells. The varieties which follow may be obtained generally in the trade at two or three shillings each, or less.

Jackmani, one of the most interesting, because the type of the new race, and one of the first among many splendid varieties obtained by Messrs. Jackman, of Woking. The flowers average six inches across, the colour violet purple.

Rubro-violacea, brilliant reddish violet, makes a remarkably fine bed.

Viticella amethystina, pale violet blue, very distinct. Fine for beds or specimens.

Magnifica, flowers very large, colour soft purple, with reddish bars, which give to the flower a star-like appearance. Fine for conservatory specimens.

Prince of Wales, flowers very large and produced in great abundance; colour deep purple, with red bars.

Rubella, a remarkably fine variety, producing an astonishing profusion of massive flowers of a solemn claret colour. For specimen culture and for trellises this cannot be surpassed.

Lanuginosa pallida, clear lilac, with reddish bars, makes a fine bed.

Lanuginosa candida, pure white, a good companion to the foregoing.

Velutina purpurea, flowers very large, colour rich maroon-purple.

This is the best time in the whole year to purchase and plant clematis. The plants are kept in pots at the nurseries, and are generally of sufficient size to produce a good effect the first season if they are put out at not more than three feet apart. Those to be grown in pots or tubs should be shifted at once into the pots they are to flower in, and placed in a sheltered, but sunny spot out of doors. It would be well to allow all the growth to remain, and train it in carefully to make the most of the plants the first season. We should allow them to remain in the same pots two seasons, giving them weak liquid manure the second season when growing freely. In the autumn of the second season, it would be well to shake them out and repot in pots one or two sizes larger with fresh light soil, and in the succeeding spring they might be severely pruned to promote a free growth of young shoots for the production of flowers of fine quality.

KIDNEY BEANS.



KIDNEY BEANS are universally appreciated, and peer and peasant are almost equally interested in their cultivation, for, amongst the summer vegetables, when young and juicy, they are equally elegant, delicate, and wholesome. In English cookery the ripe seeds are much less used than on the continent, where, for haricot dishes, the small white-seeded sorts, in a dried state, are in constant request. It is a question if the ripe seeds of any kidney beans (*Phaseolus*) are altogether wholesome; we incline to the belief that they possess properties which render them objectionable as food, but there can be no question about the green pods, as we are accustomed to eat them, carefully cooked, of a fine green colour, and tender as the slice of butter that the prudent cook will never fail to place on the top of the smoking pile when they have been drained and disbed for table. An invalid may eat a dish of French beans or scarlet-runners late at night without danger, and that is a peculiar test of the wholesomeness of the dish; for, with the exception of spinach, there is scarcely any other vegetable that a weak stomach dare encounter when the mid-day hours have passed.

Kidney beans will grow fairly, and produce useful fruit in the most trashy soils and unpromising situations. There is scarcely a plant known to the cultivator of vegetables that will endure long-continued drought with so little harm as the dwarf French bean; and as to our old familiar friend, the scarlet-runner, it is no uncommon thing to see it thriving in a sort of cinder-bed, heavily shaded by trees, in the garden of the cottager whom the love of beer has seduced, and in whose garden, therefore, "the thorn and the thistle grow broader and higher." But the capabilities of a plant to endure insult are not sufficient to justify careless cultivation. For that, indeed, it should be shown that good treatment renders the kidney bean unproductive, while a hap-hazard life is conducive to its prosperity. It so happens, as matter of fact, that this plant enjoys good living, and never fails to make an ample return for it. The lesson is consequently patent—it must be well grown in order to attain complete development, and make its owner happy by its bounteous dower of delicious fruit. A deep, fertile loam suits the kidney bean to perfection. The situation should be open, sunny, and sheltered. The plant is one of the most tender, and though it bears drought in a remarkably satisfactory manner, cold and excessive moisture soon bring it down to the dust or mud. The soil for runners should be especially well prepared by trenching and manuring, but the dwarf kidney beans do not so much need manure, though they will always pay for it, if in other respects they are managed in a sensible manner.

Now, as everybody grows these plants, it may seem an overstretch of nicety to talk about "sensible manner," but we are bound to begin finding fault with everybody, by saying that everybody sows the seed too thick, and leaves too many plants on the

ground. The weakest-growing sorts of kidney beans known will cover a square foot each plant, and therefore we may properly allow for the weakest a space of two feet between the rows, and of one foot between the plants. It is quite a common practice to leave the strong-growing sorts four to six inches apart, so we have a fair case for grumbling, even at the first start. The distances are to be determined by a consideration of the habit of the variety and the strength of the soil. On our fat loam, in a moist valley, we find that the Long-podded Negro dwarf bean may be in rows three feet apart, and the plants two feet asunder in the row, and then we can scarcely get amongst them to gather, so completely do they cover the ground. As for runners, we always leave them a foot apart at least, and might leave them double that distance with the certainty of a good plant, and have the stakes heavily garlanded soon after Midsummer-day. It is well to sow in deep drills, even if they are a day or two longer in coming up than they would be if sown shallow. Cover the seed three inches at least, and be patient. Your neighbour, who covers with a mere dusting of soil, will have plants before you do, but in a run of years the deep-sowing system will win, for we do not merely need to see the plant sprout, we also desire to see it grow on without a check, and flower and fruit freely.

The best day in all the year for sowing kidney beans is May-day. Where an early supply is wanted, it is customary to sow in pots and boxes in March and April, and keep them in pits and frames until the plants can be put out. It is by no means wise so to act, and, as a rule, the man who sows in the open on the 1st of May will have the advantage of one who takes a lot of trouble to gain a week or so in the first gathering of fruit. The earliest sorts of dwarf beans may be sown in open borders about the middle of April with a fair prospect of success, especially if the rows can be protected by means of such a contrivance as Looker's Acme Frame, or by bell-glasses or flower-pots in the event of cold weather occurring after the plants have begun to push through the ground. The crop may certainly be hastened by the adoption of simple measures of protecting or coaxing, and, indeed, early supplies of dwarf beans may be obtained most easily by sowing at the end of March, in frames, and giving air cautiously on fine days, more and more freely, until in the end the lights are removed altogether. But our anxiety has always been, not to obtain early, but *late* crops of kidney beans; and for this simple reason, that when they first come in, vegetables are plentiful, but, as they are going out, vegetables become scarce. Thus, in the earliest days of French beans and runners, there are at command cauliflowers, peas, spinach, broad beans, and new potatoes. Rapidly these drop out of the list, and, as the season advances, kidney beans and marrows are almost the only vegetables of a delicate kind available. For just this reason we do not usually sow until the 1st of June, and we never miss sowing two or three sorts—the common scarlet-runner being always one—about the 15th or 20th of June. In southern counties, and especially on light soils, sowings may be made as late as the first week in July, but on our cold soil that is too late, for just as the plants should be in full bearing,

the fogs, frosts, and heavy rains take the shine (with the fruit as a make-weight) clean out of them.

All the sorts that require stakes pay better for staking than trailing, provided only that stakes can be obtained for moderate labour or reasonable outlay. There are a few valuable varieties that rise only three or four feet high, for which mere refuse brushwood will suffice. But if it is out of the question to stake the running sorts, they may be kept in a compact state of growth by constant pinching away of the points of the shoots, which should be done simultaneously with the gathering of the pods as often as possible. It is by this mode of procedure that the scarlet-runner is kept in a dwarf state as a field crop, and not by the sowing of a dwarf sort, which many people believe the market-gardeners to possess, and keep to themselves. In the books we find it recommended to pinch back all running sorts, even when they are well staked; but this is neither necessary nor desirable, for they bear more abundantly if allowed to grow to their full height unchecked, and therefore the cultivator may give them the tallest stakes he can afford, and consider a ladder a needful agent in the gathering of the crop. When string is used for training runner beans, it should be slack enough to allow for contraction in wet weather. When runner beans are grown on hot, dry soils, the seed should be sown in manured trenches, to facilitate the operation of watering; for if ever water is given to this crop, it must be in considerable quantities, with an interval of a week or so between the several supplies. The dwarfiest sorts, however, are far better adapted to starving soils than any of the runners. The roots of all the sorts may be preserved during the winter in sand for planting out in May, precisely as dahlias are treated; but as seed is cheap, and produces a fruitful plant as rapidly as roots, the saving of the roots is a sheer waste of time, and should be practised only by those who want amusement.

The gathering of the crop is really an important part of the general management of kidney beans. If allowed to hang too long, the pods become stringy, and tough, and tasteless, and the plants cease to produce as they should do. It is really better to gather all the produce on the instant of its becoming fit for use, and throw it away, than allow any accumulation on the plants of mature pods, because the maturing process puts a stop to bearing; and at the close of the season, when well-managed kidney beans are invaluable, those that have been allowed to ripen seeds are absolutely worthless. But the reader will ask, impatiently, perhaps, if he may not save a few seeds, as his father, grandfather, and great-grandfather did? Yes, certainly; save a few, by all means, if you wish, but do it properly, both to ensure a maximum of green pods and a maximum of ripe seeds; in other words, to obtain all the plant can give you, instead of half or two-thirds its proper produce. To solve this problem is most easy. If you wish to save a little seed, leave a few plants, or a row, according to requirements, altogether untouched. Let them have plenty of room for the enjoyment of the sunshine, but do not remove from them a single green pod—in other words, let them ripen every pod they produce from the very first, and you

will have seed of the finest quality. From those you gather green pods, gather all, and you will have an enormous production, lasting until the cruel autumnal frosts make a miserable havoc of the plantation.

About fifty sorts of kidney beans have been grown in the experimental garden at Stoke Newington. It is equally agreeable and surprising to be able to say that a considerable proportion of them are good, but, as a matter of course, very few are needed in any private garden. We have made a selection of varieties for several classes of cultivators, and hope they will be useful, though unaccompanied with the descriptions that might easily be appended by reference to our notes of the trial they were submitted to last year.

DWARF KIDNEY BEANS.—The best for forcing, and to sow on warm slopes for early crops, are *Sion House* and *Sir Joseph Paxton*. The best for main crops, a handsome plant, and prodigiously fruitful, is the *Long-Podded Negro*. The following are also good: *Mexican Salmon*, *Fulmer's*, and *Dun-coloured*. The following are not worth growing, except for some special purpose: *Newington Wonder*, *Dwarf Battersea*, *Black-speckled*.

INTERMEDIATE KIDNEY BEANS.—The *Paris Market*, rising only three to five feet high, is invaluable for its abundant production of large, handsome, tender beans. The *Canterbury dwarf* rises about three feet, and is the better for being staked.

TALL-RUNNER KIDNEY BEANS.—The two best and handsomest of this class are *Giant White* and *Common Scarlet*. These should be grown in every garden, the white being singularly beautiful and highly productive. The best of such as we may call curious varieties, is the *Blue or Purple-podded*, which grows about five or six feet high, producing dark bronzy leaves, violet-coloured flowers, and pods of a violet-purple colour. It is moderately productive, and the pods make an excellent dish, being green and tender when cooked. All the white and yellow-podded runners are to be avoided, except by those who have become accustomed to their use, and understand how to cook them. The best of them, both for exhibition and the table, is the *Yellow-podded Algerian*. The following are good, and well worth growing, though of secondary importance: *White Dutch*, *White Lady*, *White Scimitar*, *New Zealand*, *Liver-coloured*, *Black-seeded*, *Painted Lady*, or *York and Lancaster*. The last is extremely pretty.

S. H.

TO DESTROY EARTHWORMS.—*B. S.*—The following is a recipe originally published in the *Garden Oracle* for 1864: Corrosive sublimate 1 oz., common salt 1 tablespoonful, boiling water 1 pint; stir till dissolved. Pour the mixture into 9 gallons of rain-water, and water the lawn or the soil in flower-pots, wherever, indeed, the worms that annoy are to be found. We must confess we do not understand how any real difficulty about getting rid of earthworms can arise in any garden. Lime-water can be made with the least possible amount of trouble, and is always effectual.

THE BEGINNER IN GRAPE GROWING.—No. IV.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.



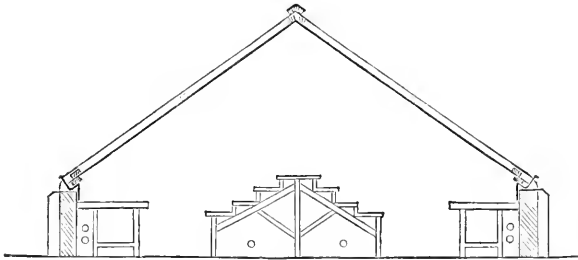
IN former communications under this heading the subject has been dealt with in a general manner, so as to be of assistance to grape growers of all classes, but before proceeding further it is desirable that something should be said about the cultivation of the grape-vine in the greenhouse. Such matters as the propagation and the growth of the vines during the first year of their existence, and the preparation of the border, of course, apply with as much force to the greenhouse as they do to the vinery. But a few of the minor details differ, and it is well that they should be explained at once.

It is not an unfrequent occurrence to meet with the assertion that good grapes cannot be grown in a house occupied during the greater part of the year with flowering and other plants, and, to prevent any misapprehension, I will state at once that these assertions are not strictly true. Where grapes of the finest quality are required, and separate structures are provided for fruit and plant-growing, it certainly would not be wise to crowd the vineries with plants. There are periods, such as when the grapes are in flower, and when the berries are colouring, when the presence of plants is objectionable, because of the moisture arising from them, but with due care, when the vines are allowed to grow of their own accord, without the use of fire-heat, no serious harm will result therefrom. For instance, by the time the vines are in flower, the season will be sufficiently advanced to admit of the ventilators being opened to their fullest extent, and thus prevent the slightest possibility of the "setting" process being interfered with through a stagnant atmosphere. Also when the berries are colouring nearly all the plants grown in a greenhouse may be removed to the open air, not only without injury, but with decided benefit to them. Again, if it is desired to keep the grapes long after the season for filling the greenhouse with plants for the winter, the bunches can be cut with a piece of the spur, and the end of the branch inserted in bottles of water suspended in a dry and airy room. The berries will keep plump and retain their full flavour for a considerable length of time. I am not alluding to keeping grapes until far into the following spring, because there are only a few sorts that have a skin thick enough to allow of their being kept in good condition so long; but I refer to the most desirable sorts for the greenhouse, such as the Black Hamburgh and Royal Ascot.

The shape and size of the greenhouse vinery must, of course, be regulated by the position it is to occupy, and by the taste and circumstances of the owner. I would, however, strongly recommend a span roof rather wide and lofty. The front lights should be rather high, say three feet above the brickwork, to admit the light to the plants grown under the vines. The borders should be entirely

outside, and the vines brought through the wall just underneath the plate of wood upon which the front sashes rest. With respect to the internal fittings, a stage should be erected in the centre, and a flat stage, about two feet in width on the two sides, with three feet walk between the sides and centre. The sashes at the side should be made to open, as well as providing ventilators in the roof, because in the spring and summer season a free circulation of air must be maintained in congenial weather for the sake of the health of the plants.

The accompanying figure of a span roof greenhouse vinery,



SECTION OF GREENHOUSE VINERY.

erected by Messrs. Hereman and Morton, affords a capital illustration of the structure here recommended for the cultivation of both plants and grapes.

The roof must not be covered with a complete canopy of green foliage, or it will be next to impossible to grow plants of any kind satisfactorily, for they will be drawn up so much as to become, by the middle of the summer, quite unsightly. A good distance at which to plant vines apart in the greenhouse is four feet, and then by training the branches rather close to the main root, and by keeping the laterals well stopped, the plants will receive plenty of light for maintaining a healthy growth.

CARPET BEDDING.

BY HENRY CANNELL,

The Nursery, Station Road, Woolwich, S.E.¹



THE beautiful illustration of an embroidery border which appeared in the March number of the *FLORAL WORLD* has induced me to offer a few remarks upon the style of planting there represented, by way of supplement to the observations which accompanied the picture. Some twenty years ago the flower garden was simply a confused mass of colour, and the improvement that has been effected since that time is simply wonderful; although at one period the planter's whole attention was devoted to producing a brilliant display of colour, and

all bedding plants not having flowers of a scarlet, yellow, or blue hue, were looked upon as of little service, and were quietly elbowed out, to make way for those having flowers of the desired colour. Indeed, it was thought that the greatest glare of colour was the chief merit of a well-kept garden; but Nature has taught us that colour is very sparingly used, and when applied it is very bright and attractive. Another lesson we have also learnt from Nature is, that other tints, particularly those approaching to the various shades of green, when well blended together, are extremely beautiful; and consequently curious, and highly-coloured leaf plants are fast gaining the respect of all those who have a refined taste for the love of Nature. I fear, however, that very few, even of those who like to see their gardens planted in the best possible style, have a fair idea of the splendid and rich effect that can be produced with ornamental-leaved plants only; for those who have not seen *Alternantheras*, *Echeverias*, *Golden Feather*, and other low-growing bedding plants in their proper colours, cannot form an idea of the beautiful appearance they have when properly arranged.

There have been many very pretty arrangements of these low-growing plants in Battersea Park, and those who have had an opportunity of seeing them have no doubt learnt much respecting them. The selection of the colours used in this park has unfortunately been too much limited, for they consisted almost exclusively of magenta, yellow, and white; and, as the two latter do not contrast well, they ought not to be planted side by side. The prettiest and best beds, last season, were at Messrs. Veitch's Nursery, Chelsea; these were oblong raised block beds, between, and abutting against, the gable end of the greenhouse, on each side of the entrance. And when seen, these raised mounds, tapering upwards, each having its beautifully-squared edges, might have been taken for pedestals for statuary. They averaged about eighteen inches high, five feet long, three feet wide at bottom, and about eighteen inches at top, and were planted in great taste with diminutive plants. *Golden Feather*, *Alternantheras*, *Echeverias*, and a small-growing bright blue *Lobelia*, formed the outline, and the panels were well shaped out in various designs, such as diamonds, triangles, half-rounds, etc. For neatness and taste, I believe the designs eclipsed all that has yet been attempted. The only flowering plant was the *Lobelia*, for the sake of its blue colour. At Kew they had a very large bed intended for this style, but, by intermixing tall plants, a complicated design was the result, and the required effect was totally lost. It was at best merely a curiosity without beauty. The next best design to Messrs. Veitch's was, in my opinion, in my trial garden, and was simply an ordinary flat, raised about ten inches, with its sides slightly sloping towards the walk.

Now comes one of the main features in making these beds. In the winter season we collected as much as was likely to be required of fresh cow-dung one-third, and the remaining two-thirds adhesive loam. These were roughly put together until bedding-time, the bed made the shape required, with its sides so as to be perfectly straight, flat, and level when all was planted and finished. This done, we

marked out the centre design as required. Every plant was then put exactly in its place—not one-eighth of an inch out of their proper line and height. After the centre was finished, so that the sides could be easily reached from the grass or path, we commenced plastering and building up the sides with the cow-dung and loam. This was merely to keep the edges up throughout the season, and as we proceeded with the work we inserted a perfectly regular line of Echeverias. Either *secunda* or *secunda glauca* will do, although the latter is the best. *Sempervivum californicum* is also very pretty, and quite hardy. These were in the centre of the six-inch edging. One regular-sized plant was used, and put at a regular distance from plant to plant, otherwise the beauty of the bed would have been spoiled. After this, we proceeded to finish the planting of the bed. I struck mine out last year with my boy's bow and arrow, which gave me a continuation of small half-round shapes on both sides, making the centre a running line of diamonds, which were formed with *Lobelia pumila grandiflora* (blue), *Golden Feather* (yellow), *Alternanthera* (orange and red), and the remaining half circle was filled up with various plants for a trial. To give a slight idea how attractive this bed was, many persons asked if they might examine it the second time; and it is difficult to say how astonished they were when they learnt how simple were the arrangements.

The most chaste and lovely beds may be made with the following plants:—A margin all round of *Echeveria secunda glauca*, which is of a beautiful bluish grey tint; then plant a broad band of *Alternanthera paronychioides*, which soon after planting turns a beautiful orange red at the points; then make either squares, circles, or diamonds in the centre, at equal distances, and fill them with *Pyrethrum Golden Feather*, which is the most effective, accommodating, good-natured plant in the world, as it will stand having the halves of the leaves pinched off without sustaining the slightest injury; then finally fill up the remaining space with *Alternanthera amœna*, which is the brightest coloured of all. For complete success in a bed of this kind, the soil should be made firm at the edge, and cut off perfectly level, and the Echeveria should be planted sideways, and every one in a straight even line; this is one of the main points for a bed of this description. Other fine and effective beds may be made with the following:—The margin *Sempervivum californicum*, which is a peculiar tint of green, with nearly black points, and requires to be planted in the same way as the Echeveria; then a broad band of *Antennaria tomentosa*, which is one of the finest dwarf silvery grey carpet-like plants we possess; next a broad band of *Pyrethrum Golden Feather*, and fill the centre with *Iresine Lindeni*, a grand sanguineous red-leaved plant of dwarf habit, and a pleasing shade of colour; but it will require pinching at intervals to prevent it overtopping the other things.

The following plants are the best adapted for this style of planting, but there are many more which might be employed by persons who understood their growth:—

Pyrethrum Golden Feather is exceedingly pretty and cheap. A one shilling packet of seed would produce about five hundred plants.

These ought to be small, just large enough to handle, and pricked out, with a small stick, about four inches apart, after the others are planted and finished. The plants can be pinched in with the finger and thumb to any required size.

Alternantheras are fine. *A. amœna* is much the best in colour. It requires to be well hardened, and planted sufficiently thick to produce an effect at once. The hardiest of all the *Alternantheras* is *A. paronychioides*.

Lobelia Pumila grandiflora.—This is a gem, because of its compact growth and bright blue flowers. It affords a fine relief, and never exceeds more than about five inches high, and about as far through.

Echeverias are exceedingly valuable, especially *E. secunda glauca*, *E. glauca metallica*, and *E. metallica*, the two former for edging purposes, and the latter for the centre. They should be planted so as to nearly touch each other.

Sempervivum californicum is quite hardy, and almost equal to the dwarf *Echeverias*, if the young offsets are pulled off as they appear.

Achillea umbellata.—This is a beautiful white-leaved little plant, grows very dense, and almost hardy, never exceeds more than about four inches high, and makes a fine line between *Alternantheras* and *Lobelias*.

Antennaria tomentosa.—This is fine for margins, as it is very white in its foliage, and exceedingly dwarf; never grows higher than moss; and for a yellow-foliaged plant of the same character grow the following—

Lysimachia nummularia aurea.—This is exceedingly pretty, and the yellow is very dark and quite distinct from other yellow plants recommended for this purpose; grows no higher than moss, and is quite hardy.

Veronica incana and *Santolina incana* are also admirable little plants, growing about four to five inches high, and about as much through; the latter will grow larger, but can easily be kept down to any required height.

Achyrocline Saundersoni.—This is equal to the preceding, quite hardy, very white, and makes a splendid miniature bush or line, and can be cut into any size and height below eight inches.

Teucrium aureum and *polium* are quite equal for their frosted appearance; neither of these grow above three inches high, and cover the ground admirably.

Thymus citriodorus aureus.—This is about the same growth and height, with a yellow variegation, and is unquestionably fine, and one of the prettiest little plants that we possess for edging small beds.

The above include all the best very dwarf white and yellow foliage plants suitable for the flower garden. For a rather taller growth select—

Dactylis elegantissima, *Polemonium variegatum*, *Coprosma Baueriana variegatum*.—The latter has a good bit of yellow in its variegation, but all are first-class showy and effective bedding plants, as each can be cut to any required height and size.

Mesembryanthemum cordifolium variegatum and *Lonicera aurea reticulata* are different in character from the preceding, and require pegging down occasionally to regulate the branches as they trail on the ground.

There are several taller-growing plants that may be used with admirable effect in a large design, and others topped and pegged down, such as *Iresine Lindenii*, *Fuchsia Golden Treasure*, *Coleus*, various, *Amaranthus melancholicus ruber*. Where these plants can be used in the design, *Geranium Brilliantissima* for a brilliant scarlet would have a grand effect to set off other colours. Many Succulents can be used in small corners, but by all means do not plant any kind of tall-growing plants, no matter how handsome; if they are planted, the fine effect will be lost all the season. I feel convinced that if this style was once put in practice, with—first, Golden Feather, then Lobelia, next Cerastium, then Alternanthera, then finished off with any kind of the dwarf Echeveria, the effect would be so striking, even in wet bad weather, all through the season, that small choice beds would in future be planted almost exclusively with these dwarf-coloured foliage plants. It must be remembered, too, that we do not have to wait for leaf effects as we do for flowers.

PORTULACAS FOR THE FLOWER GARDEN.

BY A KENTISH GARDENER.



THE constant accessions to the number of our bedding-out plants have quite driven these out of the field, but I trust this notice may induce some of our readers to bestow upon them a share of their favour, as they are deserving subjects. It is true they are somewhat more troublesome to raise than the hardy annuals, but their beauty more than repays for any amount of trouble they may take to bring them into use; and, as compared to the little extra trouble, the beauty of these little plants is an important consideration. Indeed, I cannot imagine anything half so chaste and beautiful in the whole list of annuals, being quite distinct from any commonly grown; and their neat habit of growth, and the chaste markings of the flowers, render them most fit of all to be favourites with the ladies. But to grow them satisfactorily they must have special treatment.

The seed should be had in separate colours. I used to be supplied with a collection of twelve different colours, out of which I could select at the time of flowering eight sufficiently distinct to warrant their being separated, but the remaining four differed so little from the others, that a casual observer could hardly assign to them any peculiar distinctness. That, however, is of but little consequence when compared to the advantage of knowing that you can depend upon the majority coming true to the colours given, as when planting you can the better balance the colours, by arranging the most distinct at such distances as will secure an even distribu-

tion of the most prominent tints over the bed, and by filling in the doubtful ones between, all risk of there being a predominance of any colour over one part of the bed will be avoided. For those who might not care to take the trouble to raise them in separate colours, a shilling packet of mixed seed will be sure to repay the cultivator for all the pains he may take with them.

In preparing the pots or pans in which to sow the seed, let them first be thoroughly cleansed and dried, and then half filled with broken potsherds for drainage. Next pound into dust some old mortar, and some old bricks into small nodules, about half the size of hazel-nuts. Take equal quantities of these pounded bricks, silver-sand, and dry leaf-soil. Fill the pots to within an inch of the rims with this mixture, and give it a gentle soaking of water. When this is drained away, sow the seed (which is very fine) thinly on the surface, and cover with a very little dry silver-sand. If the pots are placed on a warm shelf in the greenhouse, and carefully shaded, they will not require any water until the young plants are showing themselves; or they may be raised in a warm room with a southern window. But here they may require water once or twice before the seed germinates, as the air of a room is usually more drying than that of a plant-house; and the water must be given with a very fine rose.

Sow the seed immediately, and plant in the first or second week in June. It will be important to remember that water is the greatest enemy of these plants; but from the time you can detect the first appearance of the seeds germinating, you cannot give them too much heat, as they delight in a dry heated atmosphere, and thrive best when they have but little water and an unbroken continuance of brilliant sunshine. When the plants are well up, in very bright weather give them water twice a week, not more; and not through a rose now, but lay a small convex potsherd just over the rim of the pot, upon this pour the water gently from the spout of a small water-can, and by tilting the pot or pan gently on one side, the water will distribute itself over the whole surface without damping the succulent leaves of the young plants. Sow the seed thinly, and grow them on in these pots until they are bedded out.

Now for the bed; and on the proper construction of this depends in a great measure the success of the cultivator. In the first place, take away all the soil in the bed twelve inches deep, and place in the bottom six inches of brickbats or flints; upon this put another six inches of the same mixture as advised above for sowing the seed in, but this need not be broken up so fine; into this prick out the plants three inches apart, give a little water, and shade for a couple of days if the weather is very bright, and then leave them to fate. If the summer should be favourable, the result will be a brilliant bed of colours that cannot be surpassed if the whole range of annuals were grown and shown by the side of them. In an ordinary summer they will produce an effect that will surprise many who have never grown them. If we could foretell what the coming summer was going to be, and that it would be a bright

sunny one, we might dispense with the drainage beneath the plants, and use the mixture only; but in the absence of any fore-knowledge, those who intend to grow them had best adopt the precaution of using it, as a thorough system of drainage is at all times essential to success.

CINERARIAS.

BY J. JAMES,

Head Gardener, Redlees, Isleworth, W.



THE inferiority in form and colour of the flowers of the majority of the seedling plants, when compared with the best of the named varieties, is so great that I cannot understand how any one can tolerate them in their conservatory. The trouble of propagating a stock of plants from cuttings is undoubtedly greater than from seed; but the task is by no means difficult, and the advantages are more than sufficient to repay any little extra labour and attention. A few observations will be made upon raising seedling plants; but as I am anxious to encourage the cultivation of the best of the named sorts now in command, the remarks will be principally devoted to giving directions for their propagation and after management. The details are, however, very simple, and the whole matter can be dismissed in a very few words.

To secure a stock of offsets early in the season, the plants should have the flower-stems removed immediately the flowers begin to fade, as seed-bearing weakens them and interferes with the production of offsets. Preserve the healthy leaves and place the plants in a cold frame, protect from frost, and keep the soil moderately moist. Where frame-room cannot be spared, the last batch may be stood upon a bed of coal-ashes in a shady position in the open air, and protected from frost when necessary. The early batch can also be placed in the open air after the first week in May, if desired; but if retained in a frame after that period shade during brilliant sunshine.

With ordinary attention the offsets will be strong and ready for removal early in August. They should be taken off with a heel, and a small portion of root. Put four or five together round the sides of a five-inch pot, and place in a cold frame, where they can be shaded and regularly sprinkled overhead. They must not be kept too dark, nor the frame too close, or a large proportion will quickly damp off; on the other hand, no more air must be admitted than they can bear without the foliage flagging. Pot off singly when well rooted, and keep close and shaded for a few days, afterwards gradually increase the supply of light and air to promote a healthy and well-matured growth.

The best compost for the cineraria is undoubtedly one consisting of five parts turfy loam, a sixth part of well-decayed manure, and a

plentiful proportion of silver-sand. The loam must be chopped up roughly, and the manure and sand then thoroughly incorporated with it. The soil in which the young stock is pricked off should have the addition of a part of leaf-mould, to ensure their rooting quickly in it.

The pots must be perfectly clean and well drained, to prevent the soil becoming sour and waterlogged. The number of times the stock will require shifting depends upon the purpose for which the respective specimens are required; two shifts will be sufficient for those intended for ordinary conservatory decoration; but specimens for exhibition must have three shifts. In both cases they should first of all be put in three-inch pots, and, when well established, those which are only to have one more shift should be transferred to six-inch pots, and the others into five-inch size; and when repotted again put into pots two sizes larger. Those which are to be flowered in six-inch pots should have their last shift in the early part of November, and the others about the middle of December. Each batch must be repotted before the plants become pot-bound, because of the danger which exists of throwing them into flower prematurely. The soil should be pressed rather firm, but hard-potting must be avoided.

A cold frame placed on the shady side of a wall is the most suitable position for the stock until the end of September, as it can have abundance of light without being exposed to the fierce rays of the sun. From the end of the above-named month until the flowers begin to expand, a heated store-pit facing the south is the best possible position, although they will do very well in an ordinary greenhouse, provided they are placed near the glass, and not exposed to cold winds and keen draughts. It is also highly important to use as little fire-heat as possible; indeed, just sufficient to keep out the frost, with the aid of a covering on the glass, is all that should be employed. When exposed to much artificial heat the leaves will curl, and the plants nearly or quite come to a standstill. On the other hand, a little artificial warmth in very dull and damp weather will be of considerable service to maintain a sweet moving atmosphere.

Damp and mildew are the principal enemies to the cineraria, but both are easily kept in check if taken in time. The best remedy for mildew is flour of sulphur dusted over the foliage, and for the destruction of the green-fly nothing can equal tobacco-powder. The latter should be applied after the foliage has been wetted with the syringe, and washed off again in about twenty-four hours afterwards. Green-fly can be destroyed by fumigating with tobacco-paper, but the tobacco-powder is applied more easily, and there is no danger whatever attending its use if the precaution of not allowing it to remain on too long is duly observed.

The plants must be watered carefully at all times, especially during the winter. They must have sufficient water to maintain a vigorous growth, without being kept in a constantly saturated condition, and no more; but they must not under any consideration suffer from drought. Use soft water until the end of January, and

then substitute weak liquid manure for it. The plants should be syringed lightly overhead in the afternoon, previous to closing the frames for the night, both for the purpose of maintaining a genial growing atmosphere, and for keeping the foliage free from dust and insect pests. The syringing must be discontinued after the end of September, as the water which runs from the pots will be sufficient to maintain a proper degree of moisture in the atmosphere.

Stop the portion of the stock intended for specimens as soon as the flower-stems rise; pinch back the flower-stems to about four or five joints, and peg out regularly the side-shoots and large leaves as the growth progresses. The former will also require tying out before the flowers begin to expand, but it is a good plan to commence the training early, as there is then little difficulty in putting each shoot in its proper place, and practically no danger of their being broken when tying them out. A well-grown specimen, when the flowers are fully expanded, should be spherical in shape, with the outside flowers nearly level with the rim of the pot. Use pegs made from galvanized wire, if practicable, but wooden ones are equally serviceable. Seedlings and others intended for blooming early must not be stopped at all.

Where seedlings are grown, those from which it is intended to save seed should, as soon as the first flowers are expanded, be removed from the general stock, and placed in a frame by themselves to prevent their being fertilized with pollen from the worthless sorts. This is a very easy matter, because a very few plants will furnish an ample supply of seed for the generality of gardens. The seed should be saved from plants compact in habit, and with well-formed distinctly-coloured flowers. Where seed is saved from a collection of first-rate named varieties, it will not be necessary to separate the seed-bearing plants from the general stock. As the flowers begin to fade, place the plants in a light airy position to insure the seed being thoroughly matured, and gather before it is blown away and lost.

Sow the seed in the first or second week in July in five-inch pots. Make the surface perfectly level, and cover with a very thin layer of sandy soil. The pots should then be placed in a cold frame, and constantly shaded from the sun until the young plants begin to show above the surface, when the supply of light and air must be increased. Directly the seedlings have two rough leaves, prick off into seed-pans or round the sides of the same-sized pots, and in the same manner as advised for the offsets; and, like the latter, they must be potted off as soon as established.

The following are the best varieties at present in commerce, and will form a good collection to begin with. If purchased at once a stock of each sort may be obtained for next year; and it will be the cheapest in the end, even if they cost more than they would in the autumn, because the plants at the latter period would, in all probability, be too small to make much of a display the following season. The names and colours are as follows:—*Agrippa*, white, with rosy crimson margin; *Auricula*, white, blue margin; *Blue Beard* deep blue; *Celestial*, white, narrow margin and blue disk; *Chancellor*, rich

purplish crimson, narrow ring of white round the disk; *Duke of Cambridge*, crimson self; *Flora*, pure white, crimson edge; *Herbert*, white, blue edge; *Lord Amberley*, rich plum; *Orb of Day*, crimson, white ring round the disk; *Pandora*, white, tipped with claret; *President*, rich plum, white ring round the disk; *Queen Victoria*, crimson, with white ring; *Reynold's Hole*, bright crimson; *Snowflake*, pure white; *Uncle Toby*, deep purple self; *Vesuvius*, magenta crimson.

CANNELL'S NEW BOILER.

ALTHOUGH there is no lack of good boilers for heating horticultural structures, the new boiler, or "Hot-water Circulator," invented and recently introduced to public notice by Mr. Cannell, The Nurseries, Station Road, Woolwich, is deserving of the careful attention of all who depend upon the aid of artificial heat in the cultivation of plants, fruits, and vegetables. The chief merits of the invention consist in its being constructed so that the whole of the caloric or heat which the fuel contains, excepting just sufficient to carry off the smoke, is extracted and carried to the water; in its being

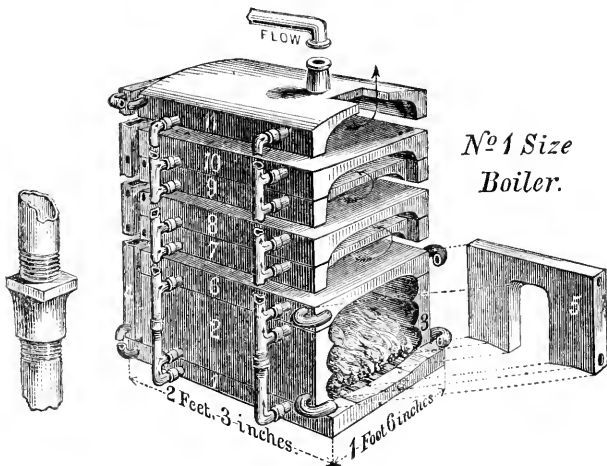


FIG. 1.

manufactured in the best manner possible, to secure equal strength in all the parts; and in its being cast in separate sections to admit of any part being replaced when worn out, without the necessity of having an entirely new boiler.

Fig. 1 is a sketch of a full-sized boiler, with the several sections elevated to show the peculiarity of its construction, and the ease with which

it can be taken to pieces when required. Fig. 2 is intended to show that when the extent of the piping is not large the boiler may be worked in much the same manner as the old Saddle-back, and its heating capacity increased by the addition, first, of the two ends, and then the top sections, according to the extra work put upon it by the increase of piping. The several compartments are connected together with the patent joint shown on the left hand of Fig. 1, which admits of their being separated or put together in a very short space of time.

The following description, in connection with the illustrations, will, we hope, convey a clear idea of the details of the construction of the boiler:—

The boiler consists of nine or more separate hollow castings, placed one upon another. Upon brickwork is placed the basement, or No. 1 casting, consisting of a hollow rectangular frame, in which are fixed eight (more or less, according to the size of boiler) circular hollow fire-bars, placed at such a distance from one another as to allow sufficient space for the draught. At the back or farther end of this casting are the return pipes, and in the front the discharge pipe for cleansing the interior of the boiler at any time. The ashpit is formed by the brickwork supporting the first or basement casting, and is enclosed by a door hung on a solid cast-iron frame built into the brickwork or otherwise. The furnace-door is to be hung in the same way.

Upon the first casting four other separate hollow castings are placed, of which Nos. 2 and 3, forming the sides of the furnace, are fluted and placed parallel with the hollow fire-bars, and are of such a length that the two remaining castings, Nos. 4 and 5, which form respectively the back and front of the apparatus, may be flush with the ends of the first casting. The back, or No. 4 casting, is large enough to cover the whole or part of the end of the apparatus, and is connected at the bottom by pipes with castings Nos. 2 and 3 respectively, and at the top on each side with casting No. 11, which will be afterwards described. The front casting, No. 5, must be of such a height that the top will be level with the top of No. 6, forming the top of the furnace. The front is built up with brickwork, with three sliding soot-doors to allow the flues to be properly cleaned out. This front, or No. 5 casting, is connected at the bottom by pipes with castings Nos. 2 and 3, and at the top on each side with casting No. 6. Upon the top of castings Nos. 2 and 3 is placed a sixth further and separate hollow fluted casting, forming the top of the furnace, having a space left at the back opening upwards, to allow a free passage for the fire to pass out of the furnace under a separate and hollow casting (No. 7), which when

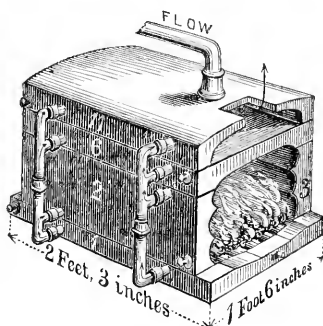


FIG. 2.

fixed forms two flues communicating, by means of other flues formed by similar castings, and terminating in a rectangular opening at the top for regulating the draught, and for the passage of the smoke into the chimney.

The circulation of the water from and into every separate hollow casting is effected by means of four sets of pipes affixed externally to the castings, two sets being placed on each side of the apparatus. If desired, the crown or top casting with the flow-pipe can be placed upon No. 2 or 3 casting, and worked without the flues until required. The flame or hot air from the fire placed on the hollow bars will pass between castings Nos. 2 and 3, until it arrives at the opening, previously described to be left at the back of casting No. 6, where it will divide, and pass upwards towards the front through the two flues formed by casting No. 7. It will then return towards the back through the two flues formed by casting No. 8, again uniting and passing upwards into the flues formed by castings Nos. 9 and 10, the heat thus continuing to travel through the castings Nos. 9, 10, and 11 in the same way, so that the hot air will pass six times through the internal length of the apparatus before escaping into the chimney.

CUT FLOWERS FOR BOUQUETS AND VASES.



N carrying out the modern system of bedding, with its ribbon borders, panel beds, and leaf embroidery, it is necessary to employ almost exclusively a class of plants that do not produce flowers well adapted for bouquets and for filling vases. Therefore, where the greater portion of the garden is devoted to that style of bedding, and there is not a good collection of summer and autumn flowering plants under glass, it is most difficult to obtain a plentiful supply of flowers for the vases during these seasons. Indeed, a lady friend of mine, who has a much larger garden than ours, but which is almost exclusively devoted to summer bedders, assured me that she had the greatest difficulty in keeping the vases properly filled, and was surprised to see how beautifully ours were arranged at all times. She could not understand where we could obtain the flowers from, until she was taken to a retired part of the pleasure grounds and shown the little border set apart for the cultivation of plants expressly for the supply of cut flowers for indoor apartments. Since last autumn she has had a border prepared in a similar manner, which she intends keeping entirely for herself. Were this to be done in all gardens where cut flowers are in request, much vexation between the gardener and his employers would be avoided; the employer would be saved the annoyance of not having sufficient, and the gardener the vexation of having the flowers stripped off plants in beds occupying prominent positions. It is not an easy task to make out a complete list of plants suitable for the end in view; indeed, I shall not attempt it, and shall content myself with enumerating the best of

those we have hitherto grown. The list is certainly not so complete as I should like, and I do hope that some of the many thousands who read it will lend a helping hand to make it complete, and send the names of any of the plants they have found well suited for the purpose for which they are intended. For the assistance of lady readers, and others not well acquainted with flowers, I shall divide the list into sections as follows:—

ANNUALS.—*Asters* in variety; *Trafalgar's Perfection Pæony*, *Dwarf Pyramidal Perfection*, and *Victoria Asters*, are probably the best to grow to cut from. *Cullipsia bicolor grandiflora*, *C. b. marmorata*, *C. b. nigra speciosa*, *C. coronata*; *Fragrant White*, *Dark Crimson Flesh*, and *Purple Candytuft*; *Rockel* and *Candelabrum flowered Larkspurs*; *Linum grandiflorum*; *Lupins* in variety; *Mignonette eximea*, *M. ameliorata*; *Sweet Peas* in variety; *Phlox Drummondii* in variety; *Schizanthus Grahamei*, *S. pinnatus*, *S. retusus*; *Senecio elegans* in variety; *German and English Ten-week* and *New Large-flowering Pyramidal Stocks*, *Night Scented Stock*; *Zinnia elegans* in variety. All the above may be raised from seed sown in the spring, either in the cold frame or open ground. Where any of the above may be had "in variety," a packet of mixed seed will suffice, although in a few cases it would be preferable to have the colours separately. The Stocks and Asters should be planted in favourable positions.

HALF HARDY PLANTS.—*Ageratum Prince Alfred* and *Mexicanum*; *Bouvardia angustifolia*, *B. elegans*, *B. Hogarth*, *B. Jasminoides*; (these must be planted in a warm sunny situation); *Pomponé Dahlias*; *Heliotropium Jersey Beauty*, *Miss Nightingale*, and *Surpasse Guascoi*; *Pelargonium Rollisson's Unique*; *Double-flowering zonal Pelargoniums*, *C. Glynn*, *Captaine l'Hermite*, *Marie Lemoine*, *Victor Lemoine*, and *Willhelm Pfitzer* (these should be plunged in the pots); *Salvia coccinea*, and *Veronica Blue Gem*. The foregoing should be planted out at the same time as the ordinary bedding plants. *Verbenas* and *single-flowering zonal Pelargoniums* are omitted because they will be in abundance in other parts of the garden, and they do not remain in good condition sufficiently long after they are cut to admit of their being considered first-rate.

HARDY HERBACEOUS PLANTS.—*Antirrhinums* in variety; *Aster dumosus*, *A. formosus*, *A. Nova Angliæ*, *A. Nova Belgiæ*; *Carnations*, including the *Clove-scented varieties* (seedlings which are usually sold at a cheap rate are suitable to cut from); *Cheiranthus Cheiri luteus*, *fl. pl.*, *C. C. purpureus*, *fl. pl.*; *Lily of the Valley*; *Delphiniums* in variety; *Dianthus barbatus*, *D. hybridus* in variety, *D. laeinatus*, *D. Heddevigi*, *D. H. diadematus*; *Snowdrops*; *Gladiolus* of all kinds (*Brenchleyensis*, *floribundus*, *gandavensis*, and *ramosus*, are wonderfully cheap, and valuable for cutting, although not equal to the many splendid varieties now in cultivation); *Everlasting Peas*; *Forget-me-nots*; *Lilium candidum* (the common white); *L. longiflorum*; *Lychnis Chaleedonia*, *L. Haageana*; *Herbaceous Lobelias*; *Muscari* in variety; all the *Narcissus*; *Primula acaulis* and *P. elatior* in variety; *Spiræ filipendula*, *fl. pl.*, *S. ulmaria*, *fl. pl.*; *Veronicas*; *Violets*.

PLUMBAGO CAPENSIS.

BY ROBERT OUBRIDGE,

Church Walk Nursery, Stoke Newington, N.



OW that preparation for the summer bedding is in active progress, it appears desirable to direct attention to this fine old plant, which is now seldom grown, because so few of the modern flower gardeners are acquainted with its merits. It is perhaps one of the most valuable of all plants for furnishing a supply of cut flowers for bouquets and other uses to which they are put; not only because of the adaptability of the flower for working up with other flowers, and the profusion with which they are produced, but because of their peculiar delicacy of colour and thorough distinctness from all others that may be used for the same purposes. The reason that it is so seldom planted out in the open border is undoubtedly due to its being generally believed that it must have the protection of glass at all seasons of the year. It is certainly not so hardy as many other plants employed in flower garden decoration, but it is hardy enough to grow well and flower freely during the summer and autumn months, when planted in a warm, sunny situation. The most suitable position for planting it when grown expressly for supplying cut flowers is against a wall facing nearly or quite due south.

Previous to planting, a few shovelfuls of either manure, leaf-mould, or fresh loam, or a combination of all three, should be mixed with the staple soil to give the plants a good start. The plants can of course be put out without any preparation, but no one can object to the little trouble occasioned in preparing the ground as here directed. It is of no consequence whether the plants are young or old, but preference should be given to the latter if in good health, because even if they are thin and scrubby in appearance, they will rapidly fill out and soon begin to bloom freely. A few liberal soakings of water, and training the young growth to the wall are all the attentions that will be required after they are planted.

They are very valuable for edging beds in the flower garden which are filled with rather tall-growing subjects, but they will require pegging down. A few plants put round the outside of beds filled with mixed subtropicals have a very pretty appearance, with the flowers peeping out here and there from the masses of foliage. The best way of employing them is perhaps planting alternately with the scarlet-flowered *Bouvardias* such as *Elegans* and *Hogarth*. The *Bouvardias* should be planted rather farther apart than would be desirable if the bed was to be filled entirely with them, and the *Plumbago* planted close enough together, so that in a short time they will completely cover the surface. Young plants should of course be selected, and the young growth pegged down in much the same way as *verbenas*. If they grow too vigorously, and appear likely to smother the *Bouvardias*, the shoots must be thinned out,

Merely stopping them will make matters worse, as it will put a stop to the flowers, and, at the same time, encourage the production of more wood. The beds should be in an open and sunny situation, as much for the sake of the *Bonvardias* as for the *Plumbagos*, because both require a liberal degree of warmth to do them justice. The bed should also be raised a few inches above the general level, to enable the soil to become warmed from the action of the sun on the raised sides. The close-growing *Antennaria tomentosa*, or either *Sempervivum Californicum* or *Echeveria secunda glauca*, planted on the sloping sides will effectually keep the soil in its place.

THE GARDEN GUIDE FOR MAY.

FLOWER GARDEN.—The annuals sown last month must be thinned before they are spoilt from overcrowding. Take up primulas, polyanthus, daisies, and other spring-flowering plants, from the beds, as they go out of flower, and divide, and plant in reserve border for next year. A partially-shaded position is best for these subjects through the summer. Plant in rows, a foot apart, and six inches from plant to plant in the rows. Asters, stocks, zinnias, and other hardy and half-hardy annuals, can be sown in the open ground now. Harden off those sown under glass, and get them planted as speedily as possible. All the ordinary bedding stuff ought to have been in cradles out of doors, or the lights drawn entirely off those in frames, for the last fortnight at least. Subtropical plants, of a tender constitution, intended for the decoration of the flower garden, must have free exposure to the air, to fit them for going out next month. Thin the buds of pinks, picotees, and carnations, and shade those intended for exhibition. Remove auriculas to a shady position, if not already done. Nip off the flower trusses as the flowers fade, unless it is intended to save seed, for seed-bearing weakens the plants. Trim up the grass verges, and mow and roll the lawn, to promote a close bottom, and give everything a fresh and bright appearance. The end of the month will be soon enough to begin bedding out.

KITCHEN GARDEN.—As weeds grow with great rapidity at this season of the year, every exertion must be made to keep them down, or they will fill the ground with seeds. Thin out all permanent seed-beds, such as onions, carrots, etc., and plant out broccoli, cauliflowers, cabbage, kales, etc., for the winter, as the plants grow large enough to transplant, before they get too much crowded. Sow scarlet-runners, dwarf French beans, beet, turnips, spinach, endive, and lettuce; the last two should be sown where they are to remain, to prevent their running to seed so quickly, as is the case when sown in beds and transplanted. Also sow marrow peas, and earth up and stick those already forward enough. Peas do best sown in trenches through summer; they should be made in much the same manner as for celery, but rather broader, and not quite so deep. Prick out the late sown celery, and make trenches, and

plant out the earliest batch. Shade with a few branches of evergreens for a few days after planting, and keep well supplied with water.

FRUIT GARDEN.—When disbudding the wall-trees, avoid denuding the trees too much at one time; remove the foreright shoots first, and then begin again, and remove those not required for training in. Proceed cautiously with thinning the fruit until the end of the month. Bush and pyramid trees must have their shoots thinned out, where too crowded, and those remaining pinched back to the third or fourth leaf. Remove the runners from the strawberry plants directly they push, if not wanted for layering, or the parent plants will soon be choked up with the young brood. Wash all the trees on the walls, and those trained as pyramids, frequently with the garden engine.

CONSERVATORY.—Now that the frames are clear of the hosts of bedding plants with which they have been filled through the winter, all small soft-wooded stuff should be removed to them, and hard-wooded plants must have light and air, now that they are growing freely. Azaleas and camellias require a warm, moist atmosphere when making their growth, and to have plenty of air directly it is made. Freely ventilate New Holland plants of every description, and attend carefully to the watering, and be particular that each has sufficient to moisten every particle of the soil in the pot. Shift and stop fuchsias and petunias; water them with manure-water as they get pot-bound.

STOVE.—Large numbers of orchidaceous plants will now be in flower, and every means, consistent with the health of the plants, must be adopted to preserve the freshness and beauty of the flowers as long as possible. A cool, dry atmosphere is necessary for this purpose. Shift those in the hottest house into the cool house, and those from the cool house into the greenhouse, where they can be shaded and kept close; for, on no account, must the plants be exposed to currents of air. Plenty of moisture at the roots, and in the atmosphere, will be necessary for growing plants. Gesneras and other plants, intended for winter blooming, must soon have their last shift. Shade during bright sunshine, and place those in flower by themselves, so that the flowers receive no injury from the syringing, which has now become a daily necessity. Ventilate freely, and shut up early in the afternoon.

FORCING.—Inside vine borders must be liberally supplied with water, where the crops are swelling, and the atmosphere kept moist by throwing water on the paths, and sprinkling the bed and walls. Where the grapes are colouring, give abundant ventilation, and keep the atmosphere dry. The crops should be watched, and the border have a good soaking just before the grapes commence colouring, so that no more is required until that process is finished. Shift on young vines in pots, and help those bearing young crops with manure-water. Peaches, nectarines, cherries, and figs, swelling fruit, to have an increased temperature, with plenty of water at the roots, and a thorough syringing twice a day. Crops of these in a more advanced stage, which are beginning to ripen, must have less

moisture above, and more below. Cucumbers and melons require regular attention in stopping and training. Where the heat is maintained by means of hot manure, add fresh linings directly it begins to decline. Give plenty of air, to render shading unnecessary.

PITS AND FRAMES.—Give all the air possible to vegetable marrows, tomatoes, ridge cucumbers, and chilies. It is a capital plan, where any of these subjects are required early, to shift them into eight-inch pots, and keep them growing until the time arrives for planting out; it makes a month's difference in their time of coming into bearing, when strong plants are turned out, instead of poor little starved ones.

HORTICULTURAL NOTES.



SPRING FLOWERS do not lack encouragement so far as the leading Horticultural Societies are concerned, supposing their proceedings to encourage them, for during the past month we have had no less than three exhibitions in the metropolis, besides those held in the provinces. Two of the London shows were held in the gardens of the Royal Horticultural Society at South Kensington, and one in the gardens of the Royal Botanic Society in Regent's Park. The first of the Kensington exhibitions, held April 5, was devoted to Cyclamens and Cinerarias, and Amaryllis; and the second, which was held April 19, to Auriculas and Azaleas. The Regent's Park Show, held April 11, included spring flowers generally. To deal with any of them in detail is quite unnecessary, and therefore only mention will be made of a few of the most important matters that were brought forward at the several shows.

April is, undoubtedly, too late to see the varieties of *Cyclamen persicum* in perfection; hence it was not a matter for surprise to find that the dark flowers had lost much of their freshness, and presented a faded appearance compared with what they were a month or six weeks previously. Of these beautiful flowers, Mr. James, gardener to W. F. Watson, Esq., Redlees, Isleworth, and Mr. Goddard, gardener to H. Little, Esq., Cambridge Park, Twickenham, came out in strong force, and carried all before them, and ran each other a very close race in the classes in which they competed together. Indeed, the competition was so close between them, that Mr. James was first, with Mr. Goddard second, and in the class for six their positions were exactly reversed, and Mr. Goddard was also first for an unlimited collection. The varieties in the collections shown by Mr. James were chiefly light flowered, but of the most excellent quality; and on the other hand, the collections put up by Mr. Goddard, especially the larger ones, comprised some of the very best dark flowers ever exhibited, and to say too much in their praise would be well nigh impossible. Mr. Edmonds, nurseryman, of Hayes Common, Middlesex, who has probably done more than any other

member of the trade in the improvement of the Cyclamen, exhibited a grand group of medium-sized plants, which were so brilliant in colour as to quite astonish those who had only been accustomed to the common varieties in cultivation. To overpraise Cyclamens for winter decoration would be difficult, and those who are anxious to obtain the greatest amount of pleasure possible from their cultivation, should first secure seed from a first-rate strain, and then save seed from the very best flowers they have in their collection. Seed-bearing is, however, very injurious to the health of the plants, and not more than two pods of seed should be allowed to mature on each plant, because if more than that number is allowed to remain, the plants will in all probability break badly the following season, and those that are the most heavily taxed will in all probability entirely perish.

The only exhibitor of *Amaryllis* was Mr. Baxter, gardener to C. Keiser, Esq., Broxbourne, who is undoubtedly the most successful grower of these gorgeous flowers we have, for he has taken all the first prizes offered by the London Societies, both this season and last, and with plants that have certainly not been surpassed. It would serve no useful purpose to give the names of the varieties staged by Mr. Baxter, because he has been most successful in raising new varieties, and the collections staged consisted entirely of varieties of his own raising, many of which have received first-class certificates. As Mr. Baxter contributed a paper on the cultivation of these plants in the *FLORAL WORLD* for August, 1869, there is no reason why all who read this, provided, of course, they have the convenience, should not be as successful as himself in cultivating them. It is very generally supposed that a very high temperature is essential to a vigorous growth, but it will be recollected that in the paper referred to it is distinctly stated that a temperature intermediate between the greenhouse and stove is all that is required.

Many other interesting things were shown, but, excepting the fine collection of hardy herbaceous plants from Mr. Ware, of the Hale Farm Nurseries, Tottenham, and the collections of Pot Roses from Mr. W. Paul, Waltham, and Messrs. Veitch and Son, Chelsea, they were not of sufficient importance to merit attention here. It is worthy of remark, however, that in the competition for the prizes offered for Cucumbers, both first and second prizes for white-spined varieties were awarded to Blue Gown, a fine variety sent out by Mr. Turner, of Slough, which is unquestionably the finest cucumber of its class for exhibition yet sent out. This cucumber averages an inch and a-half in diameter and twenty-four inches long, is very smooth, with scarcely any handle, and with proper care can be had as straight as a gun-barrel. At the last meeting at Kensington Mr. Turner exhibited a plant of Turner's Prolific Black Spine, growing in a ten-inch pot, to show its productive qualities. The plant, although only about thirty inches in height, had nine or ten fruit, averaging twelve inches in length, and most of them were full grown. A better proof of its productiveness could not possibly be had, and as the fruit is of excellent flavour, it can be highly recommended for ordinary consumption. Long cucumbers, excepting for exhibition,

are not desirable, because they are seldom remarkable for productiveness, and it is much better to have two fruit twelve inches in length than one eighteen inches. For a companion to Turner's Prolific, Masters's Prolific, a most excellent and free-bearing white-spined variety, can be highly recommended. Indeed, it is such a good cropper that a very small amount of frame or house-room will suffice to maintain a regular supply throughout the season.

The most important contributions to the exhibition of the Royal Botanic Society, held April 12 and 13, were the Pot Roses, greenhouse Azaleas and Cinerarias, and hardy Herbaceous plants. The competition in the classes for roses was remarkably spirited, although the number of exhibitors was not large. The two leading trade exhibitors were Mr. C. Turner, Slough, and Messrs. Paul and Sons, Cheshunt, whose collections were very evenly matched; but there can be no doubt that the first prize was most deservedly awarded to the collection from Mr. Turner. As a guide to rose-growers, it will be well to give the names of the varieties shown in the two collections, which, it is hardly necessary to say, are first-rate for pot-culture. The collection staged by Mr. Turner comprised examples of Anna Alexieff, Miss Ingram, Marie Baumann, Souvenir d'un Ami, Maréchal Vaillant, La France, Céline Forrestier, Victor Verdier, Princess Mary of Cambridge. The varieties in the Cheshunt collection were Madame Victor Verdier, Madame de St. Joseph, Dr. Andry, Charles Lefebvre, Souvenir d'Elise, John Hopper, Horace Vernet, Juno, and Maréchal Niel. The leading amateur exhibitors of roses were Mr. Baxter, gardener to C. Keiser, Esq., Broxbourne, and Mr. James, gardener to W. F. Watson, Esq., Isleworth, who were first and second respectively in the class for six, with well-grown examples of the leading kinds.

Spring-flowering hardy herbaceous plants are so beautiful when grown in pots under glass, and require so little skill to manage them properly, that it will be useful to many to mention that the splendid collection with which Mr. Ware carried off the first prize, consisted of *Spiraea japonica*, *Dielytra spectabilis*, *Polemonium reptans*, *Polygonatum multiflorum*, *Triteleia uniflora*, *Primula cortusoides amœna lilacina*, *P. cortusoides intermedia*; the common and striped-leaved Lily of the Valley, the fern-leaved Pæony, and *Cheiranthus luteus* fl. pl., a very fine double yellow Wallflower. Cinerarias, with but one exception, were far from first-rate. The principal exception was the collection from Mr. James, who staged a group of most beautiful and well-flowered specimens. Several new plants were shown, the most interesting of them being *Cyclamen persicum* *Snowflake*, a fine large-leaved variety with large pure white flowers, from Mr. Goddard, gardener to H. Little, Esq., Cambridge Park, Twickenham; *Tillandsia argentea*, an interesting epiphytal species with silvery leaves, and *Euterpe antioquiensis*, a very graceful-growing palm with pinnate fronds, from Messrs. Rollisson and Son; *Amaryllis hybrida gigantea*, a very beautiful variety with medium-sized flowers, of a delicate blush colour, most beautifully painted rich rosy carmine, from Mr. B. S. Williams, Upper Holloway; *Acer polymorphum palmatifidum*, a very beautiful maple with leaves

elegantly cut, and of a light green colour, from Messrs. Veitch and Sons, Royal Exotic Nursery, Chelsea; and *Malortiea speciosa*, a bold and distinct palm, from Messrs. A. Henderson and Co., Maida Vale, Edgware Road.

At the last meeting of the Royal Horticultural Society, the Azaleas were decidedly poor, and excepting a fine group of new varieties, staged by M. L. Van Houtte, Ghent, Belgium, we can well afford to pass them by.

All the varieties shown by M. L. Van Houtte possess considerable merit, but the best and most distinct were:—*Alice*, deep rose, spotted on top segment; semi-double, showy. *Marquis of Lorne*, vermilion, with a few crimson spots on top segments; single, fine. *Comtesse de Beaufort*, deep rose, with crimson blotch on upper segment, semi-double. *George Loddiges*, scarlet, very large and showy; single. *Baronne de Vrière*, pure white, striped with rosy scarlet, very large and fine; single. *Juliette*, deep rosy earmine; semi-double, large and of fine form; superb. *Madlle. Marie Van Houtte*, white, striped with scarlet, large and fine. *Superba Nova*, rosy crimson, shaded with violet, single; first-rate. *Princess Louise of Lorne*, pale flesh, with violet spots; large and good.

Auriculas shown both for the prizes offered by the Metropolitan Floral Society and by the Royal Horticultural Society were staged in fine condition. The former society offered prizes for single specimens of selfs and of green, white, and grey-edged varieties, and for six show varieties, and the principal prizes were awarded as follows:—Single specimen Self, Mr. Turner, Slough, first with Spalding's Blackbird; Mr. James, gardener to W. F. Watson, Esq., Redlees, Isleworth, second with Martin's Mrs. Smith. Single specimen Green-edge, Mr. James first with a grand example of Lovely Ann; Mr. Turner second with Traill's Prince of Greens; and Mr. Butcher third with Mrs. Butcher. Single specimen White-edge, first Mr. James with Smith's Ne Plus Ultra in fine condition; Mr. Turner second with Lee's Earl Grosvenor. Single specimen Grey-edge, Mr. Turner first with Lightbody's Richard Headly; the Rev. H. H. Dombrain second with Headly's George Lightbody. Six Show varieties, the Rev. H. H. Dombrain, Westwell Vicarage, Ashford, Kent, first with Clegg's Crucifix, Martin's Mrs. Sturrock, Traill's Mayflower, Lightbody's Richard Headly, and Park's Metropolitan; H. Little, Esq., Cambridge Park, Twickenham, second with a well-finished collection, consisting of Traill's General Neill, Lightbody's Richard Headly, Dickson's Duke of Cambridge, Smith's Ne Plus Ultra, and Lancashire Hero.

The competitors for the prizes offered by the latter Society for twelve show Auricula and twelve Alpine Auriculas, were Mr. C. Turner and Mr. James, who were first and second respectively in each class. In the Alpine class, Mr. Turner had Borealis, Godfrey, Elcho, Nonpareil, Celina, Mercury, Gladiator, Dazzle, Queen Victoria, John Leech, Defiance, and Cygnet, all of which are first-rate; and Mr. James had Little Beauty, Miss Andrew, Conspicua, Mabel, Beauty, Novelty, Minnie, Clipper, and Dazzle. In the show class, Mr. Turner staged Martin's Mrs. Sturrock, Martin's Miss

Martin, Partington's Trafalgar, M'Lean's Unique, Read's Miss Giddings, Barlow's Morning Star, Turner's Galatea, Turner's Colonel Champneys, Turner's Omega, Turner's Buckstone, Turner's Competitor, and Lightbody's Richard Headly; and Mr. James had Spalding's Blackbird, Martin's Mayfield, Wild's Bright Phæbus, Headly's Royal Purple, Turner's Webster, James's Mary James, Lightbody's Meteor Flag, Smith's Mrs. Smith, and Martin's Mrs. Sturrock. Mr. Turner exhibited a batch of new Alpine varieties, all of which are decided acquisitions. The names and colours are as follows:—*Mr. James Butcher*, very large, stout, and massive; ground colour deep maroon-crimson, very rich; paste small deep golden yellow; truss good. *Sultan*, medium size, but smooth and well finished; ground colour brownish-maroon, shading to claret; paste large and sharply defined. *Marquis of Westminster*, rather above medium size; ground colour rich chocolate-crimson; paste large and smooth; a beautifully-finished flower. *Mrs. Moore*, rather large; ground colour deep blackish velvety maroon; paste large, smooth, and richly coloured. *Lord Lorne*, medium-sized and of fair form; ground colour bright crimson; paste rich in colour, and well defined.

The most desirable of the new plants shown were:—*Maxillaria lutea grandiflora*, a very fine and richly-coloured variety, from Mr. B. S. Williams. Tea Rose *Belle Lyonnaise*, very large and double, and of the finest form, from Mr. Charles Turner. *Rhododendron The Bride*, a superb greenhouse variety, with pure white flowers of large size, fine form, and great substance, from Mr. G. Fairbairn, gardener to J. T. Noakes, Esq., Brockley Hall, Lewisham. *Acer dissectum*, a very beautiful variety with elegantly-cut green leaves, and *A. japonicum ornatum*, a variety with leaves cut in much the same manner as the preceding, but of a dark bronzy crimson hue, from Messrs. Veitch and Sons. *Azalea amœna Marvel*, a semi-double form of this well-known and useful azalea, from Mr. Bull. *Pink Princess Louise*, a magnificent dwarf-growing variety, with large flowers of fine form, very full, and of the most brilliant scarlet colour, and very fragrant, from Mr. Lee, Florist, Cross Bush, near Arundel. *Cypripedium niveum*, from Mr. C. Ward, gardener to A. D. Berrington, Esq., Pont-y-Goitre, Abergavenny; and *Odontoglossum odoratum*, a pretty species, with yellow and brown flowers, from Mr. Denning, gardener to Lord Londesborough, Grimston Park, Tadcaster.

It will be remembered that Mr. Trussler, the head-gardener at High Leigh, Hoddesdon, contributed a paper on the cultivation of camellias to the FLORAL WORLD for December last, in which he strongly recommended planting them out in a border of good soil instead of growing them in pots; and assuredly he can speak with confidence upon that point. The large conservatory under his charge is planted almost exclusively with camellias, and each plant is a perfect specimen, some of them being nearly twenty feet in height. Some are grown as pyramids, a few as bushes, and others as standards, all being in the most luxuriant health; and when I had the pleasure of seeing them in March, they were literally loaded

with flowers. Those of the favourite old Double White could have been gathered by the hundred from each plant. One of the most remarkable of the specimens in the conservatory was a pyramid about twenty feet in height of Chandleri elegans, quite solid with the bloom, and the majority of the flowers measuring six and seven inches across. Of course there are not many amateurs who could grow camellias on so large a scale as at High Leigh, but where there is a small house and a liberal supply of camellias required, the plan recommended by Mr. Trussler is undoubtedly the best that could be adopted. An abundance of camellias may be grown in the open, or at least against a wall, anywhere south of London, because the camellia is quite hardy enough to bear exposure to winters such as that through which we have just passed without injury. At the present time there is, in the gardens of Baron Schroder at Englefield Green, a plant of the old Double White that covers a wall twenty feet in length, and is upwards of fourteen feet in height. The growth has been allowed to grow out from the wall, and it now extends to a distance of six feet, and the foliage and bloom as dense as they possibly can be. During the early part of this spring it has been really magnificent; for from top to bottom throughout its whole length it has been sheeted with bloom of the most snowy whiteness. The only protection it receives is a few lights placed over the top when in bloom, to prevent the rain injuring the flowers. It has flowered in the same manner for many years past. G. G.

NOTICES TO CORRESPONDENTS.

FERN HOUSE.—I have a small glass annexed outside my dining-room window, and should feel obliged by your opinion as to what to grow in it. It faces north-west, the sun getting on it about two o'clock. I have just had the pleasure of reading your book ("Fern Garden"), and the simple practical advice you have there given induces me to make the above request.—*J. R. Garside, Leeds.* [The structure is best adapted for the cultivation of ferns, and we should recommend their being grown. The "Fern Garden" will supply you with all the necessary information respecting the selection of the best kinds, preparation of the soil, potting, and other details connected with their management.—Ed. F. W.]

ROSE-BUDS DECAYING.—If time permits, will you in the next number of the FLORAL WORLD tell me why the buds of a rose, one of which I enclose, have all rotted without opening. It is a standard in a large pot in the greenhouse, and had twenty-seven promising buds, of which only one expanded.—*A Constant Subscriber.* [The bud sent tells the story in detail. Your pot rose made a good growth last summer, and ripened a fine lot of wood; since it began to grow again the roots have been too cold and too wet. It is too late, of course, to save the flowers, but there is time to put the plant to rights, and the first step will be to have it carefully repotted, for in all likelihood the drainage is stopped and the soil is sour, and if the roots are not promptly attended to the rose-tree will die.—Ed. F. W.]

WOODLICE IN COLD FRAMES.—*J. M.* would be glad to know if there is any way of destroying *wood bobs* in frames; the writer's melons have been much injured for two or three seasons by these insects, and he can find no effectual remedy. [For directions for trapping these pests, see the answer to "W. S.," page 32 of the FLORAL WORLD for last January.—Ed. F. W.]

G. H.—Six late-flowering Philæx: *Aurantiaca superba*, *Madame Guil-*

lotteaux, Liervalli, Madame Marin Saison, Mons. Linden, Mons. W. Bull. Six Pentstemons: *Arthur McHardy, Black Knight, Lady Boswell, Stanstead Rival, Miss Carnegie, George Sand.* Six Antirrhinums: *Admiral, George Gordon, Leopard, Striped Unique, The Rival, Yellow Gem.* The above selections include a few of those that are now in course of distribution for the first time.

CALCEOLARIAS.—*G. Simpson.*—We cannot say whether they will die off this summer as they did last, and as they have too frequently done in past years. But we can say this, that in several experiments with calceolarias at Stoke Newington, those planted in soil consisting of about three parts out of four of rotten hot-bed dung, none died, and the growth and bloom were the astonishment of many practicals who saw them.

GERANIUMS FOR PLANTING AFTER BULBS.—*W. W.*—All you need do is to shift the plants into six-inch pots, and plunge them out of doors till wanted. Then you can turn them out without any check, and in full bloom. So in autumn you need not take up your plants till the end of October, and you have then good time to plant the tulips. Suppose you were to have some kind of cheap frame-work for inclosing those beds, and then fill them with potted plants for the summer, on the plunging system. That system proves to be about a hundred times more grand than any system of planting out, and it has but one defect, and that is, that it uses an enormous quantity of plants, but that is an advantage to those who grow plants in quantities. But you have only to give your bedders an extra fortnight's growing.

DESTROYING WIREWORM.—*Robert Wilkinson.*—Yours is a bad case, but not at all uncommon where a grass-field has been lately converted into a garden. Cultivation will eradicate the pest in time, as every time the land is dug the birds will make a feast of the vermin, and the use of lime and salt on the land *when newly dug up* will contribute to thin them. For the present, we can recommend a good plan to save the crops that are coming forward. Sow carrots in short rows in all the beds occupied with lettuces, onions, and other things that they usually destroy. As long as they can find their way to a feed of carrots, they will desert everything else, just as slugs and snails will quit everything else for lettuces. Sow the carrots now rather thick, at intervals of about two yards across every four-foot bed, and as soon as they acquire the thickness of a quill begin to draw them where thickest, and you will catch many of the vermin. But you must allow a fair share of roots to remain, and you will have a crop of carrots in the end in spite of the worms. Next year sow onions and carrots, lettuces and carrots, etc., in alternate rows in the same beds; it is too late, we presume, to advise this course now.

F. C.—You have nothing to fear, although it would be a decided advantage if the trees could be pruned earlier in the season; but it would not be safe to prune them before the sap is in active circulation.

A New Beginner.—Of course, if the plants had not been well hardened off by exposure to the air previous to their removal from the frame, they would suffer.

MUSHROOM CULTURE.—*Mrs. Smith.*—There are many ways of growing mushrooms; some of the most careless ways are sometimes very successful, some of the most careful ways are sometimes failures. In the end the careful man will be the winner; and therefore, though the best ways fail sometimes, we recommend the following, which we consider *the best*:—Collect short manure from the stable daily, and lay it in a heap in a dry shed. So long as it rises to only a gentle heat leave it alone, and keep adding to it; but if there is any tendency to a strong heat, spread it out; leave it spread a day or two, and make it up again in smaller heaps. If it gets thoroughly hot, it will be in great part spoiled. When you have enough for the bed, mix with it a fourth part of good turfy loam; if the loam is stiff, use only a sixth part to the whole bulk. Lay it all up in a heap to ferment, and when the heat rises to 80° or 90°, take it to the mushroom house, and make up the bed 18 to 24 inches deep. It will soon heat again, but not fiercely. When the temperature of the bed is declining from its first heating, and is at about 90° (80° to 100° will do as well), bore holes with a rammer about a foot apart, and put into each a piece of spawn the size of a walnut. Fill up the holes with some of the same stuff the bed is made of, then spread two or three inches of good strong loam all over the bed, and at once beat the whole firm. It is one of the most important of all the points in mushroom-growing to make the bed as firm as a rock at the right

moment—that is, when the heat is going down from the first rush, and is not more than 100°. Spread over the bed some clean dry straw, not hay, for that is apt to go mouldy; and thereafter keep the bed moderately moist, but never wet, and as far as possible let the atmosphere be close, damp, and averaging 55° to 70°. Generally speaking, water never need be given until after the first gathering of mushrooms has been made; but this will depend on the degree of moisture of the stuff when the bed is made: the experienced cultivator will take care to have it moist enough in the first instance to last five weeks, and will then expect to find the bed smothered with young mushrooms. In gathering, take them clean out of the soil; the practice of leaving the root in, with a view to disseminate fresh spawn, is bad, for it attracts several kinds of flies, and these soon fill the bed with maggots, and it encourages snails and wood-lice, which are a fond of mushrooms as we are.

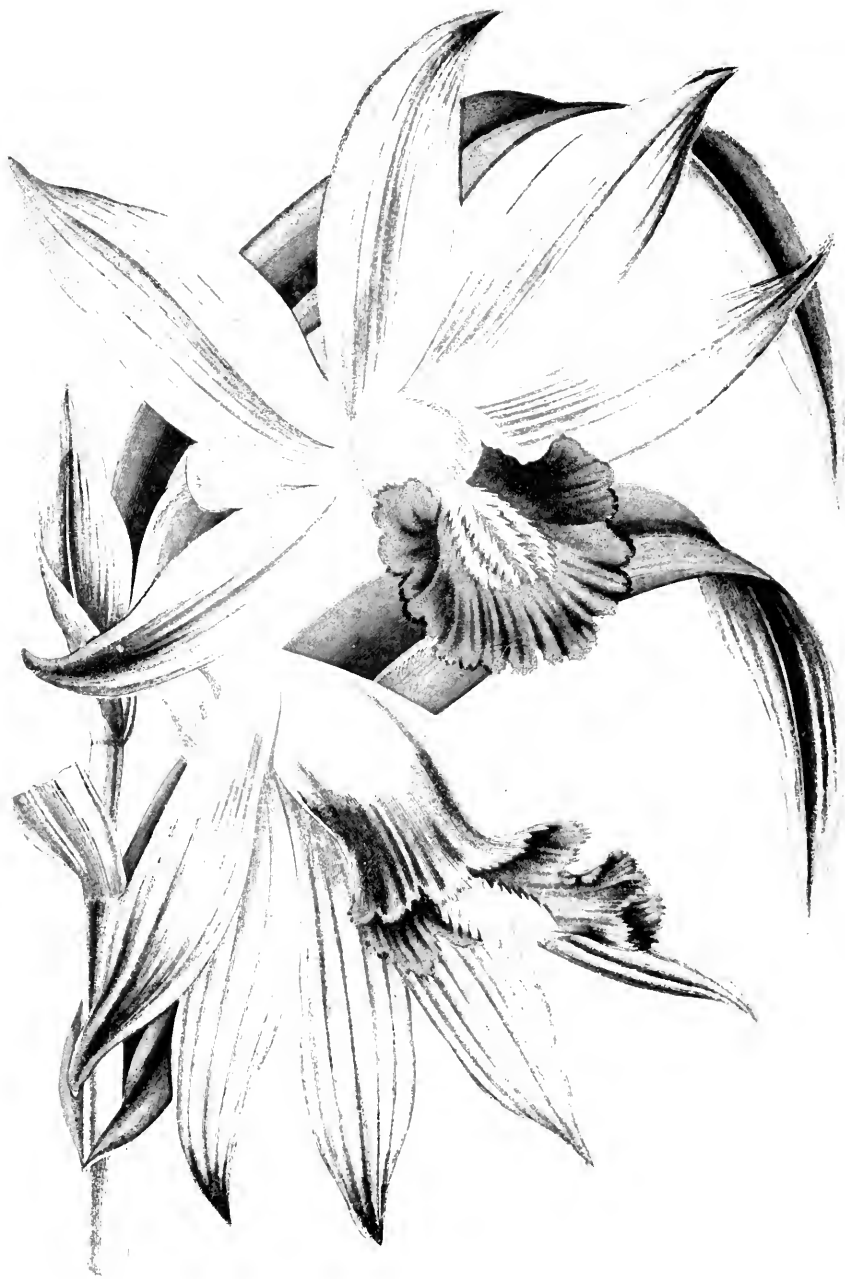
PÆONIES AND PYRETHRUMS.—*W. W.*—There is still time to buy and plant, though the autumn is preferable. Your position, climate, etc., are all that these things require to do well; the fact is, they are first-rate flowers for the suburbs of towns. Since your ground is well drained, you may reasonably expect to grow pæonies, pyrethrums, dahlias, and hollyhocks well. We cannot advise you whether to buy the cheapest or the dearest kinds; you are the best judge of your own purse; but the most expensive kinds are as hardy as the cheapest, and occasion no more trouble to grow them well.

FLOWERS.—*Miss B.*—The following are good subjects for a London garden: Chrysanthemums, Pyrethrums, *E. Fraseri*, *Iberis sempervirens*, *Alyssum saxatile*, common white Lily and Martagon Lily, Solomon's Seal, *Achillea millefolia rosea*, *Achillea ptarmica*, *Spiraea filipendula*, herbaceous Pæonies, *Dielytra spectabilis*, Everlasting Pea, *Veronica spicata*, *Campanula carpatica*, *Campanula persicifolia*, *Campanula nobilis*, *Tradescantia Virginica*, *Centranthus rubra*, *Hemerocallis flava*, *Helianthus angustifolius*, *Helianthus lætiflorus*, *Lysimachia nummularia*, *Sedum acre*, *Sedum fabarium*, *Sempervivum montanum*. These are all good things, and will grow and flower well wherever they can get a bit of sunshine. They may all be obtained in pots or tufts from the open ground at a nursery where hardy plants in any great variety are kept. We can advise you of a few hundreds more, but perhaps these will suffice for the present. Any that you determine to have, procure and plant at once.

UNHEALTHY ZONAL PELARGONIUMS.—*An Amateur Grower.*—The plants that are affected like the sample sent, have for months past been in a bad state at the roots. Probably the drainage has been choked by worms, and during the miserable March and April the soil was becoming more and more saturated and sour. Shake them out, prune back the roots a little, and repot them, using an extra bed of crocks and an extra quantity of sand, and put them on a hot sunny shelf, where they will no doubt recover in a few weeks.

ANNUALS FOR COLD SOIL.—*W. G. S.*—The best annuals for a cold clay are the showy Californian kinds, sown in pans in a pit or frame, or on a gentle hotbed, and planted out when the ground is warm. If you grow *Oxalis rosea*, *Hunnemannia*, *Nemophila maculata*, *Leptosiphon*, or *Fenzlia dianthiflora*, or Ipomeas, get them forward in pans, and do not plant them out till May. Give preference to the crimson, purple, and white Candytufts, *Nemophila insignis*, *Campanula speculum*, Venus's Navel-wort, *Silene armeria*, *Kaulfussia amelloides*, *Viscaria oculata*, *Gilea rosea*, *Escholtzia crceca*, and pæony Poppy.

CELOSIA PYRAMIDALIS.—*R. Johnson.*—To start the seeds quickly, a bottom-heat of 80° to 90° is necessary; sow the seed thinly, but directly the plants are up place them close to the glass, and give air freely to keep them dwarf. As soon as the plants are sufficiently strong, pot them off into "thumbs," and give them a bottom-heat of 80° at the least, a moist atmosphere, and as much air night and day as the heat of the frame, pit, or house, will admit of, always bearing in mind that the night temperature should not fall much below 60°, while in the daytime a brisk moist heat rising to 80° or 90°, with sun-heat and moisture, will not be too much. As the pots fill with roots, shift into those of a larger size. Fine plants may be grown in eleven-inch pots, but if you wish to attain the fullest perfection, thirteen or fifteen-inch pots will be necessary. Soil, sandy loam and very rotten dung, and use manure-water pretty freely.



THUNIA BENSONIÆ.

NOTES ON ORCHIDS.

BY GEORGE GORDON.

(With Coloured Illustration of Thunia Bensoniæ.)

ORCHIDS have had ample justice done them in the pages of the FLORAL WORLD, as a reference to the indexes of past volumes will show, but the appearance of a portrait of the beautiful *Thunia Bensoniæ* presents a most favourable opportunity for once more directing attention to the claims they have upon the amateur. A few years since, the cultivation of orchids was considered quite beyond the means of any but the most wealthy; for expensive houses, and an excessively high temperature, were looked on as most essential to success. Added to this, the cost of the plants themselves was quite sufficient to place them beyond the reach of the amateur with limited means. Now, all this has changed, for an extended acquaintance with them has shown that the more simply the orchid-house is constructed, the better it is for the health of the plants, and also that a very large number of species can be grown in a comparatively cool temperature. The reduction in price of the most showy kinds has also been very considerable, and now strong plants of a very large number can be obtained for a less sum than the price paid for a "tricolor" geranium when first sent out. Indeed, in a catalogue before me, *Dendrobium nobile*, which is most beautiful and easily grown, is quoted at five shillings, and *Oncidium flexuosum*, and *Phaius grandifolia* both showy and free-flowering, at a trifle over two-thirds of that sum; and in another catalogue a collection of twenty-five are offered for four pounds, and superior collections, both for cool and high temperatures, for eight pounds each, or the fifty plants, which would form a very good collection to begin with, for sixteen pounds! This is merely mentioned to show that orchids are not such expensive luxuries as they once were, and are even now generally supposed to be. Of course the plants at so low a price are not large, but it is better for the young beginner to commence with small, instead of large plants, because of the extra pleasure afforded in watching their development into fair-sized specimens. And in case of failure with any of the kinds, the loss will be very inconsiderable when the plants are small.

Apart from the above considerations, and the gorgeousness of their flowers, they possess many advantages over ordinary stove plants, but two only will be noticed here. First of all, the labour of the annual or periodical renewal of the stock from cuttings common to a stock of ordinary stove-plants is avoided, for they do not soon outgrow the space allotted to them, and they increase in value as they increase in size. When it is wished to increase any particular species, the plants can, with but few exceptions, be divided just as they are starting into growth, and each portion potted and otherwise managed in the same way as established specimens. Secondly, there

is nothing in their culture which may not be mastered by the amateur, with the assistance of a little practical advice, such as that given in the papers on Orchid Growing, published in the *FLORAL WORLD* for January and May, 1870.

To give, upon the present occasion, any but general directions for their management, is out of the question, and all that it appears desirable to attempt is a few observations on the most suitable house for an amateur to build, the selection of the potting materials, and the supply of moisture, both at the roots, and overhead.

First of all, we will consider the best form of house, and it should be well understood that orchids, although they do not bloom satisfactorily in a dark house, should not be exposed to an excess of light. For a moderate collection, a span-roof house, twelve feet in width and eight in height from the floor to the apex, and twenty feet in length, would be a fair size. The tables should be four feet in width, and fixed at a distance of four feet above the floor; and the side walls, upon which the bottom of the lights should rest (for side sashes are entirely unnecessary), should be carried thirty inches above the stage. The latter can be made with open lattice-work, but it is preferable to have a close stage, and then it can be covered during the summer months with cocoanut-fibre refuse, or sand, to retain the moisture, as the evaporation therefrom is most conducive to the health of the plants. The house should be heated with hot water, and the division set apart for species requiring a high temperature, four rows of pipes on each side; for those requiring an intermediate temperature, three rows, and for "cool" orchids, two rows will be ample; but two divisions will be ample for an amateur, and preference should be given to orchids that will succeed in the cool and intermediate house. If three divisions are required, the house should not be less than thirty feet in length. A less quantity of piping in all the divisions may be fixed, but in severe weather the pipes will have to be made much hotter than would be otherwise necessary, and the heat given off will not be so congenial to the health of the plants. Ventilation should be effected by means of small openings in the side walls, opposite the pipes, and small moveable lights at the apex of the roof.

Nearly all the epiphytal species can be grown in a mixture of sphagnum moss and fibrous peat used in equal proportion, but some species prefer either peat or sphagnum separately. The *Cattleyas*, *Pleiones*, and *Lælias*, for instance, do best in peat, whilst the *Dendrobiums*, *Ærides*, *Oncidiums*, and *Phalænopsis* succeed better when potted in sphagnum. All grow with greater vigour when the roots can come outside, and run down the sides of the pot or basket in which the plants are put, consequently the pots should be nearly filled with large crocks only, or in repotting the plants, turn them out of the pots, remove the loose material from round the outside of the ball, and after carefully loosening the outside roots, spread them out regularly, and cover them with a moderate thickness of the compost; and to hold the plants steady, insert a few pegs at regular distances apart.

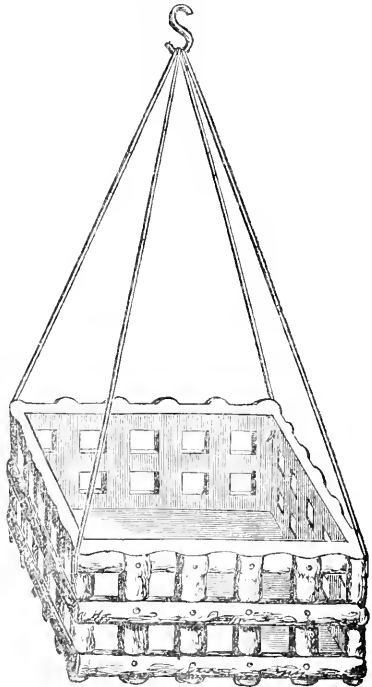
Terrestrial species should be potted in a mixture of turfy loam,

leaf-mould, sand, and cow-dung rotted to a powder, well incorporated together, and used in a moderately rough state. The pots should be about half filled with crocks, and then filled up with the compost to within about an inch of the rim.

The winter temperature of the several divisions should average 70° , 60° , and 45° respectively, with a range of five degrees each way, according to the weather. As an example, the temperature of the hottest house in mild weather may rise to 75° , and in frosty weather fall to 65° , provided the transition is effected in a gradual manner. The summer temperature should be on an average ten degrees higher. An abundance of atmospheric humidity is essential during the summer season; consequently, the paths and walls require sprinkling frequently, and in very bright weather plants not in bloom may be syringed overhead lightly when the house is shut up for the night. Liberal supplies of water during the same period will also be necessary; and if the pots are drained as here advised, there will not be much danger of the compost becoming sour from over saturation, provided the water is applied in moderation. When at rest, the compost must not be allowed to become quite dry, but kinds with thick fleshy pseudo-bulbs, such as the Cattleyas, Dendrobiums, and Oncidiums, require very little moisture indeed, and it will be safer to err on the side of keeping them too dry than in watering them too freely. *Arides*, *Vandas*, and *Phalænopsis*, and others of a similar character, which are not furnished with pseudo-bulbs, must not be kept so dry at the roots, or they will suffer severely, and the safest rule to lay down is, that the compost should be kept moderately moist throughout the winter.

From March until the end of August, Orchids require shading, which can be accomplished by tacking stout tiffany or thin canvas over the roof permanently, or by means of roller-blinds, which are preferable, excepting that a considerable amount of labour is requisite in attending to them. Air should be, excepting during the summer season, admitted at the top, unless special provisions are made for warming it previous to its coming in contact with the plants.

Some kinds are best suited for baskets, and for growing upon



IMPROVED ORCHID BASKET.

blocks, and as they do better when disturbed as little as possible, durable wood, like that of the apple-tree, ought to be selected. Branches six inches in diameter cut up into lengths of nine and twelve inches, make excellent blocks, quite large enough for all ordinary-sized specimens. In attaching them to the wood, first fasten a little moss on one side, then spread the roots over it, and cover them lightly, and make all secure by means of thin copper wire. Baskets of wood or red ware are the most suitable; and preference should be given to those made with hazel rods an inch in diameter, and of a similar shape to that shown in the accompanying illustration. Amateurs in the neighbourhood of towns would do better to buy the baskets ready-made from nurserymen who cultivate orchids, or purchase from the potteries baskets manufactured in red ware, like the one here figured, which is probably the best form that could be adopted.

Orchids may be divided into three classes: the first comprising those which should be grown in quantity for decorative purposes, furnishing a supply of cut flowers; the second those which, from their great beauty, are indispensable to the amateur cultivator; and the third those which are only suitable for botanical gardeners and collectors of curiosities.

In the first class we must include, *Barkeria Skinneri*, *Brassia verrucosa*, *Calanthe vestita*, and its varieties; *Cypripedium insigne*, *Dendrobium fimbriatum*, *D. nobile*, *Goodyera discolor*, *Lælia acuminata*, *L. albida*, *L. anceps*, *Limatodes bicolor*, *Oncidium flexuosum*, *O. leucochilum*, *O. sphecelatum*, and *Phaius grandifolius*.

The varieties comprised in the second class are so numerous that it will be necessary to divide them into sections, according to the temperature in which they can be the most successfully cultivated.

HIGH TEMPERATURE.—*Arides affine*, *Æ. Lobbi*, *Æ. suavissima*, *Æ. virens*, *Burlingtonia candida*, *B. fragrans*, *Calogyne pandurata*, *Cypripedium barbatum*, and varieties; *C. Fairieanum*, *C. hirsutissimum*, *C. villosum*, *Dendrochilum glumaceum*, *Oncidium ampliatum majus*, *O. Lanceanum*, *Phalænopsis amabilis*, *P. grandiflora*, *P. Schilleriana*, *Saccolabium Blumei*, *S. guttatum*, *S. retusum*, *Vanda cærulea*, *V. insignis*, *V. suavis*, *V. tricolor*. The *Phalænopsis*, *Saccolabiums*, and *Vandas* are rather expensive, but they are remarkably beautiful, and well worth the outlay incurred in their purchase.

INTERMEDIATE TEMPERATURE.—*Cattleya amabilis*, *C. crispa*, *C. Dowiana*, *C. intermedia*, *C. labiata*, *C. maxima*, *C. mossiae*, *C. Skinneri*, *C. Trianae*, *C. Warneri*, *Calogyne cristata*, *Dendrobium albosanguineum*, *D. chrysanthum*, *D. chrysotoxum*, *D. densiflorum*, *D. Deconianum*, *D. Farmeri*, *D. moniliforme*, *D. Parishii*, *D. Paxtoni*, *Epidendrum macrochilum*, *Lælia autumnalis*, *L. majalis*, *L. purpurata*, *Miltonia Moreliana*, *M. spectabilis*, *Oncidium altissimum*, *O. ornithorhynchum*, *O. papilio*, *O. pulvinatum*, *Phaius Wallichii*, *Stanhopea oculata*, *O. tigrina*, *Thunia albus*, *T. Bensoniæ*, *Trichopilia coccinea*, *T. suavis*, *Zygopetalum crinitum cæruleum*.

COOL TEMPERATURE.—*Barkeria Skinneri*, *B. spectabilis*, *Cattleya citrina*, *Cypripedium insigne*, *C. venustum*, *Epidendrum aurantiacum*,

E. dichromum amabile, *Ionopsis paniculata*, *Odontoglossum Alexandræ*, *O. citrosum*, *O. cordatum*, *O. grande*, *O. Inseayi*, *O. luteo-purpureum*, *O. membraceum*, *O. phalænopsis*, *O. pulchellum*, *O. Rossi superbum*, *O. triumphans*, *Oncidium crispum*, *Pleione lagenaria*, and *P. Wallicki*.

SELECT ZONAL AND VARIEGATED PELARGONIUMS.

BY JOHN WALSH.



THE list of zonal and variegated pelargoniums has swollen to such an inordinate size, that it is not by any means an easy task to criticise fairly on the new varieties when introduced to public notice, or to make out the best selection possible of the older sorts according to the purposes for which they are required. It is very easy to make out a list of good kinds; but it is another matter to make a selection which shall include the very best, and the best only, in the several classes. For my part, if I did not possess unusual facilities for becoming well acquainted with the best of new kinds before they are put in commerce, and for thoroughly testing them afterwards, I should shrink from the task of offering advice on such an important matter; and even now I approach it with a considerable degree of diffidence. In all the classes, with the exception of the white-edged and golden-leaved, several new varieties, possessing considerable merit, are now offered for the first time, and for the assistance of buyers of novelties, it will, perhaps, be desirable to dispose of them first.

Amongst the Golden Zonals, first place must be given to *Macbeth*, a grand variety in the hands of Messrs. Bell and Thorpe, of Stratford-on-Avon. The leaves are of splendid form, stout, and massive, and the colour is heavily laid on; indeed, it is the nearest approach to perfection we yet have seen, and well deserved the first-class certificate conferred upon it by the Royal Horticultural Society when first exhibited. The *Rev. R. Benyon*, in the hands of Messrs. E. G. Henderson and Son, of the Wellington Road Nursery, is wonderfully brilliant in colour, although hardly so perfect in form as one could wish, and must be added to the most select list, for it is a grand bedder, and in every way a most desirable acquisition. *Miss Goring* and *Mrs. Griève*, which are both in the hands of the last-mentioned firm, are also very desirable. The leaves of each are of fine form, and the colours are sharply defined and wonderfully rich and brilliant. The first-named is also most valuable for winter decoration, as the rich vermilion zone retains its brilliancy throughout the whole year. *Ettie Beale*, now being sent out by Messrs. Carter and Co., of High Holborn, deserves mention, as it is well entitled to a place amongst the most select. *Mr. Rutter*, which has been exhibited several times by Mr. C. Turner, is of a different type to the preceding; and for those who care more for form than

colour, although it is by no means dull, it will be much appreciated. It is worthy of mention, as an evidence that their merits have not been over-estimated, that all the above have received first-class certificates from the Royal Horticultural Society.

The new additions to the list of Silver Zonals are not by any means so satisfactory as those in the class just dealt with. The only varieties I have seen which can be recommended as superior to those which can be obtained at a much cheaper rate are *Mrs. Rousby* and *Princess Beatrice*, belonging to Mr. Turner and Mr. Plant respectively; and *Clorinda* and *Mysterious Night*, the property of Messrs. E. G. Henderson and Son. *Lass o' Gowrie* is perhaps the most valuable of all the silver zonals, and is expensive as yet; but it is hardly entitled to a place here, because it has been in commerce one or two seasons.

In the Bronze Zonal section, first and foremost stand the magnificent varieties in the hands of Messrs. Downie, Laird, and Laing, of Forest Hill, who have done so much in the improvement of this useful class. All the varieties they are now offering are good, but if only two can be afforded, preference should be given to *Black Douglas* and *Reine Victoria*, because of their extreme effectiveness and distinctness of character.

The Silver and Golden Variegated varieties cannot boast of any improvement. There are no new kinds on offer this season. Postan's *Snow-wreath*, and *Virgin Queen*, and Cannell's *Mrs. J. C. Mappin*, three white-edged varieties, with white flowers, which are all most valuable for edging purposes. Ample amends are, however, made in the zonal sections with green leaves, for the new varieties now being sent out for the first time may be numbered by the dozen. The best for bedding are undoubtedly Cannell's *Master Christine*, a dwarf-growing and free-flowering variety, with flowers of the Christine hue of pink; but it is much dwarfer in growth, and the flowers are stouter and of better form than that variety. Hibberd's *Feast of Roses*, a dwarf nosegay, producing medium-sized trusses of rich rosy-pink flowers in the greatest profusion. Bell and Thorpe's *Charles Dickens*, a neat grower, and a most profuse flowering variety, with flowers of a rich rosy puce colour. Denny's *Ianthe*, bluish crimson, of a similar shade to Madame Mezard. Downie, Laird, and Laing's *Star of Fire*, a neat dwarf-growing and free-flowering nosegay, with flowers of the most brilliant scarlet; and Hibberd's *Lilac Banner*, also neat in growth and free-flowering, and very valuable in the flower-garden, because of its distinct colour.

The best twelve new varieties for pot-culture are Denny's *Haidee*, magenta, with bluish shade; *Sir C. Napier*, dark scarlet; Denny's *Wellington*, maroon scarlet; Hibberd's *Alice Spencer*, pure white, tinted with carmine at the base; Cannell's *Pride of Kent*, orange scarlet, with extra fine foliage; Windsor's *Conflagration*, scarlet; Downie, Laird, and Laing's *George Peabody*, deep rich scarlet; very rich and effective; Downie, Laird, and Laing's *Pink May Queen*, deep rosy pink, a grand nosegay for pot-culture; and Smith's *Mr. Gladstone*, deep crimson scarlet, of the single-flowering

varieties. Add Bell and Thorpe's *Miss Evelyn*, bright rosy pink; Cannell's *Crown Prince*, deep rosy peach; Cannell's *King of the Doubles*, bright cerise, flowers extra large, and grand for hand and button-hole bouquets; and Paul's *Pink Perfection*, of the double-flowering varieties.

For pot culture, in addition to the above, the following twenty-four are very desirable, namely—Single: *Richard Heudly*, *Blue Bell*, *Dr. Koch*, *Jean Sisley*, *William Underwood*, *Windsor's Bride*, *Christabel*, *Maiden's Blush*, *Mrs. Sach*, *Surpasse Beauté du Suresnes*, *Eugénie Mezard*, *Mulame Mezard*, *Madame Werle*, *Gloire de Corbeny*, *Coleshill*, *Mrs. Keeler*, *Othello*, *Amelina Grisau*. Double: *Charles Glyn*, *Princess of Teck*, *Victor Lemoine*, *Ville de Nancy*, *Marie Lemoine*, *Madame Michel Buchner*.

The best twenty-four of the older gold, silver, and bronze zonals for pot culture are—Gold: *Mrs. Heudly*, *Prince of Wales*, *Victoria Regina*, *The Moonstone*, *Sophia Cusack*, *Lady Cullum*, *Mrs. Turner*, *Mrs. Dunnell*, *Queen Victoria*, *Humming Bird*, *Plutarch*. Silver: *Miss Burdett Coutts*, *Princess Beatrice*, *Mabel Morris*, *Caroline Longfield*, *Imperatrice Eugénie*, *Banshee*. Bronze: *Imperatrice Eugénie*, *Mrs. John Lee*, *W. R. Morris*, *Princess of Wales*, *Harrison Weir*, *St. John's Wood Star*, *Fairy Ring*, *Waltham Bronze*, *Sybil*.

For bedding purposes the following are the best that could possibly be had in the several classes:—Zonals and nosegay: *Scarlet*, *Thomas Moore*, *Jean Sisley*, *Orbiculata*, *Attraction*, *Bonfire*, *Morning Star*. Orange and Salmon, *Hibberd's Orange Nosegay*, *President Barberot*, *Jean Valdean*. Crimson and purple tinted, *Le Grand*, *Duchess of Sutherland*, *Black Dwarf*, *Murillo*, *Bayard*, *Waltham Seedling*. Rose and pink tinted, *Christine*, *Hibberd's May Queen*, *Kate Nicholson*, *Madlle. Nilsson*. Cerise, *Tristram Shandy*, *Lucins*, *Cherry Lips*. Lilac and purplish rose, *Amy Hogg*, *Duchess*, *Dr. Hogg*, *Blue Bell*, *Lilac Rival*. White, *White Wonder*, *White Princess*.

Golden zonals, *Beautiful Star*, *Louisa Smith*, *Madonna*, *Mrs. Pollock*, *Rising Sun*, *Sophia Cusack*. Silver zonals, *Italia Unità*, *Nydia*, *Queen of Hearts*, *Imperatrice Eugénie*, *Flying Cloud*, *Charming Bride*. Bronze zonals, *Egyptian Queen*, *Climax*, *Kentish Hero*, *Princess of Wales*, *Mrs. Lewis Lloyd*, *Fairy Ring*, *E. G. Henderson*, *Mulberry Zone*, *Impératrice Eugénie*. White and creamy variegated, *Albion Cliffs*, *Bright Star*, *Flower of Spring*, *Silver Chain*, *Bijou*, *Oriana*, *Snowdrop*, *Queen of Queens*, *Daybreak*, *Princess Alexandra*, *Waltham Bride*, *Avalanche*. Golden-leaved: *Crimson Banner*, *Golden Banner*, *Crystal Palace Gem*, *Star of Gold*, *Gold Circle*, *Creed's Seedling*, *Golden Fleece*, *Little Golden Christine*, *Yellow Gem*, *Gem of Brilliants*, *Jason*, *Waltham Gem*. *Meridian Sun*, one of Mr. Hibberd's newest of the new, will be the leading favourite for masses of golden yellow leafage for many years to come.

BEDDERS AND BEDDING.—No. IV.

BY A HEAD GARDENER.

SUBTROPICAL PLANTS.



It would be absurd to fill the flower garden with masses of Cannas, Castor-oil plants, and Solanums, to the exclusion of flowering plants, and no matter how extensively they may be planted in the public parks, they should play a very subordinate part indeed in private gardens of limited dimensions. Plants remarkable for their stately growth or elegant leafage are very well, provided they are surrounded with brilliant colours to relieve their heaviness, but without they can be balanced with flowering plants, they had better be omitted from the arrangements altogether. In all private gardens they should be employed very sparingly, and a few single specimens of good things should be preferred to masses of plants of a second-rate character. Holding these views, the selection of subtropicals will be very limited, and will include only such as can be thoroughly recommended. In small gardens it is a very good plan to back up the mixed border with a bank of subtropical plants, including as many good things as can be procured for the sake of affording as much variety as it is possible to obtain in a limited space. Another good plan for dealing with them in small gardens is to have two or three beds filled with a mixed collection, or to put single specimens in the centre of beds that stand out singly upon the lawn, and are planted with flowering plants. Very choice specimen palms, india-rubber plants, and tree ferns, where the situation is shaded from the sun, may be placed singly on the grass, and the pots or tubs sunk below the level. Apart from the eligibility of the specimens for the respective situations, the only matter to consider in putting them in their allotted positions is to make the holes from one to two feet deeper than the space occupied by the pots. The bottom of the holes must be then filled to the required depth, with large pieces of brick or stone, or a pot can be turned bottom upwards instead. This precaution is necessary to prevent the soil in the pots becoming sour through remaining in a saturated state, owing to the inability of the water to escape quickly. In very sandy soils it is not so important to have a hollow space underneath the pots as in those of a more retentive character, but in the lightest soils the pots ought not to stand upon the soil in the bottom. The majority of plants used for subtropical gardening do much better when planted upon beds raised from twelve to eighteen inches above the level, but for such things as will be here recommended, it is not necessary to incur the labour and expense of raising them, excepting in low damp situations. To assist the planter the average height in feet of each will be given.

My selection for a small or medium-sized garden would comprise *Acacia lophantha*, 6; *Acanthus latifolius*, 4; *Andropogon formosum*, 8; *Aralia papyrifera*, 5; *A. Sieboldi*, 4; *Arundo conspicua*, 6; *Bocconia cordata rotundifolia*, 3; *B. japonica*, 5; *Canna Annei*

superba, 5; *C. Bihorelli*, 4; *C. Chatei sanguinea*, 6; *C. expansa*, 4; *C. Lemonei*, 6; *C. nigricans*, 6; *C. Premices du Nice*, 7; *Cannabis gigantea*, 6; *Chamæpuce cassabonæ*, 1; *C. diacantha*, 1; *Dahlia Imperialis*, 8; *Datura fastuosa Huberiana*, fl. pl. 4; *Eucalyptus globulus*, 6; *Ferdinandia eminens*, 8; *Melanthus major*, 3; *Nicotiana macrophylla gigantea*, 6; *N. Wigandioides*, 6; *Ricinus bourbonensis*, 7; *R. compactus*, 6; *R. Obermanni*, 8; *R. sanguineus tricolor*, 7; *Solanum acanthocarpum*, 5; *S. marginatum*, 5; *S. robustum*, 4; *S. Warscewiczii*, 3; *Wigandia caracasana*, 4; *W. urens*, 3; and *Zea japonica variegata*, 5.

Special reference must be made to the very distinct and beautiful *Cyperus papyrus*, which is so admirably adapted for the embel-



CYPERUS PAPHYRUS.

ishment of water scenes, as shown in the accompanying illustration. They require a very moist position, and do much the best when planted close upon the edge of the water. It is very easily raised from seed, but the seed cannot be obtained, so far as I am aware, except at Messrs. Hooper and Co., Central Avenue, Covent Garden. It is, however, by no means dear. I think it was a shilling I paid Messrs. Hooper for a packet of seed, and we have now a nice stock. To raise a stock for next year, the seed should be sown at once, and the plants grown on in a warm corner of the greenhouse during the summer. The pots should be stood in pans containing two or three inches of water. The above-mentioned firm also offer seed of *Cyperus vegetatus*, which bears a strong resemblance to the preceding, but does not exceed eighteen inches in height, and is, therefore, very

valuable for situations where the strong-growing *C. papyrus* would not be admissible.

The stately *Dahlia Imperialis*, if taken up in a careful manner, and potted some time about the end of September, and then placed in a warm greenhouse, will flower superbly until Christmas, and present a fine appearance in conjunction with the Chrysanthemum.

ASTERS FOR CONSERVATORY DECORATION.

BY THOMAS TRUSSLER,

Head Gardener, High Leigh, Hoddesdon, Herts.



BEFORE the season is too far advanced I am anxious to say a word about the cultivation of asters in pots for conservatory decoration. It is true it is well to furnish the conservatory during the summer and autumn with plants as different as possible from those in the flower garden, yet a few asters in pots when well grown present such a cheerful appearance that no reasonable objection can be made to their introduction into the conservatory in moderate numbers. These remarks would perhaps have been more useful a month since, but there is yet time to rise a stock of plants if the seed is sown without delay, as the asters are not really wanted in the conservatory until quite the end of the season.

It is not desirable to weary the reader with directions for sowing seed, pricking off, and other details, because the merest tyro will have some knowledge of these matters. It is, however, necessary to state that the plants must not be allowed to remain in the seed-pans until they are nearly spoilt before they are pricked off. Probably the best plan for dealing with both stocks and asters is to sow the seed in drills in a cold frame, and then it is not necessary to disturb the plants until they have acquired sufficient strength to bear handling without injury. The object of these remarks is not so much for the purpose of giving directions for raising the seed, as it is to suggest the desirability of putting a few of those not required for the flower garden into pots instead of throwing them away.

Asters, whether planted out, or grown in pots, require a moderately rich soil to do them justice. The compost in which they will succeed best when in pots is turfy loam and decayed manure from an old hotbed, prepared by mixing three parts of the former to one of the latter. Five or six inch pots are very suitable sizes in which to grow them, and two or three plants should be put in each. In preparing the pots place three or four moderate-sized crocks in the bottom, then fill with the prepared soil, and prick out the plants at equal distances apart round the outside. Each pot should be filled with plants that will produce flowers of the same colour, otherwise the effect will be far from satisfactory when they are in bloom.

After they are all pricked off plunge them in a bed of leaf-mould, or partly decayed manure in the borders. In either case the pots

must stand upon a hard bottom to prevent the worms getting into the pots. When leaf-mould or manure is used, it is a good plan to first of all make up a bed of coal-ashes, and then only put sufficient material to reach to the rim of the pots when they stand upon the ashes. When plunged in the border a pot must be placed in an inverted position in the bottom of the hole to stand the other upon. This precaution is necessary to enable the water to drain away quickly, as well as for the purpose of keeping the worms out. They should be put at a distance of twelve inches apart, in rows not less than fifteen inches from each other, because it is most essential to put them far enough apart to enable the air to circulate freely about them and prevent them being drawn up, or the loss of the lower leaves.

After the pots are filled with roots, water with liquid manure if convenient to do so; but if not, be content with watering with clear soft water. They must not, under any consideration, be allowed



PEONY-FLOWERED GLOBE ASTER.

to suffer for the want of water, and in dry weather an occasional sprinkle overhead through a rather coarse rose will be of immense benefit. They should be taken to the conservatory as soon as the flowers begin to show colour, and placed in an open airy position, if practicable.

The best for pot culture are the varieties of the *Dwarf Chrysanthemum-flowered*, which seldom exceed a height of twelve inches, and require little or no support. The most distinct varieties are those with *rose, carmine, violet, and pure white* flowers.

The *Peony-flowered Globe*, sent out by Messrs. Hooper and Co. of Covent Garden, is also good in pots, but invaluable for garden decoration. The accompanying figure will afford a good idea of its general habit when it has sufficient space for its full development.

TOMATOES.

BY GEORGE GRAY,

Head Gardener, Norbiton Hall, Kingston-on-Thames.



UNTIL the last few years, the cultivation of tomatoes was confined almost exclusively to the gardens of the wealthy; but now, so much has their popularity increased, they are grown more or less in the gardens of all classes. It is not likely that the tomato will ever attain in this country to the degree of popularity it enjoys at the present time in America; but there can be no doubt that when its cultivation and the manner of preparing the fruit for table are better understood, there will be very few gardens indeed in which it is not grown extensively.

Excepting in the southern and midland parts of the country, the plants must, to enable them to produce good crops, have the assistance of a wall, or close boarded fence; and they do better even in the most favoured districts when trained to a wall or fence having a south aspect. They do well on east and west aspects, but an aspect due south is decidedly preferable. Good crops can be produced on sloping banks; and those who have no wall or fence on which to train the plants may succeed very well by throwing up a bank of soil having a sharp slope of about three feet. The trench from which the soil is obtained for making the mound should be made on the north side, because they require all the warmth at the roots they can have, and it is therefore not desirable to plant below the general level.

In the southern and midland counties good crops can be grown in the open borders, and trained to stakes, or the growth may be supported with ordinary pea-sticks, in exactly the same manner as peas. Those put out in the open quarters should be planted upon beds measuring thirty inches across the top and about twelve inches above the general level. The beds can be easily made by forming a twelve-inch trench on each side, and taking out sufficient soil to raise them to the desired height. The surface of the beds should be perfectly level, to prevent the rain running off, and also to facilitate watering, in case it becomes necessary, during the summer.

One of the most essential conditions for insuring success is to secure strong plants by the time the season is sufficiently advanced for planting them out. As the weather is seldom favourable enough to admit of their being planted out, without they can be protected, before the end of May, it is a more excellent plan to shift them into eight-inch pots in the early part of the month. It is, however, a much better plan to plant them out in the first or second week of May, and protect them with Looker's Patent Plant-covers, which were figured and described in the August number of the *FLORAL WORLD* of last year. Strong plants put out early in May, and these covers put over them, and ventilated freely in congenial weather, will be well

established long before it would be safe to put them out without protection. The covers are certainly one of the most valuable aids the amateur can possibly have.

Previous to planting, fork in a moderate dressing of leaf-mould or vegetable manure if the soil is at all heavy, and ordinary hotbed manure if it is inclined to be light. The soil must not be manured too heavily, or the plants will grow too luxuriantly to bear well.

Commence training immediately the plants begin to grow freely, whether trained to walls or stakes. Spread the branches out rather widely apart, and remove all the small shoots that are not really required to prevent overcrowding. Stop the main branches when about three feet in height, and stop all the laterals one joint above each cluster of fruit as soon as it is set. All young wood that is produced after sufficient fruit is set must be removed immediately it is a few inches in length, to prevent the energies of the plants being devoted to the production of useless wood, instead of the maturation of the crop. It is also a very good plan to remove any of the large leaves that overhang the clusters of fruit as soon as it is nearly full grown, to enable the sun to act directly upon it.

Very excellent crops may be grown in pots; and that system of culture can be strongly recommended to those who have only a little garden, as the plants can be placed in any out-of-the-way corner, provided they can have full exposure to the sun. The stopping and training must be much the same as advised above for the plants in the open border, and they can be easily supported with neat stakes. Pot in a compost, consisting of good turfy loam and a small portion of manure, and when the fruit is swelling off, water with weak liquid manure, if the plants show signs of exhaustion.

The fruit should be gathered as soon as it is thoroughly ripened, and towards the end of the autumn any that is still immature may be gathered and ripened off in a warm room, provided it is nearly or quite full grown. The best and most productive kinds are the *Orangefield*, *General Grant*, and *Hepper's Goliath*. The *Common Red* is exceedingly good, and for small gardens will, in conjunction with the first-named, be sufficient for all purposes. The so-called upright grower, *Tomato de Laye*, is very late in ripening, and comparatively worthless in this country because of the shortness of the summer.

EARLY PEAS.—Mr. G. Green, gardener to the Ven. Archdeacon Fitzgerald, of Charlton Mackerell, Taunton, picked his first dish of peas on the 10th of May, although he might have done so on the 8th. The sort was "Sutton's Ringleader." They were sown in the open air on Nov. 19, and have had but little protection.—*Western Gazette*, May 13.

SCARLET RUNNERS.—Plant them in trenches two feet wide and three feet in depth; the bottom spit being thrown out on one side, and about the same quantity of vegetable refuse, or good manure, incorporated with the soil. When the trenching is done, the soil from the bottom is placed in a ridge on each side of the trench, to prevent the water applied to the rows running all over the quarter, instead of soaking down to the roots. The produce will be enormous.

THE SETTING OF MUSCAT GRAPES.



THE setting of Muscat grapes, and indeed of all other kinds of grapes that are reputed to be "shy," or that fail to fruit freely unless skilfully treated, affords a subject worthy of special consideration at any time amongst English cultivators, because even doctors do occasionally differ, and some of the most successful practitioners in the vinery hold diverse views as to the best mode of procedure for insuring a crop. In our "Garden Guide," this subject has always received considerable attention, and we have frequently remarked on the necessity of obtaining and maintaining in the house during the time the vines are in flower, conditions favourable to the development and diffusion of the pollen, such as sufficient fire-heat, a moderate degree of humidity, and a moving atmosphere. We have seen in so many instances varieties of grapes reputed to be shy, made to bear abundant crops through attention being paid to the three main conditions of success, that we can scarcely hesitate to attribute failures to bad management in at least nine-tenths of the complaints that reach us of the refusal of Muscats to compensate their owners with the much-coveted bunches. It is rather commonly believed—though, strange to say, not so commonly acted on—that excessive heat and a perfectly dry atmosphere are essential conditions for success in the setting of Muscats; and the man who has a "Muscat house," and is not compelled to crowd it with pot-plants requiring somewhat different treatment, may actually roast his vines, if he believe in roasting, and judge of the value of his doctrine by the result simply. It is as well that all who have to deal with Muscats should clearly understand that the roasting system is a delusion, and must be abandoned by all who would truly *succeed* in the cultivation of Muscats.

The conditions requisite to the well-doing of Muscats in flower may be stated thus: Temperature to range from 70° at night to 75° by day, allowing a rise to 85° with sun-heat. The floor of the house to be moistened about half-past seven in the morning and about four in the afternoon; the air kept moving always; when the flowers are expanded, each bunch to have a slight shake once a day.

S. H.

RAISING BEGONIAS FROM LEAVES.



VARIEGATED Begonias are usually propagated from leaves. To treat them in this way, select of this season's leaves such as are grown nearly or quite to their full size, and consequently are firm and not likely to damp off. Take the leaves off with about one or two inches of leaf-stalk, and if you require as many plants from a leaf as you can obtain, take an ordinary shallow seed-pan, and after preparing it in the usual way, insert the stalk portion of the leaf

near the side of the pan, and peg the leaf flat down upon the surface. Before doing this, it is as well to cut through the principal ribs or veins with a sharp knife. Plenty of roots will soon be emitted from the cuts, and finally young buds will start, and tiny plants be the result. Plants will also be produced where the pegs are pushed through the leaf. It is impossible to say how many leaves a pan will hold, for this part of the question depends entirely upon its size and that of the leaves. We cover the entire surface of our pans, keeping the stalks by the sides of the pans. If we have plenty of leaves to deal with, we adopt a slightly different method of procedure. Instead of using the leaf in its entirety, we take the leaf with a couple of inches of stalk as before, and then trim the blade of the leaf away, leaving a small portion, about two or three inches in diameter, adhering to the stalk. These we insert round the edges of the cutting-pots in exactly the same way as an ordinary cutting. It is not advisable to keep these cuttings too close or give them too much water, for both conditions, either together or separately, are sufficient to cause them to rot. When they are nicely rooted and the young plants are formed, pot off into 60's, and grow them liberally until the end of September, when they must have less water and be kept rather quiet. It is a very bad plan to keep this section of begonias growing all the winter, for the constitution of the plant becomes so thoroughly weakened that they are unable to make a free vigorous growth in the spring, when it is required of them. R. W. P.

CALCEOLARIAS FOR BEDDING.



THIS intensely showy plant scarcely merits to be classed at the very top of the list of first-rate bedders, because of its capriciousness and consequent frequent failure in those hot seasons which bring most other bedding plants to their highest perfection. The gardeners have a good deal to answer for on account of its misuse, thereby affording the critics, who embrace every opportunity to appear wise by abusing the bedding system, a powerful argument in support of their poor case. The chief fault of the calceolaria is its inconstancy. It is not uncommon for all the calceolarias in the country to perish about the middle of July, leaving the parterres they should have adorned with masses of golden flowers abominably ugly with their withered stumps, or, at the best, obnoxious blanks. In the experimental garden at Stoke Newington, the cultivation of this plant has received considerable attention, and it is believed that every difficulty experienced by amateurs may be overcome by the adoption of the system of cultivation which will now be recommended. The only varieties suitable for bedding are those of decidedly shrubby habit, which produce comparatively small flowers. Those that have somewhat soft stems, and large leaves and large flowers, partake too much of the characters of the herbaceous section to be fit for battling with the vicissitudes of outdoor life,

and, moreover, they always produce their flowers in a series of efforts, and not continuously. The proper time to propagate them is from the middle of September to the middle of November, when they do not require heat; but they may be very quickly multiplied by cuttings in a gentle heat in spring; and, if the summer is favourable to calceolarias, spring-struck plants do well, though they do not begin to flower so early as those struck in autumn. There can be no better method of procedure than to make up a bed of light soil, consisting of such materials as leaf-mould, sweepings of a manure heap, half-decayed moss, and the sandy stuff thrown out of pots in the potting-sheds. The bed should be in a frame or pit, within a foot of the glass, or on the border of a cool vinery or peach-house, as near the glass as possible. Prepare the cuttings from soft side-shoots, and plant them firmly in the bed, about three inches apart, and keep them regularly sprinkled to maintain their freshness until they are rooted, after which they will require but little more attention beyond watering, ventilating, and protecting from frost. They must be wintered rather dry, and have plenty of air, or many will perish. There is yet another extremely simple, but most effectual, method of procedure. Its first requisite is a greenhouse, or pit, which is sufficiently heated to keep out frost. In this structure the bed is to be made up near the glass, of some such light kindly soil as recommended for the frame. Leave the plants in the ground until the middle of October, or, if the weather permits, until the middle of November; then pull them to pieces so as to separate the best young shoots with a heel, and strip the bottom leaves from them, and dib them in, and press them firm, and the work may be considered finished. As for the roots, throw them away. They may be crowded together so as to make a solid field of leafage; but, as a rule may be useful, we will say plant them three inches apart. A slight sprinkle over the tops occasionally will be good for them, but they must be kept rather dry, and must have a little heat to help them through frosty weather. No matter which of these two methods be adopted, the whole of the plants must be lifted in the first week of March, and be planted out in beds of light rich earth in frames facing the south, where they will make rapid progress if taken care of. The latter part of the month of April is the proper time to plant calceolarias; if the planting is deferred the plants are endangered. The beds for calceolarias should be prepared by deep digging and liberal manuring with rotten hotbed manure and leaf-mould; and if there is no leaf-mould at command, use an additional dressing of the hotbed manure in place of it. If planted in poor ill-dressed soil, the plants are endangered; in fact, the principal reason of the failure of the calceolaria in a hot dry season is defective root-hold, the result of planting late in poor soil, the plants having been already nearly starved to death in pots as a preparation for their final extinction. In the operation of planting, the plants should always be put into the ground as deep as possible, but of course without burying the branching portion of the stem. Deep planting encourages the formation of a fresh set of roots, and places the roots

already formed at the greatest possible distance from the surface, where they are comparatively safe against the exhaustive action of a hot sun. As to watering, one or two liberal doses may be given within the first ten days after planting, but it is far better to give none at all if only the ground is moist enough to carry them on safely until the next rains occur. A considerable quantity of bedding plants are killed every year by watering them, or rather, by tormenting them, with a pretence of watering. As for varieties, there are not many good ones, but the few that are most worthy of attention are wondrously brilliant if they happen to behave well. *Amplexicaulis* is the tallest in growth, the flowers are palest yellow. *Aurea floribunda*, *Canariensis*, *Gaines's Yellow*, and *Golden Gem* have deep yellow flowers, and in habit are dwarf and compact. The red and brown varieties are simply useless.

S. H.

SUBTROPICAL GARDENING.

BY A LADY'S GARDENER.



UBTROPICAL gardening is, for the most part, pursued under difficulties, for few of us have as yet sufficiently studied the habits and requirements of the plants employed under the conditions in which we so unmercifully place them when we plant them. Nor, indeed, do we make a good use of facts previously gleaned. Look, for instance, at the extensive use we make of such plants as the different varieties of *Coleus* and *Achyranthus*; yet at bedding-out time we seem almost to forget that these are plants which must be tenderly nursed in the winter in stove-heat. Now, if they require such care in our long dark winters, how can we expect them to thrive through the summer, with our commonplace preparations out of doors? Yet too many of us do expect it, as is evidenced by the number of plants we prepare and rejoice over. From my own observations respecting these plants, I am sure they require more earth-heat than they get from our ordinary prepared flower-beds, and the careful observer can satisfy himself of this if he will call to mind how much better these plants thrive towards the close of summer, when the earth attains its greatest degree of heat, than they do in the first months of the bedding season. This, then, satisfies me, that if by any means we can assist them to secure more warmth than the soil affords at an earlier period of the summer, the better result will be obtained in the use of these plants. For this purpose, the adoption of flower-beds prepared by special drainage is the simplest and most economical method; and the drainage should consist of such materials as are known to absorb and conduct heat,—on something like the plan followed, with well-known success, by Mr. Gibson, at Battersea Park. But to be more precise, all the soil should be taken out of the bed two feet deep; or if a line of the plants is wanted, a trench a foot wide would serve the same purpose. Into this trench or bed,

whichever it may be, place a thickness of twelve inches of brick-heads or large stones, as these are the best conductors of heat, and then fill up with rich, fine, open soil. The brick-heads or stones will not only afford a ready means of escape for all unappropriated water, and thus render the ground drier and warmer, but will contribute a degree of warmth to the soil above by conduction from the surrounding earth. Some might suppose that this drainage beneath would necessitate watering in dry weather; but, from my own experience on a small scale last year, I did not find it so. But I found out another plan which is better than watering, and that is, frequent top-dressings of rich compost. We all know the roots of these plants are near the surface, which is another proof that they delight to ramify in the warmest soil. Now, to encourage these roots to the warm soil of the surface, and to keep them constantly supplied with rich surface-dressings, should be the constant aim of the gardener. I am satisfied that by this course of procedure, in favourable seasons and positions, we should have these plants in their beauty much earlier in the year than we now generally see them.

I do not think the *Amaranthus melancholicus* would be benefited by the plan above recommended, as it is in some positions a very unsatisfactory subject to deal with. The best way to do it well is to obtain good plants in single pots, and not put them out until the first week in June. When they are well established, follow up the plan of surface-dressing as just recommended, and give repeated doses of weak manure-water to the weakest plants, leaving the stronger-growing ones to take care of themselves. By following this plan, I have frequently had some magnificent lines in our ribbon-borders.

I have succeeded to a fair degree with the *Alternantheras* on a warm south border, in a rich fine soil specially prepared, but I do not recommend them to those who cannot afford time and patience in their cultivation. The only way I have found them to answer my expectations was to get large well-established plants in 32-sized pots, and plunge them in their pots, about midsummer, in the open border for an edging.

All the *Golden-leaved Pelargoniums*, or Geraniums, are delicate plants, and the best amongst them all is *Golden Chain*. They all like a rich open soil, but a cold soil and stagnant water about them is their ruin in many gardens.

The *Japanese Maize* is an elegant and useful variegated plant, either for centres of beds or to be associated with subtropical plants; or, indeed, it is a nice feature in the mixed border, as its habit is graceful as well as refined.

The *Ricinus*, or "Castor-oil plant," is one of those subjects very imperfectly done in the majority of cases. People with limited convenience sow this plant generally in the beginning of March, when the middle of April is soon enough, where there is not much room to grow it. To have it in perfection, the plant must be kept always growing from the time the first seed-leaves show themselves; for if once they are allowed to get starved for the want of root-room in

the pots, the bottom leaves turn yellow and very soon fall off, and the beauty of the plant is lost. This plant ought to be put out with every leaf entire, and as fresh and bright as the young growth at top. It may be kept through the winter in a house where the temperature does not go below 50°, and such plants, although somewhat long-legged, make grand features for centres or backgrounds the next season.

Culodium esculentum is another noble and telling object for any purpose where fine-foliage plants are admissible. It requires liberal treatment in the way of plenty of pot-room and rich soil for three months previous to its being planted out, and then it well repays for the trouble. It will succeed admirably in warm sheltered places out of doors, but requires plenty of water and frequent syringing overhead.

A common mistake, made by many of us, is putting out these tender subjects too early. On the first outburst of summer weather in May, the "bedding mania" takes hold of us, and we commence operations in earnest, seemingly regardless of the consequences of a change of weather. The present season is no exception, yet I will undertake to say there are thousands of these tender subjects out, exposed not only to cold nights, but cold days; and then we wonder why they don't thrive. Let those who have erred this year take my advice for the future and grow the plants larger, and wait until the first week in June next year, and I can promise them they will have no cause to regret having done so.

THE GERMAN BEEHIVE.

BY SIR THOMAS TANCRED, BART.



IN the course of an interesting and most valuable paper on "Bee-Culture," read at the Inventors' Institute, Sir Thomas Tancred, Bart., gave the following account of the "Improved German Hive."

In order to obtain the testimony of a disinterested writer as to the essentials of a good hive, I will cite, not a German, but a French author. I find these essentials well summed up by the latest French writer on this subject with which I am acquainted, the Abbé Sagot, in his *Culture des Abeilles* :—

"Every hive which does not allow artificial swarms to be easily made without stupefying the bees, and the honey to be taken without disturbing them or destroying the brood, and the provisions necessary for it, is defective, and will soon discourage a bee-keeper, instead of inducing others to imitate him. The best hive, therefore, is one which, whilst agreeable to the nature of the bees, at the same time allows their possessor to execute with ease all the operations belonging to apiculture—such as a complete inspection of the combs at the opening of spring, prompt and plentiful feeding when necessary, propagation by artificial swarms on any day required at the will of

the manager, without having to mount guard over the hives for weeks, and to race across country in pursuit of natural swarms; easy extraction of the purest honey as often as it may be suitable, without deranging the bees in their work, and without destroying a single particle of the brood, or of the provisions stored up for it; means of emptying the combs so as to replace them to be refilled by the bees without their being called upon to waste the best honey season in providing new ones; lastly, instantaneous reunion of bees in October without stupefying or drumming them out, and without any fighting. Such are the advantages in general little known,

very little practised, and often impracticable in many sorts of hives, yet most necessary to make apiculture an agreeable and useful occupation."

These requisites were never really combined in any single hive, though some of them might be more or less imperfectly attained, till Dzierzon brought out his exceedingly clever idea of making *each comb* movable, so that every comb could be taken out and examined separately; and not only so, but all the hives in the apiary being exactly of one diameter, no matter how different in other respects, any comb in any one can be interchanged with any comb in any other. In this way throughout Germany the hives made on Dzierzon's

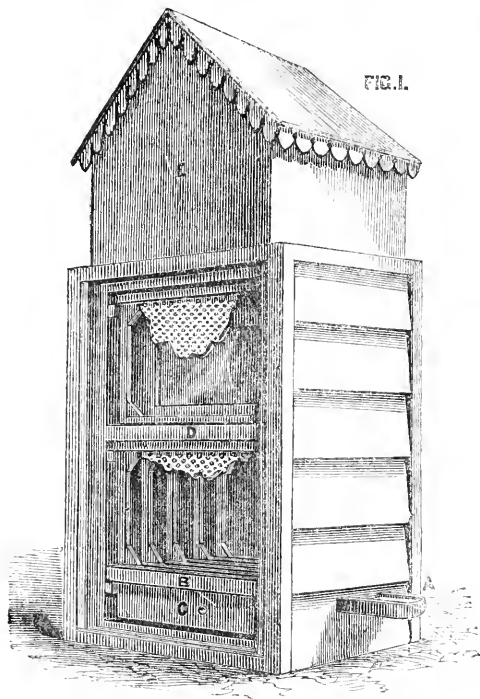


FIG 1. Brood Hive. A, Lighting-board. B, False bottom. C, Stopper inserted beneath false bottom. D, Double ties of sliding frames. E, Cover surmounting the honey-box.

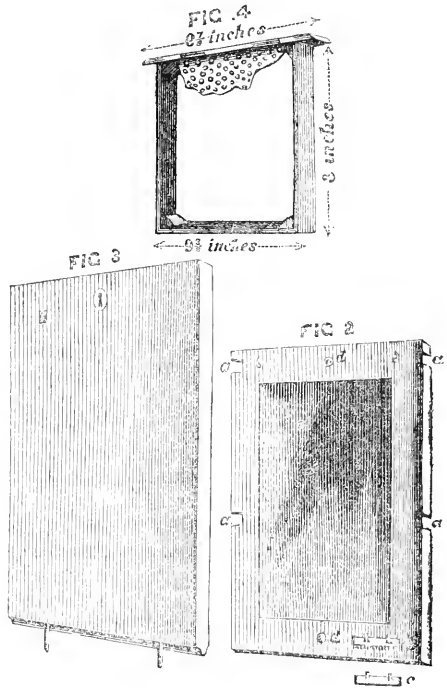
principle, whether of straw, wood, or other materials, and, however different in internal capacity, are on a uniform gauge of $9\frac{1}{2}$ English inches. In addition to securing all the requisites above stated, this improved German Hive admits of contracting or expanding the space occupied, by pushing forwards or drawing back a sliding glazed sash at each end, as I will presently show you.

Now, asking you to keep in mind the requirements enumerated by the French apiculturist, I will give an explanation of the pecu-

liarities of the hives before you (see Fig. 1). You will observe that the hives are distinguished by a letter, a number, or a name, which should be entered in a note-book, which can be easily carried in the pocket, in order that notes may be made on the spot when any hive is examined, so that important particulars about each may readily be referred to without any mistake. These letters, numbers, or names being written in capitals and Roman numerals at one end, and on all the parts belonging to that end, and in small letters or Arabic numerals at another end, the parts so marked can readily be replaced, so as to fit whenever the hive is opened. The weight also of the empty hive should be inscribed upon each, so as to be able readily to ascertain any increase or diminution of the variable contents. You observe I take my keys from my pocket, which may also have the distinguishing mark of each hive upon them, and open the outer doors (see Fig. 3). No hinges are employed, as they are apt to crush bees, though, if preferred, they might be fitted to the bottoms of the outer doors, but the plan adopted is more simple.

Within the outer wooden doors cushions of tow, wool, wadding, etc., are kept against the glass of the inner sashes to make them warmer. These inner sashes, you

FIG. 2. Sliding glazed sash. *a a a a*, Recesses corresponding to fillet in hive. *b*, Aperture for insertion of a smoker for quieting bees. *c*, Stopper for closing the aperture. FIG. 3. Door of hive. FIG. 4. Movable frame.



will observe, slide to and fro on fillets or runners, so as to enable me to expand or contract the interior capacity of the hive at will. In winter, a comparatively few combs partly filled with honey are required by the bees, and the empty ones being removed and stored up safely, the sliding sashes may be moved towards the centre, and pasted over with paper, the space between them and the outer doors being filled with tow, dry moss, hay, etc., so as to keep the hive entirely free from draughts. The combs are to be worked in these sliding frames (see Fig. 4), as you see by the one partly filled with honey. In order to induce the

bees to work their combs straight and parallel within the frames, a strip of guide comb is fastened along the under side of the top bar of each frame, by means of a mixture of bees-wax and resin melted in an iron spoon over a candle or lamp, as you see. Each frame is made to hang at a defined distance from centre to centre, so as to admit of a passage for the bees between every two contiguous combs when arrived at their proper thickness, the width of the widest part of the frame being $1\frac{1}{4}$ inches. This is important in the under or brood box, but in the upper or honey box the interval may be greater, as the bees will prolong the cells and make the combs of greater thickness when intended only for storing honey than they could if intended for rearing brood.

There are twenty-four combs in the hive when expanded to its greatest capacity, and as each frame contains a superficies of 9 in. \times 8 = 72 square inches, the whole of the combs in the brood-box occupy a superficial space on each side of 1728 square inches. When this space, or nearly as much, has been well built up and filled with combs and bees, the stopper at the top being taken out, an entrance is opened through a wooden grating to the honey-box placed above it, by which it is expected that the dame or mother-bee will be prevented from entering this box, so that only virgin honey will be stored in it.

Following the example of the German model, I at first made the honey-box with outer wooden and internal glazed sashes, etc., just like the stock or brood hive; but, in considering the subject, I found that I was going to a needless cost in this respect, and I now make them much more simple and inexpensive, as in the one I now exhibit.

The false bottom of the lower box being formed of separate thin boards, can be easily taken out, either for the purpose of cleaning out the dead bees and other refuse in spring, or for introducing a shallow feeder at that season, whilst the stops at each end keep any bees from escaping below the glazed sashes.

The lighting-board is made to take off, in order not to be inconvenient in travelling; and if the hive be moved when peopled with bees, by fixing a piece of pierced zinc in front of the entrance, as well as over the opening on the opposite side, a thorough draught can be established to keep the hive cool on a journey.

I have thus explained the construction of the improved German hive, and I have here some varieties of structure adapted for particular purposes and operations, which will be explained below. I believe that the more practically acquainted any one is with bee management, the more he will appreciate the complete control over a stock of bees afforded by these hives. To pretend to describe all the ways of using them in detail would evidently be impossible within the compass of a lecture; to do so would be to give a complete treatise on practical bee-keeping. I can only assert that there is no operation possible with bees which cannot be performed with these hives, and I believe more easily than with any other yet invented.

THE GARDEN GUIDE FOR JUNE.

FLOWER GARDEN.—If not already done, old stools of such things as produce a multiplicity of flower-spikes, like the Phlox, should be looked over, and the weakest of the flowering shoots thinned out. Stake those left, and also flowering-spikes of Delphiniums, Lilies, etc., to prevent the wind snapping them off. Pansies that have done flowering should be cut back, and cuttings made of the young side-shoots as they push. The superfluous shoots should be removed from briars intended for budding, and the remaining ones shortened back, if they are growing too vigorously. This should be done a fortnight previously to the budding being performed, so that there shall be no check to the flow of sap at that time. Seed of annuals for autumn flowering should be sown soon; this is also a good time for sowing seed of herbaceous perennials for flowering next year. When left until the autumn, the plants are seldom strong enough to flower well the following year.

KITCHEN GARDEN.—Endive and lettuce ought to be sown where they are to remain at this season. There need be no waste of seed, as it can be sown very thinly. Plant out cabbage, and cauliflower for the autumn, and Brussels sprouts, borecole, broccoli, and savoys for the winter. Choose a dull, moist day, if possible, for all planting operations. The ground should be got in readiness for planting as fast as it becomes vacant, so that there may be no unnecessary delay when we are favoured with showery weather. Plant out the early crop of celery, and shade with a few branches of evergreen until the plants are established, and keep well supplied with water. Sow at the end of the month a few rows of any good second early marrow peas for late autumn supply.

FRUIT GARDEN.—Let the work of thinning the young shoots progress steadily, and leave no more wood than is really wanted for bearing next year, and filling up vacancies that are likely to occur. Pinch cherries, plums and pears back to the third or fourth leaf, to encourage the production of spurs. Pyramids, espaliers, and cordons should have just as much attention as wall-trees; thin out the shoots where the trees are likely to be crowded with too much wood, and stop the other shoots back to the same distance as recommended above. Remove all runners from the strawberry-beds, unless they are required for layering.

CONSERVATORY.—The whole of the hard-wooded plants ought to be removed into the open air some time this month, according to the state of the young growth. The utmost caution is necessary, just now, to see that the plants have sufficient water at the roots, but without having too much. The specimens must be looked over regularly, rain or no rain. It is a mistake to suppose that a shower of rain is sufficient for plants in pots. Pelargoniums are now fast going out of flower; they should be removed to the open air to mature the young wood, and then be cut back to two or three eyes each. Fuchsias may have liberal supplies of manure-water to help

them on as the pots get full of roots. Pot off cuttings just struck, and shift on young stuff, so that no check may be experienced by them at this stage.

STOVE.—The plants in this structure must have a good syringing overhead at least once a day in bright weather, and not be allowed to suffer for the want of water at the roots. A few cans of water should be poured on the paths several times during the day. Any of the stove-plants that are to go into the conservatory when in bloom should be removed to the coolest end, or go into an intermediate house a week previous. Stove-plants should have the warmest position the conservatory affords, and be guarded from draughts.

FORCING.—The bottom-heat in which the pines are plunged must not be allowed to decline now—more especially in the fruiting-house. Shift into larger pots suckers and succession plants that are getting pot-bound. Vines in all stages to have abundant ventilation early in the day. The borders must be kept well supplied with water, except where the grapes are just colouring. Peaches and nectarines must be well aired directly the crop begins to ripen, and the lights taken off, where practicable, soon after it is gathered; or, failing the ability to do that, the ventilators must be opened as wide as possible, and the trees regularly syringed. Plenty of moisture at the roots will also be necessary, to enable them to swell up the buds for next year. Figs must be kept rather cool and dry whilst the first crop is ripening, and then, when the bulk is gathered, they can be kept moist and close to push on the second lot.

HORTICULTURAL NOTES.



THE month of May has been characterized by the prevalence of cold north-easterly winds, which, as is so well known, are by no means favourable to the rapid progress of early-sown crops, and many things are late in consequence. So much damage has not, however, been done to the fruit crops as was anticipated at one time, and from all parts of the country we hear most favourable accounts of the fruit prospects for the ensuing season. The crop of peaches and nectarines is rather thin in comparison with that of last year, for the sharp frosts, with which the trees were visited when in bloom, destroyed a considerable proportion of the flowers; but owing to the weather being very dry at the time, the frosts did not do so much damage as was expected at the time. Apples, pears, cherries, plums, and apricots are tolerably plentiful, a few of the flowers on the outside of the trees only having been injured, and we may once more reasonably expect an abundant fruit harvest.

The exhibitions during May have been so numerous that to do more than direct attention to a few of the most important of recent introductions is impossible. The two exhibitions held by the Royal Horticultural Society, on the 3rd and 17th respectively, were remarkably poor, although it would not be just to pronounce them

failures. The exhibition on the 20th, at the Crystal Palace was, like the great summer exhibitions held in former years, a grand affair, as the leading stove and greenhouse plants, such as Azaleas, Apehexis, Ixoras, Pimelias, and Heaths, were exhibited in grand condition. The exhibition of the Royal Botanic Society, Regent's Park, on the 25th and 26th, was also good; but the best and most magnificent exhibition held during the present season is that in the gardens of the Manchester Horticultural and Botanical Society at Old Trafford, which commenced on the 26th ult. and will be continued until the 2nd inst. A fair idea may be had of its extent, when it is said that about £1,000 was offered in prizes, and that nearly the whole of the classes are well filled.

At the first exhibition held by the Royal Horticultural Society during the month, the specialities were Auriculas, herbaceous Calceolarias, and Pot Roses. The Auriculas were not shown largely, but they were contributed in grand condition by Mr. Turner, of Slough, and Mr. James, gardener to W. F. Watson, Esq., Redlees, Isleworth, who respectively occupied the first places in the classes open to the trade and private growers. Mr. James was also first in the class for six herbaceous Calceolarias, with medium-sized, but beautifully grown specimens. Messrs. Dobson and Son, Isleworth, also staged a good collection of these showy flowers, which, although hardly so good as those shown by Mr. James, presented a most striking contrast to those staged, in competition for the prizes, by several other exhibitors. Pot Roses were simply grand, and all the leading growers of this lovely flower came out in strong force. The very best collection of large specimens was that from the nurseries of Messrs. Paul and Son, of Cheshunt, and consisted of Anna Alexieff, Céline Forrestier, Marie Baumann, Charles Lawson, Victor Verdier, Madame Willermoz, Maréchal Vaillant, and Souvenir d'un Ami, all of which are most valuable for pot-culture. The greatest interest was attached to the competition in the class for twelve plants, grown in pots not exceeding ten inches in diameter, because the limit to the size of the pot enabled the exhibitors to stage several of the newer kinds. Messrs. Paul and Son were also first in this class, as they well deserved to be, for the plants were in the most robust health, and superbly flowered. The varieties of which the collection consisted were Edward Morren, Comtesse d'Oxford, Reine d'Or, Jules Chrétien, Duke of Edinburgh, Julie Touvais, Madame Eugène Verdier, Dupuy Jamain, Marquise de Castellane, Paul Neron, and Lord Eldon. The last-mentioned is a new tea variety, with large, globular, and full flowers of a clear salmon colour in the way of the well-known and justly-popular Gloire de Dijon. This was awarded a first-class certificate, as also was *Princess Beatrice*, a new perpetual hybrid, with large globular flowers of a rosy carmine hue, exhibited by Mr. W. Paul, Waltham Cross.

Of the miscellaneous new plants at the same exhibition, *Primula japonica*, exhibited by Mr. Bull, King's Road, Chelsea, attracted the most attention. This magnificent species has stout robust foliage very similar to that of the cowslip, and the flowers are produced in whorls, one above the other, on stout and rather tall scapes, each

scape having from three to six whorls. In shape the flowers are very similar to those of one of the best herbaceous Phloxes, and are of a rich rosy crimson hue, with deep or coloured eye. A light variety, *P. japonica lilacina*, with lilac flowers, having a rosy crimson eye, was also exhibited, and formed a beautiful contrast with the dark flowers of the species. Both were introduced by Mr. R. Fortune, from Japan, and if they are quite hardy, as they are said to be, they will certainly be most valuable acquisitions to our list of border flowers. *Gloxinia Rev. H. H. Dombraïn*, a drooping variety, with large flowers of the most perfect form, and of a lively carmine hue, exhibited by Messrs. Rollisson and Sons, Tooting, was first-rate. *Tropæolum Mrs. Bowman*, exhibited by Messrs. Downie, Laird, and Laing, Forest Hill, S.E., promises to eclipse all the other scarlet flowered varieties for cultivation in pots for winter decoration, and it also has the appearance of being a valuable bedder. It is very neat in growth, and the flowers, which are of a most brilliant scarlet and of the most perfect form, are produced very freely, indeed, the plants exhibited were quite solid with bloom. The same firm sent with the above, *Iberis Gibraltarica*, a beautiful perennial candytuft, with very large flowers of a pale flesh colour; this is now rather plentiful in the trade and can be highly recommended as one of the best plants of its class for flowering in spring. Messrs. Veitch and Sons, Chelsea, exhibited *Croton Johannis*, a very elegant grower with narrow, richly variegated leaves; Mr. B. S. Williams, Upper Holloway, *Amaryllis marginata perfecta*, an exquisitely beautiful variety with large scarlet flowers of the most splendid form, and beautifully feathered with white, and an unnamed *Sobralia*, with rosy lilac flowers of a colossal size; and Mr. C. Turner, Auricula, Headly's *Alderman Wisbey*, a grey-edged variety, with smooth and circular flowers, having a rich brownish maroon ground. The whole of the above were awarded first-class certificates.

The second exhibition of the Society was held in a large tent at the southern part of the garden, and it was certainly a most agreeable relief to get away from the arcades and conservatory, in which the exhibitions have during the last few years been held. The chief features were the show and fancy Pelargoniums and Cape Heaths. Miscellaneous groups of stove and greenhouse flowering and ornamental-leaved plants were staged, but owing to plants in twelve-inch pots only being allowed to be shown, the effect produced was tame and ineffective. The Pelargoniums shown by Mr. Ward, gardener to F. G. Wilkins, Esq., Leyton; Mr. James; Mr. Weir, Hampstead; and Messrs. Dobson and Son, were really magnificent, the plants being large in size, well flowered, and exceedingly fresh. The best of the varieties were Conqueror, Patroness, Lilacina, Alabama, Rose Celestial, Pericles, Exhibitor, Beacon, Fair Rosamond, Maid of Honour, and Rob Roy, all of which are exceedingly good, and can be obtained at ordinary prices.

The best Cape Heaths were those exhibited by Mr. Ward, Messrs. Jackson and Son, Kingston and Son, and Mr. Carr, gardener to P. L. Hinds, Esq., Byfleet Lodge. As a guide to intending purchasers it is worthy of mention that the most distinct and desirable

sorts in the several collections were *Elegans*, *Cavendishi*, *Depressa*, *Multiflora*, *Florida*, *Perspicua nana*, *Ventricosa*, *Coccinea Minor*, *Ventricosa grandiflora*, *Victoria*, *Mutabilis*, *Mirabilis*, and *Tricolor Wilsoni*.

The principal exhibitors of flowering stove and greenhouse plants were Messrs. Jackson and Son, Mr. Ward, and Mr. Carr; and of ornamental-leaved plants—Mr. Bull, Mr. Williams, and Messrs. Bell and Thorpe, Stratford-on-Avon. Mr. Bull's collection consisted chiefly of Palms, and in the collection from Mr. Williams occurred fine specimens of *Sarracenia Drummondii* and *purpurea*.

In the miscellaneous class Messrs. Bell and Thorpe exhibited samples of their new plant and tree labels, which there can be no doubt will be extensively employed for all out-door purposes when generally known. They are made of a hard white metal, which, it is said, does not become discoloured for an indefinite number of years, and as the names of the plants are cast in bold relief it is impossible for them to become obliterated. They are manufactured in two shapes, one for suspending and the other for fixing into the ground, and each form is made in different sizes. For naming rose and fruit trees the former shape will be most valuable, and the price is sufficiently low to place them within the reach of the most humble amateur. Messrs. Dick Radclyffe and Co., exhibited a tastefully constructed fern stand and aquarium combined; and in the collection of plants from Messrs. E. G. Henderson and Son, St. John's Wood, occurred several specimens of the lovely *Thalictrum adiantifolia*, which will be almost as valuable for bouquets and vases as the well-known Maidenhair fern, to which it bears a close resemblance. It is moreover quite hardy and the leaves retain their freshness for a considerable length of time after they have been gathered.

Amongst the new plants exhibited were *Cutleya Reineckiana*, white with large lip, beautifully painted with crimson and gold, from Mr. Denning, gardener to Lord Londesborough, Tadcaster; *Masdevallia Lindenii*, with rosy puce flowers, a fine companion to *M. Veitchii*, *M. coccinea*, and others of this family, from M. Linden, of Brussels; *Collinsia violacea*, a lovely Californian annual, with blue and white flowers, from Mr. Thompson, Ipswich; *Petunia Princess Louise*, a magnificent double variety, with rosy purple flowers, margined and blotched with white, from Mr. Badman, Lee Green; *Mauve Queen*, Intermediate stock, distinct and good, from Mr. G. Smith, Hornsey Road; *Rose Paul Neron*, a grand hybrid perpetual, with large globular flowers, silver zonal Pelargoniums *Mrs. Rousby* and *Baroness Burdett Coultts*, and *Azalea Comtesse de Flandres*, from Mr. C. Turner; and *Adiantum usarifolium*, a bold and distinct species in the way of a reniforme, but much larger in every way, from Mr. Williams. All the above were awarded first-class certificates.

The only new fruit, possessing any considerable merit, exhibited during the month, was the *Royal Ascot Frontignan* grape, shown at the last exhibition at Kensington, by Messrs. Standish and Co., Royal Nursery, Ascot. The berries are of medium size, and as the fruit approaches maturity they change to a pale amber. The flavour is most delicious and of its earliness there can be no doubt for

Black Hamburghs grown in the same house were quite green at the time of the fruit reaching maturity. It will, therefore, in all probability, be a valuable grape for greenhouse and ground vinerias, and was awarded a first-class certificate by the fruit committee.

G. G.

NOTES ON NEW BOOKS.

The Orchid Grower's Manual. By B. S. WILLIAMS, Victoria Nursery, Upper Holloway.—Has reached a fourth edition, and is greatly improved in the text and freely illustrated. The pictures, however, are of no account, and the book would be as good without them. There is no better work on the subject of orchid cultivation; the author is one of the best experienced men in the country, and gives the whole advantage of his knowledge to the reader in a comprehensive and explicit code of instruction.

Wax-flower Modelling Made Easy. By ANNIE M. WILLIAMS.—Supplies a much felt want in an admirable manner. We have seen Miss Williams's work and have looked into her little book, and feel equal confidence and pleasure in recommending those who are interested in the subject to trust her for their guide.

Handbook of Hardy Herbaceous and Alpine Plants. By WILLIAM SUTHERLAND (Blackwood and Sons).—This is the best book of its class hitherto produced. It is full of useful information on an interesting, valuable, but much neglected class of plants, by a man who thoroughly understands them. The author superintended the herbaceous department of the Royal Botanic Gardens, Kew, for several years, and made good use of his opportunities to institute comparisons of species and determine many of the perplexing questions that arise in connection with the study of hardy plants. About a thousand species and varieties are described in the work, and any one of them may be readily found by the aid of the copious index.

Secular Annotations on Scripture Texts. By FRANCIS JACOX (Hodder and Stoughton).—A quiet book of essays on subjects presented in selected texts of Scripture. Rich in thought, elegant in expression, sometimes quaint and witty, but always sedate; these essays will be found agreeable reading on wet Sundays and at odd times when something short and fresh is wanted.

Land for the Million to Rent. By the Rev. H. MOULE (Macintosh).—This is a small pamphlet addressed chiefly to cottagers and allotment holders, but of equal importance to landowners as to them. The author hopes for the day when it shall be illegal to build a house for a working-man without so much land being attached as will suffice to grow for the family all that can reasonably be expected from a working-man's garden. We share the hope, and would most gladly assist if it were possible, to secure to working men opportunity for the delightful pastime of gardening, both for the direct benefits it would confer on them and their families, and its indirect benefit as an antidote to the injurious fascinations of the

public-house. Mr. Moule, the author of this admirable essay, is the inventor of the Earth Closet, and one of the most active of philanthropists. Would that we could find a hundred thousand parsons of the like spirit, and with equal perseverance and unselfishness in labours expressive of the true purport of Christianity.

The Food, Use, and Beauty of British Birds. By GROOM NAPIER (Groombridge and Sons).—Mr. Napier's book is a counterblast to gun, traps, and poison, for its object is to show that our song-birds are amongst our best friends, and to kill them is to open the door to ten thousand insect pests, who will surely rush in if we lose our bird protectors, and devour all our garden produce. People who are in earnest about the preservation of birds, should buy dozens, scores, and hundreds of this work, and distribute them gratuitously. Mr. Napier tells all the truth, and that is no small merit of a book written for a purpose.

NEW PLANTS.



BELOPERONE CILIATA (*Bot. Mag.*, t. 5888).—A pretty acanthaceous stove plant, flowering in winter. It is of sub-shrubby habit, one to two feet high. The leaves are ovate-lanceolate, dark green; the flowers axillary and terminal; the corolla violet, with a white palate. If judged by the figure, a good companion plant to *Justicia speciosa* for winter flowers.

XIPHION JUNCEUM (*Bot. Mag.*, t. 5890).—A pretty Algerian iris, with orange-coloured flowers. The genus *Xiphion* differs from *Iris* in having coated bulbs, whereas *Iris* has creeping root-stocks, according to the terms of Mr. Baker's monograph. This plant is a native of dry hills near Algiers, also of Tangier in Morocco, and of Genoa and Sicily. It is a valuable hardy plant, neat in growth, and exceedingly showy when in flower.

TILLANDSIA (PITYOPHYLLUM) IONANTHA (*Bot. Mag.*, t. 5892).—A charming little Bromeliaceous plant, with green leaves tipped with rose-colour, and rosy-purple flowers. Dr. Hooker suggests that it is likely to prove distinct from Planchon's *T. ionantha*, in which case he suggests that it should be named *T. scopus*, "in allusion to its brush-like habit."

PELARGONIUM PINK QUEEN (*Floral Mag.*, t. 523).—This splendid nosegay pelargonium is quite a novelty, and promises to be one of the most popular varieties of its class for many seasons to come. In habit it is all that could be desired, robust yet neat in growth, with very dark circular leaves, and producing its large trusses of flowers most abundantly. Its great charm is the colour of the flowers, a rich deep carmine-pink, differing in tone from all other pink varieties, and far exceeding the darkest pinks we have in brilliancy and freedom of flowering. This splendid novelty will be sent out by Messrs. Downie, Laird, and Laing.

SAXIFRAGA (AIZOONIA) LONGIFLORA (*Bot. Mag.*, t. 5889).—A beautiful hardy plant in the way of *S. pyramidalis*. Dr. Hooker describes it as "a very striking species, commonly cultivated on the Continent, but very rarely in England, where, however, it succeeds admirably in the open air, or in a partially-shaded rock-work, forming brilliant green rosettes of leaves four to six inches in diameter, and sending up at Midsummer a truly glorious pyramidal nodding thyrsus, a foot high, of white flowers that lasts for several weeks. It is a native of the higher valleys of the Pyrenees, at the Baths of the Luchon, and elsewhere, at elevations of 2000 to 7000 feet above the sea."

MASSONIA (ASTEMMA) ODORATA (*Bot. Mag.*, t. 5891).—A sweet-scented little Cape bulb with white flowers. It was sent in 1866 to the Royal Gardens by D. Arnot, Esq., who resides in the remote district of Colesberg, under the 32nd parallel of N. latitude, bordering the Griqua territory and Orange Free States, whence he

has transmitted many rare and curious plants to Kew. It flowered in a cool house in October of last year.

AGAVE IXTLOIDES (*Bot. Mag.*, t. 5893).—A fine rigid-leaved agave, producing a tall scape of candelabra-like yellow flowers. The species before us is one that has long been in cultivation at Kew, but never flowered till January of the present year, when it threw up a scape twelve feet high.

COSTUS MALORTIEANUS (*Bot. Mag.*, t. 5894).—A remarkably handsome stove plant from Costa Rica. It has obovate leaves eight to twelve inches long, and tubular flowers of a pale yellow, striped with red.

GILIA LINIFLORA (*Bot. Mag.*, t. 5895).—A beautiful hardy annual resembling a white-flowered flax.

NOTHOSCORDUM AUREUM (*Bot. Mag.*, t. 5896).—A pretty liliaceous plant from California. It has a small bulb like that of a snowdrop, and an elegant scape of yellow flowers in the fashion of an allium.

BEGONIA CRINITA (*Bot. Mag.*, t. 5897).—An extremely elegant plant, with red stems and delicate pale pink or deep rose-coloured flowers. This is one of a series of beautiful begonias introduced from South America by Messrs. Veitch and Sons, through their energetic collector, the late Mr. Pearce.

CALADIUM MONS. BARILLET (*Floral Mag.*, t. 528).—A splendid Continental variety, which will be sent out by Messrs. Downie, Laird, and Laing. "The groundwork of the leaf is green, the midrib and veins brilliant crimson, a large irregular blotch of the same colour occupying the centre of the leaf, and between it and the green a margin of cream-colour gradually shades off into the deep rich ground-colour of the leaf."

AMARYLLIS RAYNERI (*Bot. Mag.*, t. 5883).—A stately plant, producing large pale purple flowers. In common with many other plants of this fine family, *Amaryllis Rayneri* is a native of Brazil. The bulbs were introduced by Dr. Rayner, of Uxbridge, who flowered it in November last, and thereby secured the claim to be commemorated in its specific name. The plant has bold falcate leaves, and the scape bears three flowers of great size and peculiar beauty, the prevailing colours of which are palest purple or mauve-rose and greenish amber.

CYRTANTHERA CHRYSOSTEPHANA (*Bot. Mag.*, t. 5887).—A grand tropical shrub with fine heads of yellow acanthaceous flowers and handsome ovate leaves of a rich dark green, the midribs of which are of a vivid red colour. This species is less showy than *C. catalpaefolia* or *C. aurantiaca*, but is more elegant in habit than either, and conspicuous for the vivid red colour of the midrib and nerves of the leaf beneath. The flowers, instead of being disposed in a dense thyrus, or axillary cymes, as in most species of the genus, are collected into a crown-like corymb at the tips of the branches, and are of a bright golden yellow.

ONCIDIUM TIGRINUM, var. *SPLENDIDUM* (*Bot. Mag.*, t. 5978).—A fine variety, and perhaps the grandest oncid hitherto discovered. It is a native of the Irapæen mountains, near Valladolid and Paracho, and of Mechoacan, both in Mexico, and, according to Van Houtte of Guatemala. It flowered in the splendid collection of Lord Londesborough in February, 1870, and bore twenty flowers on a branched raceme, supported by a peduncle two feet long.

PAULINIA THALICTRIFOLIA (*Bot. Mag.*, t. 5879).—A woody tropical climber with fern-like leafage. "It is seldom," says Dr. Hooker, "that a woody tropical climber of the natural family to which the subject of the present plate belongs (*Sapindacæa*) affords a subject of much horticultural interest; and this owes its exceptional character to the beautiful feathery foliage which, accompanied by its scendant habit, gives it, when in a young state, the habit and appearance of a climbing *Davallia*, or allied fern."

STATICE SPICATA (*Gard. Mag.*, p. 93, 1871).—This is said to be a charming Caucasian species, of annual duration, flowering early in the season, and continuing in bloom for a very long time. The leaves are prettily semi-pinnatifid, of a lively emerald green, and form a spreading tuft out of which rise a multitude of cylindrical earlike spikes, partly undivided, or more or less branched in a pyramidally-arranged fashion, closely set with flowers of a rosy-pink hue. The whole plant represents a graceful sub-pyramidal bouquet about one foot in height, of exceedingly handsome shape, likely to be useful for small beds or for edgings, as it succeeds in ordinary garden soil.

NOTICES TO CORRESPONDENTS.

PEAR FOR A SOUTH ASPECT.—*J. E. S., Dalston.*—Beurré Bosc is a fine pear, but Marie Louise, or Jargonelle are perhaps more productive, and they attain maturity at an earlier date.

ROSE GRUBS.—*A. M. C.* is informed that hand picking is the only practical remedy for the destruction of the grubs which are attacking the rose trees.

NIGHT SCENTED STOCK.—*J. R., Devonport.*—You ought to experience no difficulty in obtaining seed of this plant. We find that it is entered in the catalogues of Messrs. Sutton and Sons, Reading, Mr. B. S. Williams, Upper Holloway, and in those of several others of the leading houses.

BOOKS.—*A. Subscriber.*—Thompson's "Book of Annuals," and "Profitable Gardening" will afford you the desired information. There is no book published containing the whole of the information sought for.

DOUBLE-FLOWERING PEACHES.—*A. D. P.*—Your letter came too late to insure a reply last month. The trees should be placed in a sunny position in the open air during the summer months, and supplied liberally with water. Specimens started early should not be placed in the open air before the end of April. If the foliage is attacked with aphids of any kind, syringe them overhead and dust with tobacco powder, and after it has been on twelve hours wash it off again. Centaureas should be planted at the same time as calceolarias and other of the hardiest bedders.

CALCEOLARIAS DYING OFF.—*A. S.*—Probably you use too large a proportion of manure, and also water the plants too liberally. We believe the cause of the plants perishing may be safely attributed to one of these extremes.

A. D.—Pot them when at rest, and keep in the temperature of an ordinary greenhouse.

Mrs. H.—The fern is not new; and it is a very common occurrence to raise ferns from seed. Indeed that is the usual mode of propagating the majority of species.

COVERING A PORCH (B. B. B.)—The quickest, safest, and cheapest covering would be Virginian creeper. A little less quick would be sempervirens roses, very beautiful, fast-growing and abundant bloomers, one only to each pillar. These would require plenty of water, and the ground heavily manured before planting, as the chalky substratum will try them. Less quick than the last, but in such a hot place very suitable, *Ceanothus papillosus*, which would require some good turf chopped over with rotten cow-dung. *Hedera grandifolia*, a grand ivy with huge leaves, would run up quick, and be rich and shady. Clematisses would rejoice in that hot, dry, chalky bottom, and go to the top of the pillars at a rapid pace. Be content with only one kind of plant, have no mixtures. You are in time now to plant any of them from pots.

TREE FERNS, ETC.—*G. M.*—The newly-imported tree ferns, recently purchased, should be put in an upright position in some cool, close, rather dark place, such as a shed, or under the stage of a greenhouse, and syringe them once a day for a week. The next week syringe them two or three times a day, and protect them against draughts of air, so as to keep them constantly damp. In about three weeks they will begin to show signs of growth; and may then be potted. In preparing them for pots, cut clean away all hard, dead, wiry roots, so as to reduce their stumps considerably. It is seldom, however, that there are any roots left to cut away; they are so closely trimmed before being packed for transit. The best soil is one consisting wholly of tough fibrous peat, with plenty of sharp sand. When the crocks are placed, lay over them some rough charcoal, then pot the trees in the usual way, and fill the stuff in as firmly as possible. Put them in as small pots as possible; it is easy work to shift them on as they grow, and it is a great help if the roots soon touch the sides of the pots after they begin to grow. Do not make the soil wet at all until the growth has advanced somewhat; to keep it regularly damp will suffice, but continue to syringe the stems frequently, as the moisture absorbed that way will soonest arouse the energies of the plants.

VINES AND LIQUID MANURE.—*H. N.*—It is quite possible that the liquid manure had something to do with the death of the vines, but it is impossible for us to say whether or not their death has been caused by its being used too liberally. Two year old vines do not require liquid manure.

G. J. W.—Pour the water upon fresh lime, and when the lime has settled, and the water has become perfectly pure, it will be ready for use. A bushel of lime to a hogshead of water would be a good proportion.

PRESERVATION OF FRENCH BEANS.—French beans, when properly preserved, are so valuable for use during the winter months, that we gladly insert the following contribution upon the subject from an esteemed correspondent. Our correspondent says:—"The preservation of French beans is a very simple matter. Take an earthenware pipkin, with upright sides, of the capacity required; about four gallons will be enough for a small family of four; put a layer of salt at the bottom, then one of beans, and so on, in alternate layers, to the top cover, with a layer of salt, and the thing is done. Before cooking, sufficient beans for a dish must be taken out and soaked for several hours in cold water, to get rid of the salt. The beans, of course, must be picked in dry weather."—*Experientia*.

NAMES OF FERNS.—*Prestwick*.—No. 1, *Asplenium adiantum nigrum*; 2, *Blechnum spicant*; 3, *Scolopendrium vulgare*. The Petunia is wrong at the root; probably the drainage of the pot is choked up, and the soil has become sour in consequence.

A. B. S.—We have had no experience with the preparation referred to, and are therefore unable to afford you any information respecting its value.

CLAY SOIL.—*J. T. B.*—The admixture of a liberal proportion of road scrapings or other light sandy material will be the most suitable manner of dealing with the stubborn clay in the position referred to.

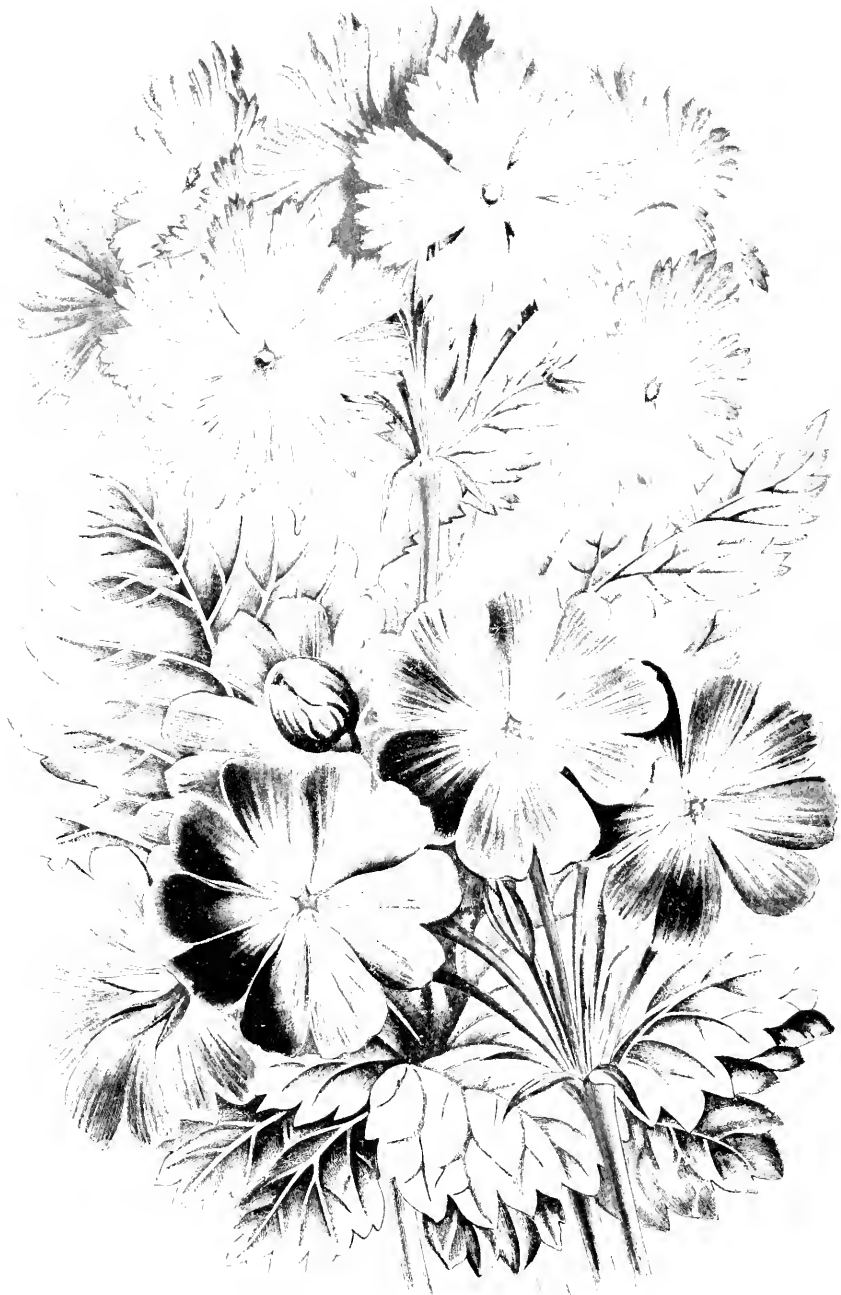
FIGUS ELASTICUS PROPAGATION.—*J. T. B.*—*Ficus elasticus* is by no means difficult to propagate, and the present moment is very suitable for the work. Cut the well-matured portion of the stem into lengths of two inches each, with a pair of leaves to each, then split the stem down the centre, and lay the pieces on the greenhouse shelf for a few hours. Insert them singly in pots filled with light sandy soil; bury the portion of the stem about an inch below the surface, and secure the leaf to a short stake to prevent its becoming loose. The cutting pots should be placed in a warm corner of the greenhouse, unless you have the convenience of a cucumber or melon frame; the frame is preferable, but they will strike in an ordinary greenhouse at this season of the year. Although *Ficus elasticus* is valuable for the decoration of indoor apartments and conservatories during the summer season, it requires a temperature rather higher than that of the ordinary greenhouse during the winter to keep it in good health. In wintering it in the greenhouse, it is essential to keep the plants rather dry at the roots.

A. D.—*Kilburn*.—The plants must have full exposure to the sun throughout the year, for, when placed in a shady situation, the leaves soon lose the brilliancy of the leaf-tints.

CLUB IN CABBAGES AND BORECOLES.—*G. Smith*.—Whatever enriches, refreshes, and renews the soil will tend to abolish club. Deep digging and plenty of manure will do more to eradicate club than all the nostrums ever heard of—in fact, nostrums are not of much avail, because clubbing begins in the seed-bed. We advise you to sprinkle lime over the young plants as soon as they appear in the seed-bed, to practise deep digging, and, when planting out, dip the roots in a puddle of clay, lime, and soot.

PRUNING ACACIAS.—*W. G.*—Acacias are usually pruned after flowering; in some cases, the growth that follows pruning is pinched back once or twice to increase the bushiness of the plants, care being taken to promote a thorough ripening of the wood to insure a good bloom again. The bloom never need be lost, except in the case of cutting down old plants to stumps, in which case one season's bloom must at least be lost.

GOURDS.—*S. S.* writes to say that he is anxious to preserve pure seed of certain races of gourds, but he fears that his this year will be a mixed lot, and that in his plantation are several hybrids, the result of crossing last year, which he regards as rogues, and is anxious to preserve the seed pure for next season. He must remove all male flower-buds before they open; the females may be left to swell their fruit, as they will be fertilized by the males of the typical kinds. The fruits on the rogue plants may be used young as marrows, or, when ripe, for any of the purposes to which ripe gourds are put, but the seeds taken from them must be destroyed. To sum up the advice in few words—nip the male buds from the rogues, and eat all the fruits the rogues produce.



VARIETIES OF PRIMULA CORTUSOIDES.

VARIETIES OF PRIMULA CORTUSOIDES.

(Illustrated with a Coloured Plate.)

THE two beautiful primulas represented in the accompanying plate are the most attractive of a very interesting group. The type of the group, *P. cortusoides*, is an old favourite in the few gardens wherein hardy herbaceous plants are properly cared for; but the varieties to which we now more particularly direct attention are of quite recent introduction, and are as yet comparatively little known. As we intend this notice to be both brief and useful, we will say as little as possible in the way of criticism, and as much as possible, though in the fewest possible words, on the merits of the plants and the best known methods of cultivating them. The imaginative reader will kindly invent for himself or herself all else that might be said on so attractive a theme.

First—Of the typical plant *Primula cortusoides*. It forms a tuft consisting of heart-shaped bluntly-toothed leaves of a bright green colour, agreeably adorned with compact umbels of purplish rose-coloured flowers in the months of May and June. It is always a neat plant; when in flower it is extremely pretty, and should one meet with the rare sight of a few very large clumps of it, the grandeur of the plant will not be soon forgotten.

If planted in the common border and left to take care of itself, this plant is likely enough to die; and yet, in some places, to plant it anywhere and leave it alone would be the most satisfactory mode of cultivating it. We have for many years enjoyed its abundant flowering on a ledge of a rockery facing the north; the soil deep and gritty, and thoroughly well drained. From April to August the tufts—indeed the whole of this part of the rockery—is heavily watered once a week. This system suits a large proportion of the best Alpines in cultivation. The north aspect is peculiarly well adapted for its requirements, for, as a native of Siberia, exposure to the full sun would debilitate the constitution of the plant; in fact, the main difficulty about growing Arctic and Alpine plants is that our climate is too warm for them, and they perish through growing too fast.

The varieties that are here figured represent a group of plants of more robust habit than the type, and producing flowers far more showy both in size and colour. The finest of the series introduced was *P. e. amana*, a native of Japan, which Messrs. Veitch and Son obtained for our gardens in the year 1864. From the same enterprising firm there have been sent out several other varieties, all of which in their leading characteristics cluster round *P. e. amana*, so that we must regard that variety, and not the species, as the proper type of them. They are all fine plants, thoroughly hardy, yet but rarely prospering in the common open border. The best of all places for them is the frame: they are, indeed, the finest frame plants we possess; for neglect will rarely kill them, and proper care will bring

them to a condition of extraordinary beauty. To grow them well, the soil should be a rich, sandy loam, the pots well drained, the plants at all times preserved from any approach to drought, and during summer to have abundance of water. The whole stock should be re-potted annually, no matter how well the plants are doing; the proper time for this operation is the month of July, when they are comparatively at rest. The following list includes all the varieties known:—

Amœna.—A robust-habited plant, flowering freely. Flowers rich rosy carmine; one of the finest of the group. The flowers in the lower half of the plate very fairly represent this handsome variety.

Intermedia.—This is well named for those who know the specific form. The flowers are most abundantly produced, the colour lilac carmine. A very desirable plant.

Alba.—A fine plant, with large, handsome, pure white flowers, which droop as if blown aside by the wind. The brilliant green of its leaves, and the snowy purity of its flowers, constitute this a striking plant, notwithstanding the drooping of its flowers.

Striata virida.—A pretty starry flower, white, with obscure green stripe. A good companion plant to *Intermedia*. It will indicate the exact relations of this variety, and also exemplify the elegancies of botanical nomenclature, if we add that its proper (or say legal) name is *Primula cortusoides* v. *amœna* s. v. *alba* s. s. v. *striata viridis*.

N.B.—A rose by any other name would smell as sweet; and if this primula bore a shorter name it would be none the less pretty. Comfort from Horatius—

“ Levius sit patientiâ
Quicquid corrigere est nefas.”

Grandiflora is apocryphal. When a plant of *Amœna* is extra well grown it becomes “*Grandiflora*,” and *vice versâ*, if *Grandiflora* is only middling well grown, it becomes “*Amœna*.” To put the case in plain English, *Grandiflora* is a nursery name for a nonentity.

Oculata is only a good state of *Amœna*, showing a distinct white eye. To repeat the solemn truth just uttered, *Oculata* is a nursery name for a nonentity.

Lilacina is an exquisitely beautiful plant, as the topmost figure in our plate will indicate. The flowers are large, quite flat, the edges fringed or lacerated, the colour palest blush, overlaid with delicate veins of lilac and palest purplish rose. This and *Amœna*, which is shown in the lower part of the plate, are the best of the group, but the others we have recommended are quite needful to any cultivator who can find amusement in the cultivation of first-class frame and Alpine plants.

Of the charming *P. Japonica* and *P. Verticillata* we must seek an early opportunity to discourse, perhaps with the aid of our artist, who tries hard and with honourable zeal to “paint like nature.”

S. H.

SUMMER WORK IN THE KITCHEN GARDEN.

BY GEORGE GRAY,

Head Gardener, Norbiton Hall, Kingston-on-Thames.



IN order to secure a good supply of vegetables during the late autumn, winter, and early spring months, the greatest amount of activity is necessary during July, and the planting of broccoli, borecole, and, indeed, winter greens of all kinds, must be completed during that month, because it is impossible for crops planted later in the season to attain their full development by the time the weather becomes cold enough to put a stop to the growth. Seed of many useful vegetables may still be sown with the greatest degree of success, but there is no time to lose. When the ground is occupied with the remnants of peas and other crops the plots should be cleared at once, and manured and dug up deeply, because it is folly to risk important crops for the sake of the chance of one or two dishes. The stumps of early cabbages should also be cleared, for the few dishes of greens that will be obtained from them will certainly not pay for the space occupied. Instead of allowing them to remain until the winter, as is so frequently done, it will be far more profitable to destroy them, and, after the ground has been turned up, to sow with turnips, or plant with some other crops, and form a small plantation of cabbages elsewhere.

Liberal manuring and deep digging are both important matters in the kitchen garden, and must be regulated by the circumstances in which each cultivator is placed. Every part of the kitchen garden should, if possible, be trenched to the depth of two feet during the winter season, every second year at least, and it should be dug over after every crop. The ground should also be manured once a year, and there can be no doubt that good stable or farm-yard manure, when about half rotten, is the best that can be employed. Amongst the artificial manures phospho-guano is the most desirable, because its fertilizing properties are of the highest order, and, unlike the samples of ordinary guano, do not vary much in quality. Guano would be one of the most valuable assistants the amateur could possibly have were it not for the fact that such an enormous price is charged for it when purchased in smaller quantities than one cwt.; and in buying it by the hundredweight a rate of nearly double the price per ton is charged, and guano exceeding £20 per ton cannot be employed in the kitchen garden with profit. In applying guano, when the seed is sown in drills, it should be sprinkled along the drills, and then covered very lightly with fine soil previous to sowing the seed. But in all other cases it should be sown broadcast over the surface before the seed is sown or the plants put out, as the case may be. The rate at which it should be used in the kitchen garden is from three to four cwt. per acre; and before quitting this part of the subject, it is desirable to add that the assistance it will be to

the crop following will be nearly, and in some cases even quite equal to the influence it will have upon the crops sown or planted immediately after its application. Having proceeded thus far, as it will enable what follows to be better understood, each class of vegetables will be grouped together in separate paragraphs.

FRENCH BEANS.—It is too late to sow the tall varieties now, but several of the dwarf kinds may be sown, if required, with the most desirable results. If a liberal sowing was not made towards the end of last month to succeed the earliest crops, a considerable breadth should be sown in a sunny border without delay. If the soil is dry, fill the drills with water, then plant and cover up quickly; for when the seed is sown in dry soil it will most probably lay dormant in the ground for a considerable period, and the plants may not attain a fruiting size before the frost cuts them off. The advancing crops should also be well looked after; those in bearing must have the pods removed immediately they are large enough for the table, and if it is desirable to save seed, set apart an end of a long row, or a whole row if short, for that purpose, because nothing interferes so much with the productiveness of both the dwarf and tall sorts as the common practice of leaving a few pods on each plant until they attain maturity. Where the conveniences exist the supply may be kept up a fortnight or three weeks later than usual, by sowing a row at the foot of a south wall and protecting it in cold and frosty weather with spare lights. The *Negro Long-podded* is undoubtedly the best for all purposes out of doors.

BROCCOLI, BORECOLE, AND KALE.—Under this heading we must include Brussels sprouts, which require exactly the same management as Scotch and other kales. The broccoli crop is so often either wholly or partially destroyed by the severe winters that the kale should be considered of the first importance in gardens of all classes, and almost exclusively grown in gardens of a limited extent. Indeed, in small gardens, the broccolis that are usually fit for the table before Christmas should alone be planted; and as we seldom have very severe weather before the middle of December, there is not so much risk attached to their cultivation. And by lifting and storing them in a dry structure, where they will be secure from frost, the supply may be prolonged for a considerable period after Christmas. The most desirable of the early kinds for forming a succession are *Early White Cape* and *Grange's Cauliflower*; and for those who are not particular about the colour the *Early Purple Cape* can be highly recommended. But to have them ready for the table before the severe weather occurs the plants must be put out early in a favourable position.

The three best kales for gardens of all kinds are the *Dwarf Green Curled Scotch*, the *Cottager's*, and the *Jerusalem*, all of which are comparatively hardy, productive, and of delicate flavour, and the former should be grown in the same proportion as the other two combined. In small gardens the two first mentioned will be quite sufficient. The most delicate-flavoured of all the kales is the one known as *Chou de Milan*; but it is rather tender, and its cultivation is attended with a considerable degree of risk. The *Albert Sprouts*

are hardy, productive, and delicate in flavour, and a fair proportion should be planted. *Brussels Sprouts* are too well known to need comment, and must be planted according to the space at disposal and the requirements of the kitchen.

The cultivation of winter greens of all kinds is comprised in a deep, rich soil, and early planting; therefore they should be put out as fast as the quarters occupied with early crops can be cleared for them. Where a portion of the stock of any of the kinds has to be planted between potatoes, the strongest plants should be selected for that purpose, because the small plants stand a chance of being smothered by the haulm of the potatoes.

CABBAGE, although one of the most profitable crops that can be grown in a small garden, is not usually looked upon with much favour. The varieties in commerce are now very numerous, but for general crops *Wheeler's Imperial* and *Enfield Market* are decidedly the best. Although they occupy more space than compact-growing kinds, good breadths of either of these sorts put out at once will prevent the possibility of there being any scarcity of green stuff during the autumn. Both should be planted eighteen inches apart, in rows two feet from each other. The most desirable of the small, compact growers, are *Atkins's Matchless* and *Hill's Incomparable*, and they should be put out twelve inches apart, in rows eighteen inches from each other, which will afford them plenty of room, because they should be cut and sent to table before hard white hearts are formed.

If the sowing of cabbage seed was neglected at the proper time, and a difficulty exists in obtaining plants of a good sort, a considerable breadth of the *Early London Colewort* should be sown at the first opportunity possible, and a second sowing made either in the last week of July or the first week of August. Plant out immediately they are strong enough at a distance of twelve inches apart each way, for they take up very little space when full grown. Coleworts are so useful for planting after potatoes and other crops that come off the ground during July and August, that a moderate quantity should be planted even where a good breadth of cabbage is already put out.

CAULIFLOWERS.—Strong plants of either the *Early London* or *New Erfurt Dwarf Mammoth*, put out in good soil, and watered every alternate evening until they are established, will produce fine heads in the autumn, and may be taken up and preserved for a considerable period in a frame or other structure where they can be protected from frost and damp. Preserve the roots in taking them up when full grown, and remove a few of the outside leaves; because it will be necessary in laying them in by their heels to pack them rather close together, and if they are too much crowded the leaves will decay, and if not removed, render the head unfit for use.

CARROTS.—A small sowing of *Early Short Horn* will be extremely useful for furnishing a supply of tender carrots for drawing during the autumn. A second sowing made about the middle of August will yield a supply during the following spring, little, if at all inferior, to those grown upon hotbeds under glass, without any of the trouble

or expense of that mode of culture. The last sowing should be made in a dry position; and if the garden is in a low situation, raise the bed a few inches above the surface with the soil taken from the paths; and in very severe weather a layer of newly-gathered leaves or long litter will prevent the frost penetrating the ground, and thus enable the carrots to be taken up without the least difficulty in the most severe weather.

CELERY.—The planting of the main crop of celery must be completed as early in the month as possible. In taking it up, preserve the roots; and after it is planted, well water it in, and screen from the sun during the first few days after it is put out. It can be easily shaded by a few branches of evergreens over the trenches; or, if more convenient, mats or strips of canvas may be employed. Celery will, of course, do without shade when newly planted; but a light shade as here recommended will be of immense assistance in enabling the plants to become established quickly.

For the assistance of those who have to purchase plants it is desirable to add that *Williams's Matchless Red* and *Incomparable Dwarf White* are excellent kinds.

PARSLEY.—To ensure a supply of this useful herb throughout the autumn and winter it will be necessary to sow in the first or second week in August. If, however, no seed has been sown since March or April, a moderate quantity should be sown in the first or second week in July. Fill the trench with water previous to sowing the seed, and thin out liberally before the plants attain a large size.

SPINACH.—Where this vegetable is in request a breadth must be sown once a fortnight, because at this season of the year it so soon runs to seed. It is a good plan in gathering spinach, when young, to thin the plants and use the thinnings, instead of gathering the largest leaves from the whole row. A rich soil is necessary to produce good crops at this season of the year.

TURNIPS are extremely useful for following the early crops of potatoes, peas, cauliflowers, and other vegetables; but they are not so profitable perhaps in very small gardens as many other things. To obtain large, juicy bulbs, a quick growth is essential, and the best means of securing that important condition is by sowing in moderately-rich soil. Quarters from which potatoes have been taken may be sown down without being dug over, as the drills can be made in the centre of the space occupied by each row of potatoes; but, of course, it is preferable to turn it up. Guano is one of the very best manures for turnips, and a dressing at the rate specified above should be applied, unless the ground was enriched with manure when prepared for the previous crop. Immediately the young plants begin to peep through the soil keep a sharp look out for "fly," and if any of the plants are destroyed, dust at once with soot, applying it when the leaves are moist from the dew. Very frequently turnip crops are totally destroyed by the "fly" taking the plants as fast as they appear above ground; and as no plants are seen, complaints are made of the seed being bad, as it is thought that it has not germinated. Soot acts as a fertiliser as well as an insecticide, therefore it may be

applied with advantage even if no danger from the fly is apprehended. The *Early White Stone* or *Six-Weeks* is the quickest in growth, and good in quality; the *Early Snowball* is also remarkably good; and for standing the winter, *Chirk Castle Black Stone* can be highly recommended. The skin of the latter is black, but the flesh is perfectly white, and of excellent flavour. The necessary thinning should be done when the plants are small, for it not only occupies less time, but it is better for the crop.

DAHLIAS.—No. III.

BY JOHN WALSH.



DAHLIAS have not been forgotten, but up to the present moment the cultivator has not been in want of advice if he has paid due attention to the hints given in the papers published in the *FLORAL WORLD* for March and April. Even now there is very little to be said, as it is yet too early to deal with the preparation of the blooms for exhibition. There are, however, a few points to which attention may be profitably directed; for upon proper attention to the wants and requirements of the plants at the present moment depends the success that will be met with at the exhibition.

The weather through June has been so cold that the plants in all but the most favourable positions have not made much progress; but as we may reasonably expect some warm weather during the ensuing month. Thinning and training the growth must be at once thought about. The support for the main stem was recommended to be put to the plants when they were planted, and if this advice was acted upon, we have now only to consider the support of the side branches. From three to five of the latter should be allowed to each plant, and must be made secure from injury by the wind by affixing a stout stake to each immediately they appear to need support. The stakes should be inserted about twelve or fifteen inches from the main stem in a slanting direction so as to give each branch all the space possible; and to make everything extra secure, connect all the stakes together by strong pieces of string. The growth must not be thinned too severely, but it will be necessary to remove a few of the most weakly shoots to prevent overcrowding, both on the main stem and secondary branches; and they should be cut off close to the stem to prevent them breaking again and producing a lot of useless spray. Sometimes, especially in hot and dry seasons like those of 1867 and 1870, Dahlias have a tendency to bloom prematurely, and if not looked after and the flowers removed the growth will experience a serious check. When they are grown merely for decoration, their flowering early is not of so much consequence.

The main object should be to secure a healthy growth, and the removal of all the early flowers is one of the most essential condi-

tions for attaining that end. Farther on in the season it will be necessary to remove all but the most promising flower-buds from the lateral branches, to throw all the vigour into the one remaining. The flowers that are disfigured in the slightest manner must be removed as soon as the defects become apparent, to prevent the energies of the plant being diverted from the support of the flowers that promise to be of no service. But next month will be quite early enough to dwell upon this point.

To ensure fine blooms it will be necessary to water rather copiously once or twice a week during dry weather, and the plants will be materially assisted if the water is flavoured with the drainings from the stable or manure heaps, or if guano, at the rate of an ounce to the gallon of water, is added to it before it is used. Very little artificial watering will, however, be required where the soil is of a moderately retentive character; and so long as the plants grow freely, artificial watering will not be required. Watering them overhead is of considerable importance, and a large canfull of water poured over them through a coarse rose on the evening of a hot day, will materially assist in keeping the foliage clean and healthy, and thus promote a vigorous growth. Watering overhead will also aid in keeping them free from red spider or thrips. The garden engine is the proper thing for washing the foliage, but as so few amateurs possess one, it will not be of much service to recommend it.

Trapping of earwigs should be commenced now; a vast amount of labour and anxiety will be avoided hereafter. The best method is to employ small pots, each with a tuft of moss in it and mounted on a stick above the plant.

If aphids appears, destroy them by dusting with tobacco powder.

GOLDEN, SILVER, AND BRONZE ZONALS.

BY ROBERT OUBRIDGE,

Church Walk Nurseries, Stoke Newington, N.



THE best varieties of these important sections of the great Geranium family are so valuable for the decoration of the conservatory, sitting-room window, and balcony garden during the summer and autumn months, that I trust you will afford me a little space in the FLORAL WORLD to give a few hints on their management, and also that the hints will be of assistance to many of its readers. The cultural requirements of the varieties belonging to the three sections are so similar that the directions here given will apply with equal force to all, and one set of instructions will therefore be sufficient.

To produce large richly-coloured specimens of the Golden and Silver Zonals in the least possible space of time, they must be grafted on stocks of some of the strongest growing green-leaved varieties,

or upon seedling plants of the same class. It is a very easy matter to graft them; indeed, it is easier to perform the operation than it is to describe it. For the stocks, select strong plants which have stout and rather firm stems and are well established in the pots, because to ensure successful results the plants must be growing freely and the sap in active circulation. Cut the stock down to within a few inches of the soil, split the top a little way down the centre, say an inch and a half; and after cutting the base of the graft into the shape of a wedge, insert it in the cleft so that the two barks are, on one side if not on both, neatly united. Then tie up rather tight with worsted threads or bass, and cover the tying material with the clay, and over the clay put a covering of moss to prevent its cracking. Place in a warm corner of the greenhouse, and in a month or so, it will be necessary to loosen the bandage; but it must not be removed until the graft is *securely* united to the stock. Standard specimens are readily produced by grafting upon stocks of the desired height, in the manner here advised.

The ordinary propagation of geraniums, by means of cuttings, is so exceedingly simple, that it is only necessary to allude to it to enable me to say that the cuttings should be struck in July, and not in September, which is by many growers supposed to be the most suitable period for that work. Moderately firm and short jointed shoots are the most suitable for making cuttings, which should average three inches in length. Cut them close under a joint, and insert them in a border on a south side of a wall, or in the open. Water moderately when the cuttings are first put in, to settle the soil firmly about them; but afterwards, very little water will be required, unless the weather is exceptionally dry, until they are rooted. It is a bad plan to leave the cuttings until the roots have attained a considerable length, because in taking them up the roots are liable to be injured, and a considerable check is experienced in consequence. To state the matter in the briefest manner possible, they should be taken up and put in three-inch pots immediately they have a few roots of about an inch in length. Use fibrous loam that has become mellow, and to which a liberal quantity of silver sand and a moderate quantity of leaf-mould have been added. Place them upon a bed of coal ashes after they are potted, and towards the end of September remove them to a shelf in the greenhouse where the light will have free access to them, and where they will not be injured by being exposed to an excess of atmospheric humidity during the winter months.

The following spring, if medium-sized plants only are required, the young stock should have the points of the leading shoots pinched out, and as soon as they begin to grow again be shifted into five or six-inch pots. But to produce large specimens, stop them as above advised; keep near the glass in a cool airy house or frame, and at the usual time plant them in an open border which has been prepared by the addition of a dressing of leaf-mould, thoroughly decayed manure, and fresh loam if available. Put them at a distance of eighteen inches apart one way and two feet the other, and if the space can be spared, an additional six inches each way will be an advantage. If everything goes on right, the young growth will require

stopping early in August, and the plants will be in fine condition for taking up and potting about the second week in September. At this stage put them in five-inch pots, if they are not too large, and then they can be conveniently shifted into eight-inch pots in the following spring; this size pot is mentioned because it is the most suitable for conservatory decoration, and the size in which they are usually exhibited. At the end of the summer they will require pruning, and if the season is not too far advanced, plant them out as soon as the young shoots, which make their appearance after the plants are pruned, are grown half-an-inch in length. Take them up and re-pot towards the end of September, in pots the same size as that recommended for putting them in the autumn previous.

With respect to general management, it may be said that weak liquid manure once a week will be beneficial when the pots are well filled with roots, and that the plants must not be over-fed, either by employing a large proportion of manure in the compost, or by the use of strong liquid manure. When over-fed, they grow too luxuriantly and the leaf tints decrease in brilliancy, and the Bronze Zonals become nearly as green as the ordinary Green-leaved Zonals. During the growing season they require moderately liberal supplies of water; but from the end of October until the beginning of March, they must be kept rather dry, and during that period no water should be allowed to touch the leaves of the Golden and Silver Zonals; and those of the other sections should be kept as dry as possible. At all seasons of the year they must be exposed to the full light, except during very brilliant sunshine in June and July, and then the shading materials must be thin. You must also promote a free circulation of air amongst them. Very little training will be required beyond tying out the principal shoots regularly, and in bringing them down in a horizontal manner to form the foundation, excepting to stop any shoot that grows more vigorously than the others. Plants intended for exhibition should, after the end of April, be placed in a frame, where they can be elevated, so as to be within a few inches of the glass; and in congenial weather the lights ought to be elevated both at the back and front.

The finest eight varieties in each of the three classes are—GOLDEN: *Achievement* (Turner's), *Ealing Rival*, *Edward Richard Benyon*, *Howarth Ashton*, *Miss Goring*, *Mrs. Griere*, *Macbeth* (Bell and Thorpe's), *Prince of Wales*. SILVER: *Clorinda*, *Eva Fish*, *Lass o' Gowrie*, *Mrs. Col. Wilkinson*, *Mysterious Night*, *Mrs. Rousby*, *Princess Beatrice* (Paul's), and *Felicity*. BRONZE: *Annie Keeler*, *Black Douglas*, *Earl Rosslyn*, *Reine Victoria*, *Impératrice Eugénie*, *Princess of Wales* (Downie and Co's), *W. R. Morris*, and *Mrs. John Lee*. As all the above are expensive, we will make a second selection to comprise the cheapest kinds.

There can be no hesitation in recommending the following as the best in their respective classes, which can be purchased at prices not exceeding five shillings each; but most of them can be procured for less than half-a-crown each. GOLDEN: *Countess of Craven*, *Edward Milner*, *Humming Bird*, *Lady Cullum*, *Sophia Cusack*, *Plutarch*, *Queen Victoria*, *Sir R. Napier*, and *Victoria Regina*. SILVER: *Ban-*

shee, Caroline Longfield, Mabel Morris, Miss Burdett Coutts, Mrs. J. Clutton, Peri, Queen Victoria, and Excellent. BRONZE: *Harrison Weir, Danae, Prima Donna, Red Ring, Countess of Kellie, Black Knight, Fairy Ring, and Napoleon III.*

THE CULTIVATION OF THE ROSE.—No. VIII.



IT is such an easy matter to make roses by the dozen, hundred, thousand, million, that the one miraculous fact in the history of the rose is of this negative sort—the scarcity of roses. To be sure there are plenty of roses in the world, such as starving standards that make gardens hideous, and those who own them open defamers to the taste they profess to promote. We may find wall roses, and pillar roses, and bush roses of the most obnoxious character everywhere, but few well-grown roses; few roseries containing anything like a variety of roses, and few, very few, extremely few, glass houses devoted to the delicate tea roses, which, if virtue were triumphant, would drive all the geraniums and verbenas clean out of every plant-house in which, with any prospect of success, a tea rose might be grown. One good reason for bad rose growing is the prevalence of an extravagant belief in standard roses. They are good enough indeed, when they are good, but they are so often planted in the wrong place and managed in the wrong way, that very many of the examples commonly met with are types of extreme ugliness, and should impress us, if we knew no more than they can teach, with the idea that the rose is the very worst of all our garden flowers. To correct this foolish faith, we must continually urge the claims of own-root roses, and teach people how to obtain or make them. As a majority of the trade repudiate the notion of providing people with own-root roses, we feel bound to say that Messrs. Lane and Son, Berkhamstead Nurseries, long since took a hint, kindly offered to mankind by the FLORAL WORLD, and set about producing millions of own-root roses. Those who want to buy such, know henceforth where to go for them. But what are own-root roses? some will ask, and thereupon the whole question will be opened about roses, and their roots in general.

There are many modes of multiplying roses; but for all general purposes, we need only notice three of them. The standard roses commonly met with, are obtained by inserting buds of named roses on the young shoots of English briars in the month of July. The operation is called “budding,” and constitutes an important mystery of the rose craft. Bush roses are obtained by the budding process; but an Italian brier, known as the manetti rose, is employed for the purpose. It is a free-growing, very free-rooting, bluish-leaved brier not adapted to form standards, but well suited for bush roses if the buds are inserted very low down, in fact immediately over the roots of the briars, so that when they grow they will spring as it were from the ground, instead of from the stems in which they are inserted. Both bush and standard roses may be obtained on their

own roots by striking cuttings or buds, or making layers of named roses, and the month of July is the best season in all the year for these operations. Whether standards or bushes are required, is of no consequence in the first instance, but a matter of after culture; the important matter is the first step, and this consideration brings us back to the point we had in mind at the first start—how to make roses by the dozen, hundred, thousand, and million.

Brier roses are admirably adapted for deep loamy and heavy clay soils. In any and every case the ground intended to be planted with roses, should be well drained, and if the subsoil is anything approximating to a clay or deep rich loam, brier roses may be planted with a fair prospect of success. To make brier roses is a simple matter enough, when you know how, but very mysterious short of that point. In the "Rose Book" ample instructions are given for the multiplication of roses in all possible ways; but here we must cut the matter short by saying that the art of budding may be learnt in five minutes on the ground with the help of the demonstrations and explanations of one who is somewhat expert in performing it, but will be very slowly apprehended by the best written instructions, however freely illustrated and "adapted to the meanest capacity."

Manetti roses are adapted for all soils and situations; but have an especial value for gravelly, chalky, and worn-out soils, because of the abundance of roots the manetti brier produces, and its consequent power of obtaining nourishment in comparatively barren lands. When this stock is employed for dwarf roses, and it is not suited for the production of standards, the stems should be budded near the ground; indeed a little of the earth should be removed to enable the operator to insert the buds as low down as it is possible to find a green lifting bark on which he can operate with a hope of success.

Own-root roses are, generally speaking, the most valuable of all. They are such as have roots of their own, that is to say they are not obtained by budding or grafting, but by the striking of buds or cuttings, or putting down layers; in each case the rose making roots for its own sustenance, instead of being made to depend on the roots of briars, manettis, or any other stocks.

Any one who has had a little experience in the propagation of bedding plants ought to find it easy and agreeable work to produce a stock of own-root roses. Now is the time, and there are many modes of procedure open to the choice of the proficient, who will have the advantage of adopting that which the state of the wood at his disposal and the conditions of the season and his own peculiar requirements may suggest as the best. The simplest of all methods may be described in a few words:—

There will be found on all the rose-trees now, or say in the middle of July, a number of plump, young, green shoots of the present year. As the seasons vary, so will the time vary for taking cuttings; and the best rule that can be given is, that they should be taken when about half ripe, the wood being still green but firm, for so long as it is decidedly soft and sappy it is unfit. The selected shoots should be cut up into lengths of about four inches each, and the

lowest leaf should be removed, as shown by the figure in the "Rose Book," page 251. The soft tops of shoots should either be cut off and thrown away or should be carefully struck in the same way that soft bedding plants are, in pans filled with sand, in a rather strong, moist heat. But the cuttings we have especially in view, consisting (say) of young wood as thick as a goose quill, in lengths of four to six joints each, the lowest leaf only removed, will not require heat, but will quickly make root if planted thickly in a bed of sandy soil, or even in a bed of cocoanut-fibre, and kept close and moist, without ever being very wet, or in a hot, stifling atmosphere.

To make own-root roses from buds is not quite so easy as to make them from cuttings. But it is not difficult—at all events, we have never found it difficult—to raise roses in this way and supply the trade with them by the thousand. The first step is to obtain a lot of precisely the same sort of buds as would be required for budding briars. The next thing is to prepare them in the same way, without removing the wood or the leaves. The wood, indeed, may be removed, but it is waste of time to remove it; but if the leaf is removed the bud will simply die. Having secured buds cut in the fashion of shields, without removing the wood, and, above all things, without removing the leaf that each must have when cut, plant these buds firmly in pans filled with sand, or on a bed of light loam covered with sand over a mass of fermenting material, or in a common frame. All the leaves must stand up and be kept fresh by frequent sprinkling, but there must be no slopping of water amongst the buds, or they will rot; in fact, any excess of moisture will ruin the best planned project for propagating roses with equal certainty and rapidity with the total abandonment of the cuttings or buds to drought, by an act of forgetfulness or intentional rose-murder.

To propagate by layers is the easiest plan of all; but it is impossible to make many roses in this way, because two or three are the utmost number obtainable from a shoot, whereas by cuttings or buds a strong shoot will furnish material for from twelve to twenty plants. But certainty may well compensate for lack of quantity with many readers; and our advice to lovers of roses who cannot see their way clear to strike cuttings, is to make layers of them in July and August in precisely the same way as carnations and picotees are layered. Lastly, but not leastly: If you will wait until the middle of September, you may then begin to multiply roses by what we have designated "the currant-tree system." To make short work of the subject, we may remark that roses may be struck from cuttings precisely as currant-trees are struck; but the business should be attended to while the roses yet have green leaves upon them. Many try this system and fail. It is all their own fault, for they allow the proper season to pass by, and suddenly make a rush at the propagating when the season for the work is past. From the middle of September to the end of October is the proper time for the practice of the currant-tree system of multiplying roses, and if the work is well done then, eighty per cent. of the cuttings will root. People who are blessed with a spirit of patience and perseverance may continue, or begin, to put in cuttings of roses in the open ground or in frames all through the

winter months, say from November to February, and in favourable seasons may be wonderfully successful. But the risk of loss is great, and the only argument in favour of winter propagation is, that in peculiarly sheltered spots, where an early bloom is desired, winter pruning must be practised, and the prunings may be turned to account to make stock, provided only that nature will assist the enterprise. In the attempt to strike cuttings after the turn of the year, a cold frame and a bed of cocoanut-fibre and sand will be immensely serviceable. If the steady bottom heat of a propagating house can be secured, first lay the cuttings in a horizontal position, just covered with tan or fibre, in a warm, moist place for a week or so, to promote the formation of the "callus," and then insert them upright in sandy stuff in a temperature of about 50 deg., a few degrees more or less being of no consequence, provided only that the bed is neither burning hot nor freezing cold. Those who love roses will discover for themselves five hundred ways of multiplying them, but as all their ways will be modifications and amplifications of the modes now proposed, we will not occupy space in describing or analysing them.

S. H.

TROPEOLUM TRICOLORUM.

BY THOMAS TRUSSLER,

Head Gardener, High Leigh, Hoddesdon, Herts.



THE lovely little tuberous-rooted *Tropæolum tricolorum* is so valuable for conservatory decoration and so easily managed, and, moreover, takes up so little room, that I often wonder why it is not more extensively grown by amateur gardeners. Some of my amateur friends, who have only a little greenhouse, cultivate it very successfully; and when in bloom the plants are taken indoors, where they remain an ornament to the drawing-room window for a considerable period. Frequently it is not met with in such good condition as it otherwise would be, because it is put by when it dies down in the spring, and is quite forgotten until it is too late to re-pot it without injuring the young growth.

To cultivate the plant in question successfully, the tubers should be taken out of the old soil some time during July or the early part of August, and be re-potted in the same sized pot again and a fresh compost used. The roots are rather delicate, and a light, yet generous, compost should be employed; but it will be found that one prepared by well incorporating together equal parts of light, fibrous loam, turfy peat, and leaf-mould, and a moderate

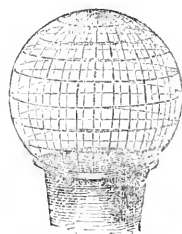


Fig. 1.

quantity of silver sand will suit them admirably. The pots must be clean and well drained, and the tubers buried about two inches below the surface. The size of the pot must be regulated by the number of the tubers put in each; but as a guide to those who are unacquainted with them, one should be put in five-inch, two in six-inch, three in eight-inch, and four in nine-inch pots, and the last mentioned is the largest size that should be employed. The soil must be kept dry until they start into growth, and then sufficient water applied to make the soil just moist, and no more; for very little water will be required until they have made considerable progress. After February, when the trellis is covered with foliage, more liberal supplies will be required, and an occasional dose of weak liquid manure will be of considerable service.

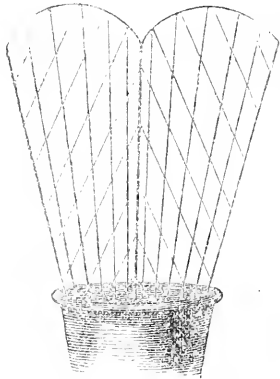


Fig. 2.

The trellis should be fixed in the pots when the tubers are newly potted, but if there are any reasons for not doing so, they must be fixed in their proper position before the young growth has attained a considerable length; otherwise there is a great danger of its becoming entangled, and probably it will be seriously injured.

The form of the trellis must be left to the taste of each cultivator, and it is of little consequence in which way the growth is trained, provided that it is nicely regulated, and not allowed to run together in an inextricable mass.

With these remarks are presented three different forms of trellis, which will explain themselves. A balloon (Fig. 1) is perhaps the most desirable; and assuredly, when covered with the cheerful green foliage, and dotted with the scarlet and yellow flowers, the effect is most satisfactory. Flat trellises, of which Figs. 2 and 3 are the type, are very well in their way, and are the most suitable for windows or other positions where there would not be room for a balloon. Small feathery sticks, like the tops of pea sticks, about eighteen inches in length, inserted round the outside of the pot, may be employed instead of wire trainers, and the slender growth twining about the sprays have a most pleasing and picturesque appearance.

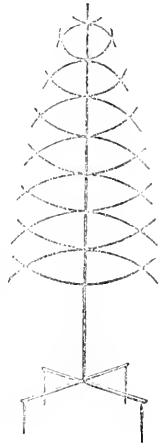


Fig. 3.

HUMEA ELEGANS.

BY A HEAD GARDENER.



Of all the graceful growing plants recommended for the embellishment of the flower garden during the summer months, none can surpass in elegance of outline, or are more thoroughly useful than the one under notice. It is in every way suitable for the centre of flower beds, vases, rustic baskets, and also for growing in pots or vases, for standing in prominent positions by the side of terrace and other walks. Also when at its best eminently suitable for conservatory decoration, and a few large well grown specimens intermixed with the flowering



HUMEA ELEGANS.

plants, with which the conservatory is usually decorated during the summer months, will produce a most unique effect.

The seed should be sown some time between the second week in July and the second week in August, in seed pans filled with a mixture of light loam, sand, and leaf-mould. Put the seed pans in a cold frame, or cover them with a piece of glass and put them on the side of a wall, or wherever they will be effectually screened from the sun.

A light sprinkling of water will be required occasionally, to maintain the soil in a moderately moist condition; but it must not be saturated with water, or it will become sour and the seed will perish. Tilt the glass a little, when a fair proportion of the young plants are visible; and in about a week afterwards, remove it altogether. To prevent over crowding, when the plants are strong enough, prick them off into pans or pots filled with light compost, and from thence, pot them off separately in three-inch, when about an inch in height. Keep them in a shady position, until they have recovered from the effects of the shift, and then remove to an open position, and stand the pots upon a bed of coal ashes. After the first week in October, considerable risk will be run, if they remain in the open, therefore, soon after the end of September, remove them to a frame where they can have an abundance of air in mild weather, and protection from frost, when required. The stock can be wintered in a greenhouse very successfully, but the plants must have the advantage of a light and airy position, and must not be crowded up with other plants. When they become drawn during the winter, the lower leaves usually fall off in the spring, and the plants present a somewhat unsightly appearance in consequence. One of the most essential points is to guard against their becoming pot-bound, or their suffering from drought; but they must not be over-potted or over-watered. If the pots, in which they are put from the seed pans, are moderately well filled with roots prior to the end of October, shift them into pots one size larger, otherwise do not re-pot them until the middle of January, and then put them into six-inch pots. As it will not be safe or convenient to plant them out before the end of May, re-pot them in April, and put the largest sized plants into ten-inch pots, and the others into eight-inch. A few of the smallest may be put into pots six inches in diameter, and they will be found useful for mixing with the flowering plants in large rustic baskets, or for the centre of small terra cotta, or stone vases.

For the characteristic sketch of this useful old plant, we have to thank Messrs. Hooper and Co., Central Avenue, Covent Garden, in whose catalogue we observe that seed is entered at sixpence; so that it may be truly said to be within the reach of all classes.

PROPAGATING GERANIUMS FROM LEAVES—MISTLETOE OR WISTARIA.—Possessing a plant of the ivy-leaved geranium "*L'Elegante*," I was desirous of increasing the stock. I accordingly struck a number of cuttings. Amongst these I placed in the cutting-pot, as an experiment, a single leaf, with no portion of the main stalk or a bud attached. This leaf has struck, and has now become a good-sized plant. But the foliage is totally different from that of the parent plant, which has leaves of a glossy green colour, with a narrow white margin. In the plant raised from the leaf there is no edging to the leaves, and they are entirely green, with the exception of a dark bronze blotch in the centre of the oldest leaves. The plant has not yet flowered, and I shall be curious to see whether the blossom will differ from that of the original plant. Another fact has recently come under my notice, which is new to me, and may possibly prove of interest to your readers. In the garden of P. P. Williams, Esq., of Stoke House, near Tenbury, I have lately seen a spray of mistletoe growing upon a *Weigelia*; as the branch upon which it is growing is a very small one, it seems difficult to imagine how the seed of the mistletoe can have found a resting place upon it.

(Rev.) SEYMOUR Y. WILLIAMS.

Whilton House, near Ludlow.

THE BEGINNER IN GRAPE-GROWING.—No. V.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.

PLANTING AND PRUNING.



UMMER planting has the advantage of enabling the cultivator to replant vineries which have been forced immediately the crop is gathered, and also to plant in houses erected in the early part of the season, and thus avoid any loss of time. Excepting for the reasons here stated, spring and autumn planting are preferable; because, in one case, the vines have the whole summer in which to complete their new growth, and in the other, they have an opportunity of becoming established in the border before the growing season commences. In planting vineries at this season of the year it is important to select strong, vigorous vines, that were either raised from eyes struck in March last, or else those which were struck the previous season, and cut back during last winter, and started in the spring in a genial growing temperature. They should be planted not later than the second week of July; and it would be better to wait until October, and plant well-ripened canes, than to plant vines in full growth after the period here mentioned. They should be well watered previous to planting, unless the soil is sufficiently moist; and to enable the roots to strike out more readily into the new soil, carefully loosen those near the outside, and press the soil very firm about them. Also, to afford them all the encouragement possible, water them with tepid water.

Spring planting is performed in much the same manner as advised for putting out the vines in summer, and therefore the instructions here given will apply with equal force to those planted in spring. It is, however, important to observe, that as the soil of which the border consists will necessarily be of a low temperature in the early spring months, the vines should not be grown in a high temperature, or receive the assistance of bottom heat, or the roots will probably be chilled when the cold soil comes in contact with them, and a large proportion perish. The safest course will be to select moderately-strong, but well-ripened canes, in eight-inch pots, and cut them down a short time before Christmas; then, early in February, put them in a temperature of about 50 deg., and when the young shoots are about three inches in length, put them in pots two sizes larger, and plant out in the permanent borders when the pots are well filled with roots, but before the vines have become pot-bound. The house, after the vines are planted, must be kept rather close, and the temperature not allowed to fall below 60 deg. It is most important to encourage the vines as much as possible, and therefore, if required, employ a little fire-heat to keep the temperature at the desired height. A moist atmosphere will also be conducive to an early and vigorous growth, and can be easily provided by sprinkling the walls, and paths, and heating apparatus occasionally with clear water.

Cold and greenhouse vineries, and also other vineries, the borders of which are entirely outside, should be planted in the autumn, and then there will be no danger of the vines suffering from a check of any kind. When planted outside, a sufficient length of the old cane can be left to extend into the house, so that the young growth will be entirely under cover. There is not much risk attached to planting at any of the above-mentioned periods, provided the vines receive careful attention; but the least risk is attached to planting during October and November, and for that reason planting at that period can be the most highly recommended to the notice of amateur cultivators. A distance of three or four feet apart will be suitable for ordinary vineries, and if it is intended to train the vines on the extension system, they can be removed to make way for the growth of the permanent vine.

Pruning the vine might now engage our attention; but, with the aid of the accompanying diagrams, there will not be much difficulty in understanding the following directions. Figs. 1 and 2 show the vine trained on the one rod and spar system, and



Fig. 1.

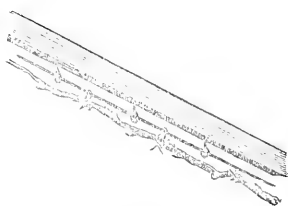


Fig. 2.

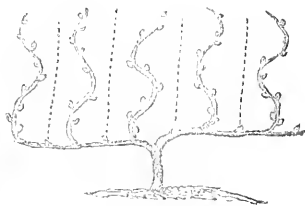


Fig. 3.

Fig. 3 illustrates the extension and the long-rod system. We will not pause to inquire into the advantages and disadvantages of the two systems, for the reasons stated in a former article, but will at once pass on to describe the manner in which vines trained on each system are pruned. Fig. 1 is supposed to represent a vine after it has completed its first season's growth, and has shed its leaves; although vines will, if they do well, attain a length of fifteen or twenty feet the first season, they should be trained under the rafters, as shown in Fig. 2, or in the centre of the lights. The wires should in both cases be fixed lengthwise of the house, at a distance of about twelve inches from the glass, to admit of the full development of the foliage without its touching the glass. No stopping whatever is required during the first summer season, until the top of the rafter is reached, and then the terminal point should be pinched out, and the laterals which push from the axils of the leaves allowed to grow unchecked, and it will be well to bear in mind that it is very undesirable to incur the risk of starting the main buds. Some time during the winter season, but not later than the middle of February, cut the canes back to just above the lowest bud, and carefully guard against the shoot which starts therefrom being injured in any way, and fix a stake by which it can be sup-

ported until it reaches the roof. Vines which are strong, and planted behind pipes, should be cut back to one bud above the level of pipes, and all the growth which starts from all the lower buds must be rubbed off before it exceeds two inches in length, otherwise it will rob the leading shoot of its proper share of nourishment. The following winter season, shorten the canes to about one-half, and at the third winter prune them to about three-fourths of their length. Those trained to roofs not exceeding twelve feet will only require shortening about half way the second winter. If they do well, the canes will be strong enough to admit of their being left their full length the winter following.

The extension system consists in having a sufficient number of rods from one vine to entirely fill the house; or two vines, if a span roof. The centre rod should be taken up the first season; those on each side, the second season, and so on, until the house is filled; if, however, the vine is not so vigorous as it should be, one rod only must be taken up each season. They must be shortened back in the same manner as those trained on the single-rod system, and, of course, trained perfectly straight.

Some growers prefer the long-rod system, which consists in keeping up a constant succession of young canes, and have a double set—the second set being represented by the dotted lines in Fig. 3. After a sufficient number of rods, as described above, are obtained, a young shoot is trained up between each, and in the winter following, the old rods, or those upon which the fruit was borne, are taken off first above the bottom spur, and the following season a young one is trained up to take its place. The rods, represented by the dotted lines, are left their full length and allowed to carry a crop of grapes the following summer; and in the winter following are in their turn removed, and the young shoots which spring from the base of those headed down, are dealt with in the same way the following season.

The management of the side branches, or fruiting spurs as they are usually called, must now engage our attention; and it is to be hoped the directions here given will be clearly understood. As a rule, the spurs should be from twelve to fifteen inches apart on each side of the cane; it will therefore be necessary to rub off in the spring every other shoot on each side. To prevent the possibility of a misunderstanding upon this point, let us for a moment suppose the base of the vine represented in Fig. 1 to be that part of the cane at the bottom of the rafter. On the left hand are six buds, and on the right, five; therefore, the second, fourth, and sixth buds should be removed from the former, and the second and fourth from the latter; stop the side branches at two joints above the bunch, and the laterals which push from the terminal buds of the latter at the first joint. At the winter pruning, cut the side branches back to within two buds of the base; and when the young growth is sufficiently advanced to enable the cultivator to determine which of the two shoots is the strongest, the weakest must be rubbed off. When the difference in the strength is trifling, the shoot nearest the main-rod must be left, for it is desirable to keep the spurs as short

as possible. In giving the above directions, it is supposed that fruit is produced at each shoot; but as the strongest do not always carry fruit, due regard must be paid in the removal of the young growth to secure a regular crop all over the house; but one shoot only must be left to each spur, and not more than one bunch of fruit to each. The training and pruning of outdoor vines must be deferred until their planting and general management is dealt with.

OUR ORNAMENTAL-LEAVED PLANTS FOR TABLE DECORATION.

BY J. W. SILVER,

Head Gardener, The Laurels, Taunton, Somerset.



PLANTS adapted for the embellishment of the dinner table have received such a large share of attention within the last few years, that I am induced to make a few remarks on some of the most useful, with the hope that they will be acceptable to readers of the *FLORAL WORLD*. A list of the most desirable kinds will also be given as we proceed, which on this occasion must be confined to plants remarkable for their beautiful foliage, for it would take up too much space to deal with both fine foliage and flowering plants in one number.

The principal conditions to be borne in mind in the cultivation of plants for the dinner table, are to have them as dwarf and compact as possible, to keep the foliage of the brightest hue possible, and also to grow them in as small pots as circumstances will admit. The size of the pots should range from three to six, or, at the outside, eight inches in diameter; but plants in five-inch pots will be of the greatest value, as they can be employed where the larger pots would be useless.

One of the most useful and easily cultivated classes of fine foliage plants are the best of the new *Coleus*, for when well grown they are so remarkably effective that for table decoration their value cannot well be exaggerated. They should in fact be grown extensively, because so little labour and skill is necessary to produce handsome specimens. The method pursued here with very successful results is to insert seven or eight cuttings in a five-inch pot, and place them in a little extra warmth, and shelter until well rooted. They are then placed on a shelf in the full sun, where they grow rapidly, and in a few weeks, with ordinary attention, become handsome specimens, with foliage of the richest colour. This mode of culture is preferable to any I have yet tried, for a few weeks only are required for the production of well-developed specimens. Attention must be given to watering, because if the soil is allowed to become very dry, they invariably lose their bottom leaves and become unsightly; plants from six to ten inches in height are the most effective. The tops of plants which have grown too tall may be taken off and inserted in cutting pots, as

advised above, and by this means a regular succession can be kept up. A temperature varying from 55° to 60° must be maintained during the winter months, but they grow freely in the greenhouse during the summer. The best varieties for the dinner table are, *Albert Victor*, *Queen Victoria*, *Baroness Rothschild*, *Princess Royal*, and *Duke of Edinburgh*.

IRESESINES next claim our attention, and the most useful is undoubtedly *I. Lindenii*, which is now universally acknowledged to be the best dark-leaved plant grown for bedding purposes. It is managed here in the same manner as the *Coleus*, with the single exception that it requires stopping once, and the side-shoots allowed to break, before being introduced to the table. *I. acuminata* and *I. Herbstii* may be used in the same way, but they are by no means so neat in growth or effective in appearance as the first named. The compost used here both for *Iresines* and *Coleus* consists of one-third each of loam, peat, and leaf-mould, well incorporated together. To this a liberal proportion of sand must be added.

DRACÆNAS.—All the best sorts are more or less useful, but the green kinds are not so effective as those with dark highly coloured foliage, which must, however, be grown on quickly, and used when from ten to twelve inches in height. To propagate a stock of young plants, it is a good plan to cut down an old plant, and then cut the stem up into one-inch lengths, and allow the wounds to dry before being inserted in the pots or pans. A large pan, filled with any light sandy compost; each piece will generally produce from two to three shoots, which may be taken off when large enough (say about two inches in length), and put singly in small pots. If unable to cut down an old plant, turn one out of the pot, and after removing the potsherds, take off the fleshy parts of the roots with a sharp knife and insert them in single pots, and place in a brisk bottom heat. In a few weeks they produce young shoots, and make much better plants than those raised from stem cuttings. The best three of the older dark-leaved kinds are—*Terminalis*, *Terminalis grandis*, and *Cooperii*; and the two best green kinds are *Veitchii* and *Gracilis*. *Indivisa* is also very good, and may be grown instead of *Veitchii* if that kind cannot be afforded.

ACALYPHA TRICOLOR is most charming for the table. It requires a stove temperature, and it is necessary to keep it as near the glass as possible, and also well exposed to the sun, to bring out its bright crimson and red variegation; young plants on single stems are the most desirable. The best compost is prepared by incorporating together two-thirds fibry peat, one-third good turfy loam, and a liberal proportion of silver sand to keep the soil open and porous.

Having disposed of the most useful kinds with dark leafage, those with golden variegation next claim attention, foremost among which stand the

CROTONS.—These are certainly unsurpassable, for the table, when well grown, and richly coloured. The cuttings should be struck early in the spring, before the old plants start into growth. They should be inserted singly in the smallest size pots, and placed in a brisk bottom

heat. The most suitable compost for filling the cutting pots is sifted peat and leaf-mould in equal proportions, and plenty of silver sand. Water carefully until the cuttings are well rooted. Shift into five-inch pots as soon as the pots are filled with roots, and place close to the glass, where they can have the fullest amount of light and sun. Keeping them near the glass is of immense importance, for without light the foliage becomes green and ineffective. Allow me here to state the compost in all subsequent shifts must be used much rougher than advised above, and one-third turfy loam added. There are now a large number of Crotons, all of which are useful; but for this purpose I shall recommend *Variiegatum*, *Angustifolium*, *Interruptum*, *Hillianum*, and *Veitchii*.

SANCHEZIA NOBLIS VARIIEGATA is exceedingly handsome, and where the convenience exists it should be grown in quantity. The cuttings can be struck at any time during the spring and summer months, and it is desirable to grow them on quickly to obtain good plants. Specimens with single stems are far preferable; the directions given for developing the colour of the *Coleus* apply to the *Sanchezia* with equal force. Unless grown in a light position and exposed to the sun, the leaves will become green and comparatively useless. Pot in a mixture of equal parts of leaf-mould, peat, and loam, with sufficient silver sand to make the whole gritty to the hand.

ANANASSA SALIVA VARIIEGATA.—The variegated pine, in its young state, is of all the plants above mentioned one of the most useful for the table. Under the influence of artificial light, the colouring is remarkably bright and attractive, which, added to its graceful habit, renders it eminently desirable. It requires keeping near the glass, as a free exposure to the light is necessary to bring out the rich leaf-tints for which it is remarkable. A compost of two parts silky loam and equal parts of well-decayed cow manure and sand, will grow it to perfection. Care must be taken to prevent the plants receiving a check of any kind, and thus guard against their fruiting prematurely, because they are of no use excepting for propagating purposes after they have fruited.

KEEPING LATE GRAPES.

BY WILLIAM TEMPLE,

Head Gardener, Balbirnie, Markinch, N.B.



THE first meeting of the Royal Horticultural Society, held at South Kensington in May and June, Mr. Temple, the able head-gardener at Balbirnie, exhibited specimens of Lady Downe's Seedling Grape in a most excellent state of preservation, the berries being plump and the flavour full and rich. The method adopted to preserve them is exceedingly simple, and worth the attention of amateurs who have to winter a large proportion of their bedding plants in the vinery.

Thick-skinned sorts only, such as Kempsey Alicante and Lady Downe's, can be kept so late in the season as the examples here referred to; but Black Hamburgh and other thin-skinned varieties may be kept much longer suspended in a dry room, with the ends of the stems inserted in bottles of water, than they can be preserved in houses filled with plants. Grapes grown in ground vinerias may also be kept for a considerable period in the same manner. In a communication received from Mr. Temple, the mode of keeping late grapes at Balbirnie is described as follows:—

“The Lady Downe's grapes referred to were ripe in August, cut in November (I think some earlier and some later, but these were among the earliest). The temperature would average from 40 to 50 deg., but sometimes down nearly to the freezing point. They were kept in the dark. The structure in which they were kept is a common fruit-room, where apples, pears, seed-potatoes, etc., were crammed. The water in the bottles was never changed entirely, but a little was added once or twice. A few pieces of charcoal were placed in many of the bottles, though some had none, but there was no difference in keeping, taste, etc. The water was partly rain and spring water from a tank used to catch all the waste water. The ends of the wood above the bunch, about half an inch long, were rubbed with Thompson's Styptic. The fruit-room was frequently fumigated with sulphur, a practice we perform to keep insects and mice from establishing their quarters. About 120 bunches were thus kept, and I am not aware that any of them decayed, except a few berries in April on some very close bunches. I attribute their keeping so sound to thorough ripening early in the season, firing hard, with top and front air on a month or six weeks after the fruit was apparently ‘finished.’ We have practised this system for five years past with the same results, and have no difficulty in keeping White and Black Muscats in good condition till March. We had some this season till the 4th of that month, which were cut early last August. If you should desire any grapes sent a month hence or later, probably I may be able to do so, as we have a quantity still in a small shed, which are finer than those sent. The latest date to which we have kept Lady Downe's in good condition was June 10th. We exhibited a bunch three years ago on that date. They were coloured in the July of the previous year.”

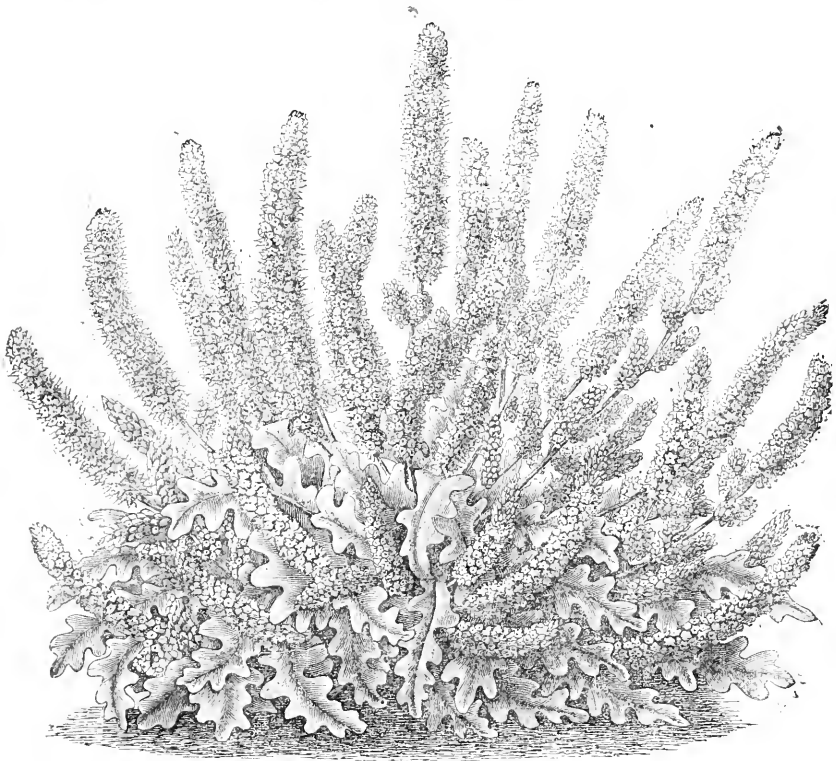
PROPAGATING ZONAL PELARGONIUMS.—*N.R.*—“The best and surest way” to propagate Zonal Pelargoniums is to strike the cuttings in the open border some time during July, August, and September. Select an open, sunny situation, and if the soil is at all heavy, add a little light, sandy soil, such as the refuse of the potting-bench or road-scrappings, before inserting the cuttings. Dibble the cuttings in the border at a distance of about two inches apart, and after giving them one moderately liberal watering to settle the soil about them, they should not be watered artificially until they are taken up and put in pots, unless the weather happens to be very dry, and then a moderate watering once a week will be of material assistance. They should be put in pots immediately they are struck, for when allowed to remain until firmly established in the border they suffer a severe check when taken up. Liberal waterings and a confined atmosphere are the chief causes of the cuttings of these plants decaying at the base.

NEW PLANTS.



HYACINTHUS CAUDICANS (*Ref. Bot.*, 174).—A splendid greenhouse bulb with flower-scape four feet long, bearing fifteen to twenty pure white flowers. It is a native of South Africa, and one of the finest amongst the many fine plants introduced from that country.

STATICE SPICATA.—This beautiful annual species was described at page 190, and now, thanks to the kindness of Messrs. Hooper and Co., of the Central Avenue, Covent Garden Market, W.C., we are enabled to present our readers



STATICE SPICATA.

with a characteristic figure of a complete plant. It appears that this species is not strictly new, having been introduced into this country as far back as 1818, but, like many other good things, has from some cause or other gone out of cultivation, and we hail its re-introduction with a considerable amount of pleasure.

HYACINTHUS PRINCEPS (*Ref. Bot.*, 175).—A handsome greenhouse bulb with nodding greenish-white flowers. This is a native of the same South African region as the foregoing.

CALLIPSYPHE AURANTIACA (*Ref. Bot.* 167).—A handsome warm greenhouse amaryllid with golden yellow flowers.

CALLIPSYPHE MIRABILIS (*Ref. Bot.* 168).—A curious amaryllid bearing greenish-yellow flowers.

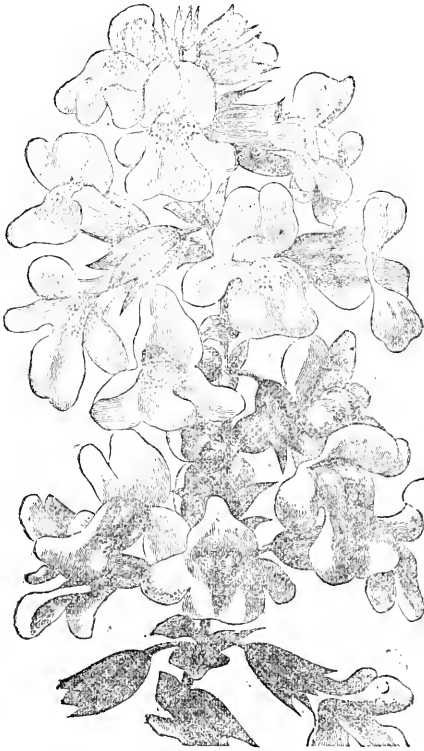
ACER PALMATUM CRISPUM (*Illustr. Hort.*, 43).—A beautiful maple, with elegant narrow-lobed leaves and red leaf stalks.

QUERCUS STRIATA (*Illustr. Hort.*, 44).—A beautiful oak, the leaves of which are marked with alternate bars of green and yellow.

ODONTOGLOSSUM NEVADENSE (*Illustr. Hort.*, 45).—A fine species with large flowers of a fine brown colour edged with yellow; the lip white.

ACER PALMATUM ORNATUM (*Illustr. Hort.*, 46).—A beautiful maple, with deeply-divided blood-red leaves.

MIMULUS TILINGI.—A very pretty and distinct *Mimulus*, which inhabits the Sierra Nevada, California, where it was discovered by Dr. Tilling, who introduced it to this country. It differs from the *Mimulus* already in cultivation in this country, and is most easily grown; and large flowering specimens can be produced in a surprisingly short space of time. It is of erect growth, and attains a height of nearly three feet, with numerous branching stems, terminating with spikes of clear yellow flowers of the shape shown in the accompanying illustration, for which we are indebted to Messrs. Hooper and Co.



MIMULUS TILINGI (Flowering Branch).

NEW CALADIUMS (*Illustr. Hort.*, 37).—*Henry Doucet* has a grand fiery leaf almost wholly overspread with sanguineous carmine, the extreme margin only being green. *Etoile d'argent* is most elegantly marked with white veins, shading off to grey bands, beyond which the surface is delicately powdered with white on a full deep green ground. *Jules Putzeys* is extremely elegant and peculiarly showy. The midrib and principal veins are of a brilliant crimson colour; the interspaces powdered with white and blotched with crimson on a ground of deep green.

TODEA AFRICANA (*Illustr. Hort.*, 38).—A tolerably good figure of a well-known fern.

ODONTOGLOSSUM ODORATUM, v. LATIMACULATUM (*Illustr. Hort.*, 39).—A pleasing variety, prettily spotted.

ARISTOLOCHIA CLYPEATA (*Illustr. Hort.*, 40).—A magnificent species with immense flowers, heavily spotted chocolate-brown on a ground of pale brownish buff.

CAMELLIA MADAME DE CANNART D'HAMULE (*Illustr. Hort.*, 41).—The flowers are flesh-coloured, with a tinge of pink at the base of every petal. If judged by the figure this is a valueless variety.

MARDEVALIA LINDENI (*Illustr. Hort.*, 42).—A good figure of this interesting and comparatively unknown orchid.

THE GARDEN GUIDE FOR JULY.

FLOWER GARDEN.—This month is a capital time for propagating many herbaceous plants. Young side-shoots of Antirrhinums, Pentstemons, and Phloxes will root freely under a hand-glass, with the needful attention of watering and shading. Polyanthus that are wished to be increased may be taken up and divided early in the month. Shorten the tap roots, and replant at a distance of about a foot apart each way. These plants do best in loam, leaf-mould, and cow-dung. A shady position is the most suitable, and the plants should have two or three good waterings after they are planted. Seed must be sown as soon as possible. The Rose-beds must be looked over frequently, and all suckers removed. The old flowering shoots should also be cut back, and the trees have a few good doses of liquid manure to aid in the production of a good autumn bloom. Budding must be proceeded with; if the stocks do not run freely, a thorough watering will generally start them. The evening is the best time for budding. Towards the end of the month the wood will be in proper order for making cuttings of strong half-ripened shoots cut into pieces of three joints each. The bottom leaf should be removed, and the cutting inserted firmly in a bed of light, sandy stuff, over a gentle hot-bed, where it will root freely. Cuttings will also root well in a frame placed upon an elevated bed of soil, without bottom-heat, but not so quickly as with that assistance. The frame must be kept close, and shaded until the cuttings are nicely callused. Evergreens may now be pruned, and their growth regulated. The annuals that are past their best should be cleared away, to prevent the garden having an untidy appearance. Where it is intended to save seed from any of the herbaceous plants, it is a good plan to cut the old flower-spikes directly the lower seed-pods begin to ripen, and stick them in pots filled with wet sand, and place indoors over a large sheet of paper, to catch the seed. When left on the plants until the whole of the seed is ripe, three-parts of it will be scattered to the winds and lost. Where it is intended to increase the stock of Pinks, Picotees, and Carnations, propagation must be commenced in the early part of the month, either by pipings or layers.

KITCHEN GARDEN.—Anything that is in need of water should have sufficient to soak the ground for a considerable depth. Surface watering does more harm than good; it attracts the roots to the surface, where they are more exposed to atmospheric influences than before. Hundreds of crops were destroyed last year through improper waterings. Unless labour is abundant, and the time can be spared to follow it up, leave watering alone. Tomatoes ought to be stopped just above the fruit, and be well pinched in, if plenty of fine fruit is expected. Continue to plant out all the winter stuff as fast as possible; the evening is the best time. Keep the Celery well watered, and plant out the main crop. Let every pod be removed from both Runners and Dwarf Beans directly they are large enough for gathering. Sow the main crop of Turnips, and successional supplies of

Lettuce, Radish, Spinach, Small Salad, a few rows of early Peas, and a bed of Stadtholder Cauliflowers. The principal crop of Cauliflowers and French Beans in bearing will receive considerable help from a thick coat of short litter or other mulching material about the roots.

CONSERVATORY.—Hard-wooded plants that flowered late, and were kept indoors to finish the growth, should go out of doors now. Particular care must be paid to plants standing out of doors. If allowed to suffer from drought at this season, next year's bloom will be impaired. Quite two-thirds of the cases of the Camellias dropping their buds in the early part of the winter arises from the plants becoming dust dry at the roots "*now and then*," between this time and September, and the other third arises from the pots being ineffectually drained, and the soil getting sour in consequence. Frequently, specimen-plants suffer through the pots being placed on the ground without any protection underneath from worms. This should be looked to, and the pots set on three small pots, or a good thickness of coal-ashes placed underneath. Roses in pots should be plunged, to prevent the soil drying up quickly, and rendering a lot of watering necessary. All soft-wooded stuff growing freely, such as Petunias, Fuchsias, Zonal Pelargoniums, Browallias, etc., should be encouraged with liquid manure until they come into flower. Pelargoniums that have ripened their young wood nicely must be cut back to two or three eyes at once, and kept rather dry until the buds push.

FORCING.—Keep Muscats going with a little fire-heat in unfavourable weather. In the late houses, where the grapes are swelling, the laterals must be kept stopped; but where they are stoning, a considerable extension of laterals can be allowed. The earlier houses, from which the crop has been gathered, must be thrown open as wide as possible, and the laterals allowed to grow freely for a short time, to help to swell up the buds. The foliage of Peaches and Nectarines must be washed with the syringe frequently after the crop is gathered, and all the air possible admitted. Cucumbers and Melons must be kept well thinned out; the former should be stopped regularly at one joint beyond the fruit. The fruit-bearing laterals of the Melons must be allowed to grow, and the others nipped off as fast as they make their appearance. Keep both well supplied with water, and give air early in the morning, to afford the foliage a chance of becoming dry before the sun acts powerfully upon it.

FRUIT GARDEN.—Thin, stop, and train the young growth of wall and other fruit trees. Thin out the fruit before it gets too large, and robs that intended to remain. Proceed with layering Strawberry-runners, both for forcing and making new beds. Plants layered in pots, and planted out when well rooted in thoroughly trenched ground, will bear well next summer.

PITS AND FRAMES.—Sow Herbaceous Calceolarias and Cyclamens for principal batch, and Cinerarias and Primulas for late bloom. Shift on, as it becomes necessary, earlier batches, and not let them become pot-bound at this stage.

HORTICULTURAL NOTES.



JUNE has been characterized this year by the prevalence of cold easterly winds, and an almost total absence of sun, and the fruit crops throughout the country have suffered severely, and their appearance has undergone a wonderful change during the month. In many parts of the country, especially in some districts in the neighbourhood of the metropolis, the currant-bushes and other fruit-trees have almost been killed by the attacks of the aphis, and in some orchards the apple-trees are well-nigh denuded of fruit, and the prospect at present is anything but cheering. The heavy rains with which we have been favoured during the month have in some cases assisted in clearing currant-bushes of the aphis; but the best remedy, because the most simple and effectual, has been dusting the trees with new-slaked lime when the foliage was moist with dew. Dusting the trees with lime quite spoils the fruit; but it is hardly necessary to say that when the trees are so badly infested as they have been in many parts of the country this year, a great risk exists of their being killed outright, unless remedial measures are resorted to before the insect pests have established themselves firmly.

The temperature has also been extremely low, and the tender bedding-plants, such as *Alternantheras* and *Coleus*, have hardly been able to stand their ground, and the possibility of their making new growth has been out of the question, and the summer will in all probability be far advanced before the flower garden—unless the situation is exceptionally favourable—can present a very brilliant appearance.

The exhibitions of horticultural and floricultural produce have been unusually numerous, both in the metropolis and the provinces, but, excepting the exhibition held at Manchester, which was attended by upwards of 50,000 visitors, and the exhibition held at Nottingham, under the auspices of the Royal Horticultural Society, none of them were above mediocrity. The most interesting features of the metropolitan exhibitions have been the new plants and new florists' flowers, and the most important of the latter were the new large-flowering show pelargoniums exhibited by Mr. C. Turner, Slough, on behalf of E. B. Foster, Esq., Clewer Manor, which will probably be sent out next spring; and Dr. Denny's new zonal pelargoniums, now in course of distribution by Mr. W. Paul, Waltham Cross. The latter are, in their respective colours, a wonderful advance on all existing varieties, and will, when they become well known, find their way into every collection of geraniums in the country. To overpraise them is almost impossible, and those who are interested in this useful class of plants, who did not see them when exhibited during the season, will do well, if they have the opportunity, to pay a visit to the Waltham Nurseries some time during the summer. The following brief description will convey a fair idea of the colour of the flowers, and also of the general character of the plants; and, to show that their merits are not over-

stated, it is worthy of mention that they have all received first-class certificates at the great London shows. The names and colours are as follows :—

Diana, rich deep velvety crimson, flowers of good form and substance; trusses of medium size, but freely produced; habit dwarf, and said to be adapted for bedding culture. *Haidée*, magenta shaded with blue; very pleasing and attractive. *Iago*, bright orange-scarlet; flowers large, and of grand form, and produced in bold, conspicuous trusses; neat, dark green zonal foliage; habit compact and robust; fine for conservatory decoration and specimen culture. *Ianthe*, bluish crimson flowers of large size, good shape and substance; habit dwarf and branching, with handsome dark green zonal foliage. *Sir Charles Napier*, brilliant dark scarlet; flowers very large, of great substance and fine form; petals considerably overlapping; first-class for exhibition specimens. *Sir John Moore*, dark scarlet; flowers large, of fine form and great substance; habit good; flower-stalks erect and wiry. *Wellington*, dark velvety maroon-crimson, petals broad and finely formed, trusses of immense size and handsome foliage; a grand hybrid nosegay for conservatory decoration.

Mr. Foster's new show pelargoniums are all so rich in colour, large in size, and so perfect in form, that it appears almost impossible to effect any further improvement. The best and most distinct varieties exhibited during the present season are *Blue Bell*, *Brigand*, *Cæsar*, *Achievement*, *Conquest*, *Chieftain*, *Great Mogul*, *Plato*, *Prelate*, *Pompey*, *Rubens*, *Finale*, and *Lord Byron*.

Before quitting the Geraniums, mention must be made of a new pink-flowered bedder, *Master Christine*, now being distributed by Mr. Cannell, of Woolwich. At the last Meeting of the Royal Horticultural Society, Mr. Cannell exhibited several specimens which afforded ample evidence of its extreme floriferous character, and the possibility of its quite surpassing *Christine* for bedding purposes. In habit, it is very dwarf and compact; the wood being remarkably short jointed, and the flowers are produced in large trusses on stout flower-stalks, which stand well above the foliage. The flowers are a few shades deeper in colour than *Christine*, and wonderfully effective. It received the highest award from the Royal Horticultural Society it could possibly have, last autumn; and the plants were apparently exhibited to show that it preserves its high character.

Amongst the large number of new plants exhibited at the first June Meeting at Kensington, were a fine perpetual flowering Clove, *Miss Joliffe*, a very free flowering variety of great value for bouquets, with flesh-coloured flowers, from Mr. Master's gardener, East Macclesfield. *Linum campanulatum*, an improved form of the well-known *Linum flavum*, and therefore most valuable, from Mr. Atkins, Painswick; and double flowering *Petunia Pantaloon*, one of the many fine varieties with fringed flowers raised at Chiswick. *Lathyrus Sibthorpi*, a perennial species with medium-sized flowers of a purplish rose, introduced from Greece by Mr. Thompson, of Ipswich; and a new white decorative pink *Lady Blanch*, staged by Mr. C. Turner, Slough, who also sent to the last meeting a grand show pink *Godfrey*, a superb flower of

the finest form, very full, and heavily laced with rose-purple. The last Meeting of the Royal Horticultural Society was devoted chiefly to Fuchsias and Palms. The trade growers of Fuchsias were represented by Messrs. Wright, of Lee, who were the only exhibitors in the class set apart for nurserymen; but the amateur growers mustered in strong force, and the prizes in the class for twelve specimens in eight-inch pots, and also for six in thirteen-inch pots, were sharply contested; and the first prize in both classes was carried off by Mr. James, gardener to W. F. Watson, Esq., Isleworth, whose specimens, although not of large size, were marvels of cultural skill. The varieties staged by Mr. James, in the collection of twelve, were Gipsy Girl, Taglioni, Starlight, Lady Heytesbury, Catherine Parr, Avalanche, Killiecrankie, Daniel Lambert, Weeping Beauty, and Generous. Mr. James, it will be remembered, recently contributed a paper on Fuchsia Growing to the FLORAL WORLD, and no one who saw the plants exhibited by him on the occasion referred to, could doubt his fitness to offer advice on the cultivation of this graceful growing plant. The competition in the classes for Palms was also very good, and equal first prizes were awarded to Mr. B. G. Williams, Upper Holloway, and Mr. Linden, of Brussels, who has probably the finest collection of Palms in existence.

The Crystal Palace Rose Show, which was held on the 24th ult., was rather below the average of former years, although a large number of very fine blooms were staged. The principal trade exhibitors were Messrs. Paul, Keynes, Turner, and Mitchell; and a new exhibitor, Mr. Baker, of Heavitree, Devon, carried off the lion's share of first prizes in the division set apart for amateurs. Amongst the new roses occurred a new English variety, *Robert Marnock*, a grand dark flower, similar in character to Duke of Edinburgh, but more darker in colour, raised and exhibited by Messrs. Paul and Son, Cheshunt.

TO CORRESPONDENTS.

MANURING ROSES.—*A Tyro.*—Spread the sweepings of the pigeon-house over the surface of the border, and the rains will wash its fertilizing properties down to the roots. It can be used in this manner quite fresh. The frond of the fern received is not sufficiently developed to admit of our giving you its name.

J. O'Donnell.—The flowers have nothing to do with the maturation of the tubers, and the recommendation for their removal is given simply because the energies of the plants must be diverted from their proper course if they have to mature a crop of seed as well as the tubers. Several excellent papers on strawberry culture, by some of the best practicals living, have appeared in the FLORAL WORLD within the last few years. Try Messrs. Barr and Sugden, 12, King Street, Covent Garden, for the Tree Onions, as you have experienced a difficulty in obtaining them elsewhere.

Christine Hippiley, Stone Easton.—The seedling rose may not flower for another year or two. The plant must not be over-fed. We suppose that it is not possible that you have taken up a sucker from the stock upon which the tree mentioned is worked. The trees are in a starving state, and the evils arising from defective root-action have been increased by the uncongenial weather we have had. There is no remedy for the grubs excepting hand-picking. The soil in which the Lily of the Valley is grown has become exhausted, and the bed should be top-dressed in the autumn with leaf-mould or well decayed manure.

EGG PLANTS.—*A. E., Hornsey.*—It is almost too late to say much about growing this plant this year. The seeds should be sown in March, and brought along in a nice heat until they begin to bloom, when you can take them into the greenhouse for the remaining part of the season. Sow the seed in light soil, pot off singly, or two in a pot, as soon as they are large enough, and use a soil composed of two parts loam and one rotten manure. Give plenty of water after the pots are filled with roots, and keep them well syringed to keep down the red-spider. The best course will be to buy a few plants in small pots, and shift them into large pots at once.

GLIANTHUS DAMPIERI.—*R. B.*—This should be kept growing freely, for a check is hurtful to it, and likely to produce red-spider. It will be a heavy job to turn them out of pots larger than those they are in already (six to the cast). You may overcome that difficulty by sinking the pots into the holes which the plants are to occupy, and then breaking the pots away. They will remain very well over winter in the pots as they are; and to keep them going give plenty of water, an ounce a week a spoonful of Peruvian guano to each, spread over the surface of the soil in the pot, and washed in with ordinary watering.

MIXED HEPATICAS.—*A Perplexed Amateur.*—The best way to manage the hepaticas, so as to get them sorted into colours, depends on how they have been treated. From the time they ceased flowering, they ought to be in very fine sandy soil, enriched with plenty of fine mulch from an old dung-bed, to make their growth for next season. Then left alone till they begin to show bloom-buds early the next year, when all the old leaves may be cut off, and the plants potted into shallow seed-pans to bloom in the greenhouse; such as are wanted for ribbon-work and systematic planting to be allowed to show their colour, and to be carefully moved immediately to the places they are to decorate. This plan ensures exactitude as to colours, and, if properly performed, in no way interferes with the blooming or after-growth of the plants. When crocuses get mixed, they may be served in the same way, for they move with as complete balls as chrysanthemums.

SHOWY GREENHOUSE PLANTS.—*A Lady Amateur.*—The best plants to make your "greenhouse gay during the next few months" are scarlet Salvias, double Petunias, Senecios, Crassulas, Abromias, Gesneras, Statice Holfordi and profusa, Brugmanias, Erica pulchella, Zonal Geraniums, Asters, Balsams, Browallias, Clintonia pulchella, and any showy annuals that were sown in June. Later in the season, pompone Chrysanthemums will come in, and make the stages very gay.

DRYING HEATH.—*A Young Botanist.*—First of all obtain some new blotting-paper, and a couple of deal boards, eighteen inches square. Lay out the specimens as flat as possible, and cut away side branches that are in the way. Place between blotting-paper with a board above and below, and put on a moderate weight. At the end of twelve hours, shift the specimens into other sheets of blotting-paper, made dry and warm by holding them before the fire, and continue to change in the same way till the specimens are dry. Plants dried *quickly* between thick folds of warm blotting-paper, changed every few hours, keep their colour most perfectly; but the slower the process, the greater is the probability that the colour will be lost. Blue flowers are the most likely to deteriorate: they usually change to a dirty white. On the contrary, yellows hold in all their original brightness.

VINCA MAJOR ELEGANTISSIMA.—*A. B.*—This is one of the most beautiful of the variegated periwinkles, and for a fancy edging very chaste and striking. It may take the place of Golden-leaved geraniums in many cases, but to our eye it is very distinct in its effect, and better adapted for large beds. It is unquestionably the best hardy plant, with variegated foliage, for shady positions, in existence.

SAWDUST AS MANURE.—*R. B.*—Sawdust from some kinds of wood requires a couple of years to rot; other kinds decay more quickly. It is of very little value as a manure, but a good material to soak up house-sewage or the drainage from stables and cowsheds. The appearance of mycelium among decaying wood appears to be local; in some districts such a thing is never seen, and wood rots into a peaty sort of mould of great value to the gardener. In others, the smallest chip has a network of white threads after a few weeks' exposure to damp, and any living roots that may be near are pretty sure to suffer. Our advice is not to use sawdust among fruit-trees at all.



IRIS RETICULATA.

THE CULTIVATION OF IRIS.

(With Coloured Plate of Iris reticulata.)

IN the revival of a taste for hardy herbaceous plants which it has been the pleasure and privilege of the present generation to witness, the Iris has obtained a considerable share of attention, and many good collections have been formed in gardens which would have been closed against them altogether a few years since. We have, we trust, done our full part in promoting this revival, and the Iris has not been forgotten in our selections and disquisitions when herbaceous plants have been the subjects of review. The subjoined figure of *Iris reticulata* has been prepared in order to "popularize" a most beautiful plant, and also to afford an excuse for recurring to a most attractive theme. Therefore, in submitting the picture we crave attention for a few remarks intended to indicate to the amateur the several characteristics of the Iris family as garden plants, and the measures that should be resorted to for their proper cultivation. In order to convey the largest possible amount of useful information in the fewest possible words, we shall abstain from eulogy, and dismiss all general considerations in one brief paragraph. All the garden species and varieties of Iris are hardy, or nearly so, and may therefore be grown in the open ground or in cool plant-houses, and common pits and frames. They are all beautiful, but as compared with the many fine herbaceous plants now at our command, are certainly not all in an equal degree desirable for ornamental purposes, as we shall indicate as we proceed. The choicer kinds that flower early in the year belong properly to the alpine-house, or "amateur's sanctum," such as was described at page 4 of last year's volume of the FLORAL WORLD. In all cases the flowers are short-lived, but they last long enough in a garden where a considerable number of various kinds of ornamental plants are grown, and where consequently a continuous succession of flowers is insured either in the open ground or under glass. A few of the more robust-habited Irises require the least possible amount of attention from the cultivator, for indeed if proper sites be chosen for them they will take care of themselves. But the most delicate-habited, which happen, also, generally speaking, to be the most beautiful, require careful and methodical treatment; and if planted and left to the care of chance, will likely enough chance to disappear. We shall prescribe the treatment for every one that we recommend, trusting solely to our own experiences for the directions offered to the amateur who takes an interest in these interesting plants.

The genus *Iris* may, for cultural purposes, be divided into two great sections, which we shall term the *Rhizomatous* and the *Tuberous*. In the first group we find those that extend themselves by fleshy rhizomas near the surface; in the second, those that form distinct tubers at some depth below the surface, and that in habit very closely resemble plants that have true bulbs. Respecting these two

groups, it may be remarked that the rhizomatous are, as a rule, the best fitted for a rough life, while the tuberous kinds require more attention, though none of these latter are to be regarded as presenting serious difficulties to the cultivator. When grown in the open ground, all the species and varieties of Iris should be lifted and replanted every three or four years, in fresh and suitable soil of course, and at a depth consistent with their size and habit. The amateur will do well to keep in mind a simple rule respecting the two groups, for it has real practical value. The roots of the rhizomatous kinds tend *upwards in growth*, so that though in the first instance they may be planted a foot or so in depth, yet in two or three years they will rise above the surface; hence these require periodical replanting, in order to place the roots at a proper depth. The tuberous-rooted kinds tend *downwards in growth*, and therefore when these are taken up they should be replanted less deep than they were found; for if allowed to penetrate deeper and deeper of their own free will, they will in time have their roots so far removed from air and sunshine that they will perish outright.

FIBROUS-ROOTED OR RHIZOMATOUS IRIS.—*Iris Germanica* is the best type of this group, and takes rank as a florist's flower. We feel bound to deliver an opinion against it as such, and we would go so far as to say that, although a few clumps are admissible almost anywhere, and are especially charming in a little cottage garden, its proper place is in the front of the shrubbery and other parts of the grounds that are not richly dressed. There are many beautiful and fantastic varieties, numbering fully a hundred in all, but none surpassing in effectiveness the common "blue flag," as it is called. This plant requires a rich deep soil and a sunny situation to attain full development, and those who grow the named varieties should of course appropriate to them a good open border in a retired part of the garden, as far removed from the principal display of flowers as possible. They will, however, do pretty well under the shade of trees, and have no objection to a sheltered nook in the immediate vicinity of water. The following twenty-four varieties of German Iris comprise the most distinct and showy, and constitute a good collection for a beginner:—*Arquinto, aurora, atrovioleacea, Buriensis, chereau, Duchesse de Nemours, Duchess of Sutherland, Edina, elegantissima, Elfrida, Enchantress, Harlequin, Incomparable, Jacquesiana, Lord Grey, marginata, mirabilis, nigra, optima, Queen of Gipsies, Queen of May, Romeo, Sampson, Sparta.*

I. sambucina differs from the last in its more vigorous growth and the nearly equal size of the segments of its dull purple flowers. A good shrubbery plant.

I. variegata is closely related to *I. Germanica*; the flowers are yellow, netted with brown lines.

I. lutescens is a neat dwarf plant, which produces but one flower on each stem. The usual colour of the flower is pale yellow netted with violet, but occasional variations occur. This is scarcely hardy enough for cold damp soils, but is quite hardy on dry soils in sunny sheltered situations.

I. pallida is closely related to the German Iris, but differs in the

flowers being stalkless and the tube shorter. It is of vigorous habit, and a large clump covered with soft blue or bluish-white flowers has a handsome appearance. A good shrubby plant.

I. cristata.—A pretty dwarf plant, and scarcely hardy enough for cold soils, but quite hardy in a sheltered and dry situation. The flowers are blue variegated with yellow.

I. fœtidissima.—This is the "Gladwin" of the English woods, a capital shrubby plant, thriving best in deep rich soil in a shady situation. The flowers are usually of a purple colour, with metallic shades, but they vary considerably even on the same plant. The variegated-leaved variety is an extremely handsome plant for pot culture in the alpine-house.

I. graminea is a neat grasslike plant, with flowers that present shades of white, purple, and yellow. A good rockery and woodland plant, but not good enough for a first-rate border.

I. pumila is the so-called "Crimean Iris;" a small, neat, fast-spreading, thrifty, and sportive plant, of which there are many distinct varieties. This is good enough for the best herbaceous border, and should have a dry sunny situation. A series of large clumps of distinct colours would contribute in a most pleasing manner to the enrichment of the border in the month of April, and the more distinctive varieties might be employed for edging beds of lilies and other large groups of herbaceous plants. The following ten varieties are all desirable, and constitute an extremely pretty collection:—*Pumila vera*, *atrocœrulea*, *alba*, *bicolor*, *cœrulea*, *gracilis*, *intermedia*, *lutea*, *pallida*, *versicolor*.

I. ruthenica.—Small plant with grasslike leaves, the flowers are borne one on each stem, the colour deep purplish-blue. A charming plant for rockwork, and for pot culture in the alpine-house. It requires a light sandy soil and the most perfect drainage.

I. sibirica is somewhat robust in growth, and when out of flower bears some resemblance to the day-lily, owing to the narrowness of its leaves. The flowers are blue, overlaid with lines of deep indigo. A good shrubby plant.

I. susiana.—This iris grows two feet high, and produces in April flowers of great size, of a fine blue colour, richly netted with dark brown lines. It is a fine garden plant, requiring a warm well-drained soil and sheltered position. It is also worthy of pot culture, and when in flower a noble adornment for the conservatory.

I. tenax.—A dwarf tough plant, producing very large flowers of a deep purple colour, blotched with white and yellow. Suitable for the rockery.

I. iberica.—A very dwarf, exceedingly neat plant, with glaucous leaves and gigantic flowers, the upper half of which is snow-white, the lower half most curiously veined with black and brown upon a groundwork of dull yellow. This rare and magnificent iris was admirably presented by Mr. Ware, of Hale Farm Nurseries, Tottenham, at a meeting of the Royal Horticultural Society in April last year. A remarkable fine rockery and pot plant, requiring a rich light sandy soil and the most perfect drainage.

I. nudicaulis.—A dwarf, neat, fast-spreading plant, with broadish

leaves and an abundance of showy flowers of a fine deep blue colour richly netted with purple and yellow. A first-rate border plant, preferable to *I. Germanica* on account of its smaller size, neat habit, and abundant flowering.

I. stylosa.—A neat-growing narrow-leaved plant, producing exquisitely beautiful pale blue flowers, which are delicately scented. A first-rate iris for a warm sheltered border, but worthy of pot culture, as it flowers early and is somewhat tender in constitution.

I. Kämpferi.—This is a fibrous-rooted plant in the way of *I. graminea*, but more handsome, presenting several distinct and fine varieties, yet comparatively useless in an English garden. It is so far tender that a severe winter destroys it in the open ground, and so far fastidious that it is a very bad pot plant. The enthusiast in iris culture may hope to succeed by planting it in a warm corner near a greenhouse furnace, or some similarly favourable spot, and in Devon and Cornwall it may prove to be quite hardy. The following are the best among many varieties:—*Alex. von Humboldt*, *Von Siebold*, *Rutherford Alcock*, *Souvenir de Vriese*, *Ernst Moritz Arndt*, *Madame Helene von Siebold*, *Ida*.

TUBEROUS-ROOTED IRIS.—*I. reticulata*, an exceedingly neat and somewhat rigid plant of dwarf, slender habit, with narrow leaves and smallish flowers of the most exquisite beauty, the prevailing colours brilliant purplish-violet, richly netted with bands of deep gold-yellow and orange. Dr. Hooker says of it, "Though far from the largest or most gorgeous, this is really one of the most beautiful species of iris in cultivation; nothing can exceed the deep rich violet of its perianth lobes and stigmata, or the delicious fragrance of violet it exhales; whilst the leaves are of a less coarse appearance and texture than is usual in the genus." We know nothing of this as a border plant, for in our cold damp soil it would simply perish if planted out; but it has long been one of the most valued gems for the alpine-house, on account of its wondrously elegant and sweet-scented flowers in early spring. It will grow freely in sandy peat or sandy loam, and would probably thrive in sandy soil in a sheltered part of a dry rockery.

I. tuberosa.—This is the "snake's-head" iris, a curiosity and a beautiful dwarf-growing plant. The flowers are blue and green, far from showy, but quaint and rich in character. It thrives in a warm sandy loam or peat in a sheltered spot, and is well worth pot culture. On our damp cold soil it is quite hardy if planted on a prepared station, so as to be well drained, and with a good mixture of loam, leaf-mould, and sand to root in, the clumps consisting of about a dozen roots each.

I. xiphium, *I. xiphoides*.—The first of these is the "Spanish," the second the "English" iris. They are so closely related that there can be no impropriety in bracketing them together. They are peculiar plants, presenting curious swollen flower-buds long in advance of flowers, and when full out making a most interesting and beautiful display. The Spanish flowers about ten days in advance of the English, and are scarcely so gay; but in respect of beauty the two classes do not greatly differ. There are no named varieties,

but there might be hundreds, for in a bed of seedlings there will not be found two alike, however large and full the bed may be. It is generally understood that these irises require a well-prepared sandy soil, but we find them thrive amazingly in our heavy loam if they are but lifted every three years, to bring their roots nearer the surface, and provide them with fresh soil. The best way to cultivate these is to plant a considerable number in an open sunny spot—say on a sloping bank in front of a greenhouse—and leave them undisturbed for three years; then take them up in autumn, divide the roots, deeply dig and manure the soil, and plant again. There will be enough for two or three plantations when the roots are divided, for they increase by the roots at a steady pace; but the most entertaining way to multiply them is by means of seed sown as soon as ripe.

S. H.

GARDENING WITHOUT A GARDEN.

BY W. D. PRIOR, ESQ.



AT first sight, this title might appear to involve a paradox. Nevertheless, it is strictly true, that every person may enjoy the luxury of a garden without a yard of ground. He must, however, have at his command a place for standing pots, such as a window sill, a balcony or portico, or better still, an area or a flat. Possessing these, his fancy may run riot in a constant succession of greenery and blossom, even in the heart of London, provided there is a modicum of sunshine or a breath of air. The gratification of this addition to urban pleasures, will be duly appreciated by all who are capable of estimating the difference between a look-out upon bright foliage and flowers, or upon stucco fronts and brick walls; and of comparing the fragrance wafted through windows so adorned, with the natural whiff of the streets. There will also be the pleasurable excitement which attends the culture of flowers even on the most limited scale—which urges "Cook" to assiduously tend her mammoth nettle geranium in the kitchen window, or "Jeames" to cherish some stunted shrub in the back area in a dilapidated tub. Indeed, there seems to be a universal instinct, developing itself in divers ways and under the most adverse conditions, which recognizes intuitively the improved appearance conferred by plant life equally on the mansion or the cottage.

The gardening of the "sill," which is the chief basis for the operations of out-door, as distinguished from in-door window gardening, is neither an elaborate or offensive undertaking. In the present day, nurseries abound in every suburb, from which numerous varieties of beautiful and interesting plants and flowers may be obtained for immediate use, and at a trifling cost. Thus, all the labour and uncertainty of cultivation is spared; the only trouble connected with this sort of garden being the preservation in health

of the plants that fill it, while in actual use; when become *passé* their places being easily filled up again by a fresh supply. A special advantage therefore attends this style of plant decoration: it may be commenced or given up at any period, and the stock being small, its removal or dispersion is attended with little trouble or loss.

To begin with the furnishing of the "sill," there will be many ways of doing this, according to its size, and the taste and means of its designer. The first point, however, in any case will be to secure the pots or boxes used from the possibility of slipping or being blown off. To this end, a frame of some kind should be fixed outside round the sill, though to the lower windows in modern residences ornamental cross-bars are usually the rule. Where such are not, a slender rod of iron will form a good frame, with a screen of fine iron wire net inside. At a little distance from the wall a similar rod may be used, following the shape of the window frame; the intervening space between that and the wall being also filled up with wire net, after the manner of a trellis, on which to train up climbers; or an actual wooden trellis may be employed. Above the window-frame, in the brickwork, hooks and staples should be placed for the purpose of suspending hanging baskets filled with trailers. We shall thus have an arrangement for the cultivation of various interesting and ornamental subjects—climbers, trailers, and pot plants.

In dealing with such a *garden* as here described, it will add much to the health and vigour of its tenants, and prolong their lasting qualities, if moss be packed between and on the surface of the pots, thereby preserving moisture, and protecting them from the scorching sun or cold winds. At each side of the "ledge," where upright rods or trellis-work is fixed, climbers may be placed in large pots, and trained up. Good and inexpensive kinds for this purpose may be selected from the smaller variegated ivies, when it is resolved to adopt an evergreen or permanent decoration: deciduous varieties are Canary creeper, *Cobea scandens*, *Convolvulus*, *Clematises*, and *Tropæolums* of all sorts, all of which will thrive in pots with small demands upon attention or cultural skill. Wire baskets should always first be padded with moss, whether the plants are grown in pots or in natural soil. For these, there are likewise hosts of appropriate occupants, such as *Sedum Sieboldii*, *Tradescantia zebrina*, the old-fashioned "Mother of Thousands," ivy-leaved geraniums, fuchsias in their season, "Love-lies-bleeding;" where a drooping crimson maroon-coloured contrast is required, *Tropæolums*, *Loniceras*, particularly the variegated Honeysuckle, and the like. While considering subjects of this habit, it may be well to call attention to *Passion-flowers*, *Virginia creeper*, and *Wisteria*, as admirable area plants where space, and aspect, and atmosphere exist, though too large for small balconies or windows.

There are so many artistic contrivances as receptacles for plants in the present day, that there is little need for falling back upon the old-fashioned wooden box, once the most ambitious piece of furniture upon the window-sill. This used to be taken to a nurseryman to be filled every year, and its advent was an event in many a town

household. The place of this is now supplied by numerous beautiful fabrics in various forms and dimensions. Those of siliceous material are by far the strongest and most durable; and, when dirty or weather-stained, their freshness may be restored by a thin cream or stone-coloured wash, not forgetting a primary application of soap and water to remove grit.

The porcelain pots or *jardinets* are the most cleanly and elegant, some of them being also works of art of the highest order. They require considerable taste and judgment to fill them to advantage, their brilliant colours and ornate patterns having a tendency to make them principals instead of simple accessories, and to *kill* the flowers, unless ingeniously harmonized or contrasted therewith; indeed, they may be termed too ornamental in themselves, and are only suitable for positions of pretension. Rustic boxes may also be constructed, very effective, without much outlay. Fir cones, crooked lengths of wood, oak varnish, and a wooden framework, are the chief materials required. Virgin oak, an article recently introduced, may also be employed in the construction of ornaments in this style. A special point must be recognized in all contrivances for the reception of plants, which is, ample provision for thorough drainage. By observing this, it is possible to utilize those ornamental vases which often stand at the side of doors or steps. Free-growing climbers grown in these might be taken up the house on such light iron rods as have been previously spoken of. A centre mass of colour contrast, where space permits, may be produced by sinking several small pots in a single large one—this improves the effect by breaking up the stiff appearance of a row of equal sized pots. It is quite unnecessary to particularize objects for furnishing the window-ledge, because the whole array of hardy plants and flowers, especially the bedders, changing with almost every week, are always to be obtained when wanted, and at such a trifling outlay.

Balconies and porticos, as affording greater space, should be chiefly treated with evergreens and shrubs: but here, again, circumstances must be the arbiter of decoration. However, climbers may be trained along and through the iron railings, and trailers allowed to hang down. If there is sufficient room, flower-stands also may be placed in fit positions amongst the shrubs; and in a cool aspect a miniature fernery will not be beyond the operator's reach. Here, again, fragrance from leaf or flower should always be largely introduced so as to extend to the interior of the dwelling.

“How to utilize a town area” has been previously treated upon in former pages; many of the general principles there laid down are equally applicable to the out-door window garden. But happy the possessor of an easily accessible “flat;” to him, if air and light be propitious, and smoke be not too adverse, garden and greenhouse are alike open. He can grow his own flowers in lieu of buying them, he can sow seeds, propagate by cuttings, and bloom the fully-matured plant, enjoying to a considerable extent the pleasures of a veritable *rus in urbe*.

INTERMEDIATE STOCKS FOR THE CONSERVATORY.



HAVING been successful in growing these for many years past, I have come to the conclusion that this beautiful stock is not grown one-half so extensively as it should be. Apart from the beauty of the flowers, their delicious fragrance alone is quite sufficient to entitle them to a more fuller recognition of their merits. Those who fail to have a good supply in their conservatory through the spring months miss one of the charms of that season. We usually grow about six dozen, three for growing in a little warmth to flower early, and the other three dozen for growing in a cold frame to succeed them. The seed is sown rather thinly in a flat box on the 1st of August, and placed in a frame or greenhouse until it is nicely up, when it is stood out of doors until the plants are large enough to handle. Some good turfy loam is chopped up roughly and mixed with about one-third of its bulk of rotten dung. After this is done, a sufficient number of 48-sized pots are filled with the compost, after placing a few crocks in the bottom for drainage, and three plants put into each. The soil should be pressed rather firmly, for the plants do not root so freely and grow so well when it is loose as they do when it is rather firm. After all are potted, they are placed out of doors in an exposed position until frost sets in, when they are removed to a cold pit, and protected from the severest of the weather.

Those intended to be grown in a little warmth are taken to the greenhouse early in January, and then about the middle of February are placed in a heat which ranges from fifty to sixty degrees. They are syringed occasionally to keep down the red-spider, and watered with manure-water about every other time, and I find that it increases the size of the spikes immensely. The others are placed in the greenhouse, which is rather warmer than the cold frame, about the end of February. By these means I manage to add very materially to the beauty of the conservatory under my charge at a very small expense, and in many instances outvie my neighbours who spend a lot of money upon hyacinths and other bulbs. We also have a two-light turf-pit, in which a bed of light and rich soil is made and planted with the plants left, after sufficient have been put in pots. Plenty of air is admitted through the winter, and in the spring they are taken up with nice ball of soil adhering to the roots, and planted in a large circular bed near the drawing-room windows. When this is done carefully they flower well, and the bed excites more admiration than the happiest combination of bedding plants I have ever had. It is true, it delays the planting-out of summer occupants; but as sufficient are always grown in 48's for planting this bed, so as to produce an immediate effect, this is of no great consequence. This could not be well carried out all over the garden, but for beds which are close to the windows it is worth a moment's thought as to whether it cannot be managed. The three colours of white, rose, and scarlet are grown, and Mr. Smith, of the Hornsey Road, has a beautiful new lilac-flowered variety, which I shall obtain at the first opportunity.

J. T.

A NOTE ON CROPPING AND THINNING GRAPE VINES.



IF the FLORAL WORLD has many readers as thoroughly interested as the writer in grape-growing, which is one of the most fascinating of all pursuits connected with the garden, no excuse will be needed for the insertion of some remarks thereupon. My experience extends no further back than five years; but during that time, I have not only observed closely, but have also read all the works upon the subject I could procure, and have looked in vain for instructions upon two important points: viz., the crop it is safe to take from a vine; and directions for thinning the berries. Granting that it is difficult to give definite rules, on account of the vines being of different degrees of strength, having larger or less surface for foliage, or being planted in borders of different sizes, I may state that my experience has led me to the following practice on these points:—

First, as to cropping. One lateral only should be grown on each spur on a stout rod (five years from planting, seven years from bud); if forty laterals can be counted, it is safe to leave twenty good sized bunches, that is bunches measuring from eight to twelve inches long from the shoulder to the extreme point. With regard to thinning, varieties such as Black Hamburgs, Mill Hill Hamburgs, Buckland Sweetwater, and White Frontignans, may be safely thinned when the size of *small* peas; and my practice is this:—For two inches at bottom of bunch, leave *one* berry only on a stem; for the next two inches, *two* berries may be left; the next two inches, *three* berries. Above these come the shoulders, to be treated in like manner; viz, one, two, and three berries according to length. If these rules are observed, the bunch should not be touched again until the berries are the size of *large* peas, when the shoulders and the bunches of three berries should be properly tied out with narrow shreds of strong bast. Do not use lead wire; take care not to raise the shoulders above the horizontal. After this, nothing should touch these precious berries until gently taken by the stalk and pressed to the lips of the fortunate individual who is to feast upon the delicious morsel. Lady Downes, the Muscats, and Trentham Black I find must be left longer before thinning, it being more difficult to discern which berries will come to maturity. The two former appear to have a habit of not stoning properly, which I suppose to be caused by want of sufficient heat at flowering-time, in consequence of their being grown with the more hardy kinds. These should not be thinned so early as the others, but they must be thinned upon the same plan, and at one operation. By this method of procedure, not only are nice clean-looking bunches produced, as when thinned early the young stems die away without decaying, but all the sap is utilized, and large berries perfectly covered with their lovely bloom are secured.

— Thanking you for guidance upon this and many other subjects, I would yet put an inquiry to grape-growers with respect to shanking. For two or three years out of my five, shanking of a few

berries has occurred. I have not always been so free in removing the bunches as now, and over-cropping may have been the cause; but has not the heavy syringing which is customary in many vineries something to do with it, through the moisture laying upon and rotting the stems of the berries. Before the present season, my vines were drenched two or three times a day, except when in bloom; but in consequence of a remark in your valuable work, not a drop of water has reached the foliage or berries this year, and the only moisture in the house has been produced by wetting the tile flooring several times a day.

I may add, much to my own satisfaction, that my vinery, started the middle of March, and pushed on very gradually, with abundance of ventilation during the day and a little at night, now presents a very handsome appearance, being well furnished with healthy foliage and finely-shaped bunches, varying from eight to twelve inches in length, on which the berries (now about half developed) are free from rust, finger marks, or any other disfigurement. This is their present state, but I must not "crow before I am out of the wood," and every grape grower knows the most serious disasters generally appear after this stage. If my remarks are likely to prove useful to others, or elicit information, please insert at your convenience.

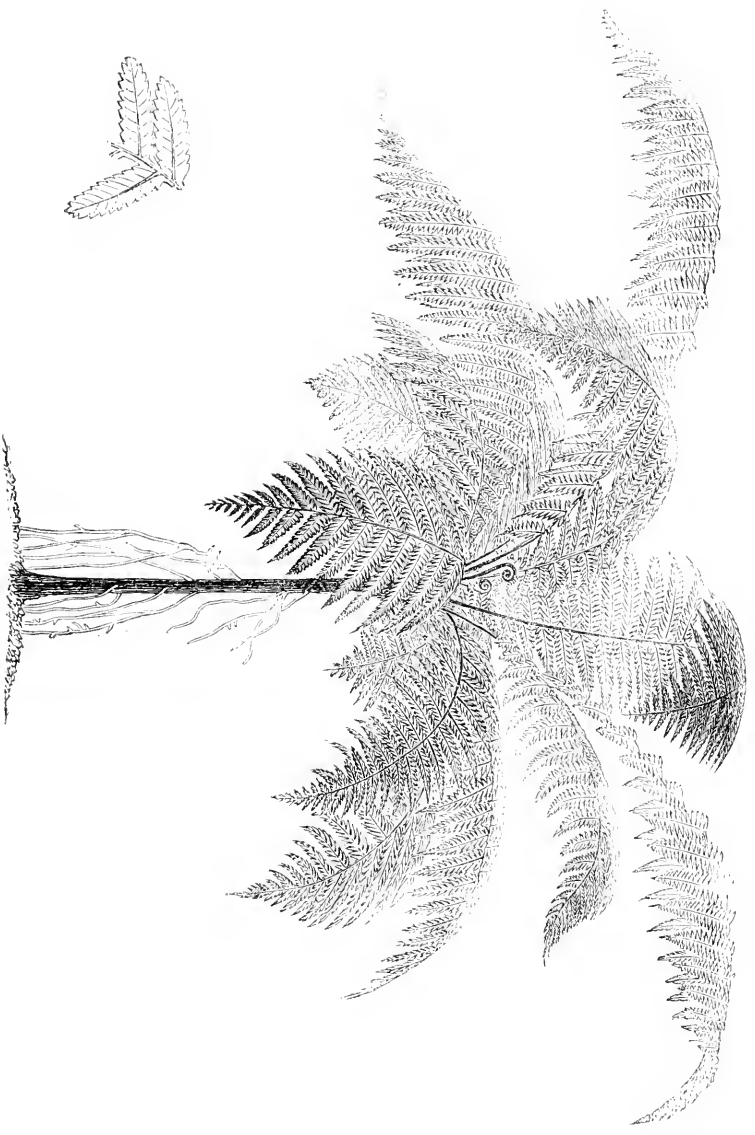
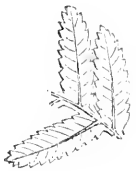
Bintal Road, Birmingham.

AMATEUR.

TODEA WILKESIANA.



THE beautiful miniature Tree Fern to which we have now much pleasure in directing the attention of our readers, was first discovered in Ovolan, one of the Fiji Islands, by the botanist attached to an exploring expedition, sent out by the United States of America. It is allied to the beautiful *Todea Fraseri*, which is now known as one of the most beautiful of filmy ferns; but it is of larger growth and has an arborescent habit. The trunks of the native specimens are said to range from eighteen to twenty inches in height, and about an inch and a half in diameter, and are usually surmounted with about twelve broad lanceolate fronds, two feet in length, and most elegant in outline. The parent plant (of which the accompanying illustration is a most excellent portrait) in the possession of Messrs. Veitch and Sons, of the Royal Exotic Nursery, King's Road, Chelsea, to whom the honour of the introduction to English gardens of this fine fern is due, has a trunk about twelve inches in length, and an inch in diameter, which, surmounted by its elegant plummy fronds, gives it an indescribably charming appearance. It was found principally growing in the humid forests of the island referred to above; and like its congeners *Todea Fraseri* and *Todea (Leptopteris) superba*, will under cultivation require a close damp situation in the fern-house, unless it is grown, as it should be, in a glass case, in the same manner as the above-mentioned species are usually cultivated. The present species is now in course of distribution by Messrs. Veitch and Sons, and is certainly well worthy of a place in the most select collection of stove ferns.



TODEA WILKESIANA.

FORMING AND PLANTING THE AMERICAN GARDEN.

BY ROBERT OUBRIDGE,

Church Walk Nursery, Stoke Newington, W.



A JUDICIOUSLY arranged and well furnished American garden presents such a glorious appearance during the early summer months, and has such a bright and cheerful look at all other periods, that the cost of its formation will always be well repaid. Hitherto, American plants, such as the hardy rhododendrons and azaleas, have not perhaps received so much attention as they deserve, through its being supposed that they will not thrive in anything but sandy peat; whereas they will grow freely and flower abundantly in almost any light and friable soil.

The situation selected for the formation of the American garden, should be in a rather secluded part of the grounds, so that visitors need not go through it excepting when the plants are in bloom. But when the cultivation of American plants is limited to a few beds upon the lawn, they should be planted at the farthest point from the windows of the dwelling-house, and the dark foliage will form an admirable background to the beds of flowering plants. A picturesque arrangement of the beds with winding walks between them is undoubtedly the best that could be devised when the American garden is shut in from the other parts of the ground, but a group of circular, oblong, or oval beds, surrounded with a raised bank of evergreens, will be sufficient for small gardens, and in many cases the most desirable plan to adopt, because of its simplicity and the small amount of expense attached to the preparation of the ground and the formation of the beds.

When the beds are upon the lawn, and form part of the general arrangements, they must of course conform in size and shape to those devoted to the ordinary bedding and flowering plants. In low-lying and damp situations, it will be advantageous to raise beds nine or twelve inches above the level, to prevent the possibility of the roots perishing through being submerged in water during the winter months. These plants, however, require an abundance of moisture at the roots when making new growth, and therefore the bed must not be elevated at all, unless the condition of the sub-soil during the winter months is such as to render it imperatively necessary. Generally speaking, a layer of broken stones or brickbats, to a depth of twelve or fifteen inches under the soil of which the bed consists, will be sufficient to keep the roots safe.

In the preparation of the beds, the first steps it will be necessary to take will be to remove the soil to a depth of three feet, if the sub-soil is of a retentive character, and two feet if it is sufficiently open to absorb the superfluous moisture. The extra twelve inches is for the drainage, which may consist of any loose rubble, such as broken stones or brickbats. The drainage should be put in with a certain amount of care to insure its being of one depth, and one degree of

solidity over the bottom. The best compost that could possibly be devised for filling the beds with, may be prepared by well incorporating together two parts each of turfy loam and fibry peat, and one part each of leaf-mould and road or river sand. Where peat cannot be had without a considerable expense being incurred, a mixture consisting of two parts loam, and half a part each of leaf-mould, decayed cow-dung, and sand, should be employed. A depth of two feet will be quite sufficient for all but extra large specimens; and previous to filling in the soil, put a layer of thin turves over the rubble if it is considered desirable to place a layer in the bottom of the bed. Unless the loose material is covered with a layer of turf or some other covering, a considerable proportion of the finer portion of the soil will, previous to its becoming consolidated, run down into the crevices and impede the escape of the surplus water after the heavy rains or artificial waterings.

The month of August is the most suitable for planting rhododendrons; but they may, in common with other American plants, be planted in the two following months with every reasonable prospect of success. A few liberal waterings, after the beds are planted, will be necessary if the weather happens to set in dry, and a sprinkle overhead in the evening of bright sunny days will be of immense service in enabling them to become established. In planting mixed beds, the rhododendrons should be put in the centre, the azaleas next to them, and a few dwarf-growing subjects, such as the hardy heaths and andromedas, round the outside, to hide the bare stems of the azaleas when they are leafless during the winter months. When once established, they practically take care of themselves, for beyond the removal of a branch now and then that is taking the lead of others on the same plant, they require no pruning or training. In dry seasons, soaking the beds thoroughly with water once or twice a week until the completion of the young growth, will be of immense assistance; but if the watering is continued after the young growth is made, the plants will probably make a second growth, instead of forming flower-buds, and in the majority of seasons they will be able to take care of themselves. The varieties of *Rhododendron ponticum* are cheap and effective; but they are decidedly inferior to the following hybrids, which comprise the best in cultivation, with the exception of a few of the newest, which are at present too expensive to include in a list of this kind:—*Alarm*, *Album elegans*, *Album grandiflorum*, *Archimedes*, *Atranganineum*, *Barclayanum*, *Blandyanum*, *Brayanum*, *Bylsianum*, *Charles Dickens*, *Concessum*, *Cruentum*, *Delicatissima*, *Elfrida*, *Everestianum*, *Fastuosum flore pleno*, *Francis Dickson*, *Guido*, *Hogarth*, *John Spencer*, *John Waterer*, *Lady Armstrong*, *Lady Clermont*, *Lady Eleanor Ca'heart*, *Lady Francis Crossley*, *Lord John Russell*, *Lucidum*, *Maculatum superbum*, *Magnum Bonum*, *Milnei*, *Minnie*, *Mrs. John Clutton*, *Mrs. John Waterer*, *Mrs. R. S. Holford*, *Mrs. William Bovill*, *Ne Plus Ultra*, *Nero*, *Perfection*, *Purity*, *Roseum elegans*, *Roseum grandiflorum*, *Standard of Flanders*, *Stella*, *Sherwoodianum*, *The Queen*, *The Warrior*, *Titian*, *Victoria*, *William Austin*, *William Downing*.

The best of the hardy or Ghent Azaleas are:—*Amœna*, *Ardens*, *Aurantia major*, *Bessie Holdaway*, *Calendulacea eximia*, *Coccinea major*, *Coccinea speciosa*, *Cuprea*, *Cuprea splendens*, *Elector*, *Elegans*, *Florentine*, *Fulgida*, *Gloria Mundi*, *Invictissima*, *Maria Dorothe*, *Maria Verschaffelt*, *Mirabilis*, *Nancy Waterer*, *Prince Frederick*, *Speciosa atrosanguinea*, *Straminea*, *Sulphurea*, *Van Houtte*, *Viscocephala*. Few people are aware of the brilliant effect these plants are capable of producing, when planted in masses, in prominent positions in the pleasure grounds and shrubbery gardens.

For belts and marginal lines round the outside of beds filled with azaleas and rhododendrons, the following selection of dwarf-growing plants will be useful:—*Andromeda floribunda*, *A. formosa*, *A. pulverulenta*, *Daphne cneorum majus*, *Erica cinerea alba grandiflora*, *E. c. atropurpurea*, *E. c. coccinea*, *E. c. rubra*, *E. herbacea carnea*, *E. vagans carnea*, *E. v. rubra*, *E. v. alba*, *Menziesia polifolia alba*, *M. p. atropurpurea*, *Kalmia angustifolia glauca*, *K. a. rubra*, *K. glauca*, *K. g. superba*, *K. latifolia major splendens*, *K. l. myrtifolia*, *Ledum buxifolium*, *L. thymifolium*, *Pernettya mucronata*, *Polygala chamæbuxus*, *Vaccinium frondosum venustum*, *V. ligustrifolium*.

To render the American garden bright and cheerful at all seasons of the year, a few clumps of the choicer kinds of *Lilium* and the showier *Gladioli* should be intermixed with the other plants. From four to eight bulbs should be planted in each clump.

THE BEGINNER IN GRAPE-GROWING.—No. VI.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.

THE MANAGEMENT OF POT VINES.



THE management of vines grown and fruited in pots requires more skill and attention than those planted out in a properly-prepared border; yet, where early grapes are in request and the space available for grape growing limited, they are most valuable, because with their aid a supply of early grapes may be had without starting the permanent vines, in the house from which the main crop is obtained very early in the season. Vines in pots are also most valuable for table and sideboard decoration, and a considerable number are grown here for these purposes.

Until after they are put in pots larger than six inches in diameter, the directions given for the management of young vines grown expressly for planting out, when speaking of their propagation, applies with equal force to those intended for pot culture. Therefore, to avoid repetition, we will commence with their management,

after they are established in the sized pots referred to above. After arriving at this stage, they require two shifts only; the first into ten-inch pots, and the second into others three inches larger in diameter, which are quite large enough for all ordinary purposes. It is necessary to observe, in connection with this point, that at all stages of their growth the vines must be repotted immediately the roots begin to run round the sides of the pot, and on no account must they be allowed to become pot-bound; for when the supply of food is exhausted the bark soon becomes set, and the canes commence to ripen prematurely; and when the young rods begin to ripen before they are half-grown, they seldom make canes sufficiently strong to produce a good crop of grapes the following season. It is from checks of this description, and letting the plants suffer from dryness at the root, that many growers fail in growing the canes to a fruiting size the first season, and require two years from the time of striking the eyes before they can look for any fruit. The whole of my vines are grown to a fruiting size the first season, with the exception of about a couple of dozen for starting in the beginning of October for the earliest crop; and this batch is raised from eyes put in a month later than that specified above, and the vines are cut down the following autumn, root-pruned, and repotted.

Vines in pots will seldom carry and finish off well more than from six to eight bunches, and to do that not more than eight feet length of rod is required; therefore all the wood beyond that length has to be cut away. Now a very common practice, and one which cannot be too strongly condemned, is to allow the vines to grow unchecked, and then at the winter pruning to cut them back to the length required. By this system the whole of the best buds and those most likely to produce good bunches are cut away, and small weakly bunches are the natural result. To do away with the necessity of having to cut away the best portion of the wood, and at the same time to strengthen as much as possible that portion whereon the fruit is expected, considerable attention must be paid to summer pruning. The vines should be stopped three or four times during the growing season. Those growing with ordinary vigour are stopped at every three feet, and those which may happen to be rather weak are stopped at two feet. When vines are pinched back so closely as this, some little care must be exercised in dealing with the laterals, or there will be a risk of the main buds starting. But the safest course to pursue is to let the laterals run out with from three to four leaves each before the first stopping, and afterwards stop the second crop of laterals at one leaf from the point where they emanate from the original laterals; and it should be borne in mind not to stop the laterals and the main growth at the same time. It is hardly necessary to say that attention must be paid to keeping the plants regularly supplied with water when in full growth, to prevent the wood ripening off before it has reached its full size. The importance of training the young vines close to the glass, and giving them the advantage of a full exposure to all the light and air consistent with their tender and delicate condition, so as to keep them as short-jointed and hard as possible, cannot be too strongly

advocated; and here they are trained to the roof of the pine-stove, or between the vines in one of the early vineries. With ordinary management the growth will be completed by the end of August, and the vines ready for going out of doors the first or second week in September.

When the young vines are taken out of doors, train them to a south wall, and allow them to remain there for about six weeks, and keep the soil rather dry, to check the growth and thoroughly ripen the wood. The stock of young vines intended for starting in the middle of October of the following year are cut back to a couple of eyes some time in December, taken out of the pots, and after the ball of soil is reduced, root-pruned, and repotted into ten-inch pots, and started in a temperature of about 50°. These should be shifted into the fruiting-pots as soon as they are nicely rooted, and the same attention paid to stopping as already advised. At the first potting these should be kept down, so that the buds are just above the surface of the soil; and at the second shift the base of the young growth should be just below the surface, which will enable it to emit a nice lot of young roots into the fresh soil. Great stress is laid by some cultivators upon the advantage derived from the use of bottom-heat in growing the young vines, but they are assuredly better without it. The bottom-heat encourages the production of thick fleshy roots, which frequently perish through the resting season, and are therefore of no assistance to the vines in bringing the crops to perfection. These will complete their growth and be ready for taking out of doors towards the end of July, which gives them a good rest before starting. This is the only reason for two seasons being required to grow them in, as plants can be grown plenty large enough in the first season, and, in fact, I prefer the one-year vines for the other crops; but there is not sufficient time for them to have a thorough rest between completing their growth and the time for starting. It is of very little use to expect much success unless the vines are thoroughly rested.

The next subject that must engage our attention is the fruiting process. As already stated, three batches of pot-vines are started here: the first lot in the middle of October, to furnish grapes in February, which come in just before our earliest vinery; the other two batches are grown for table decoration, and started at intervals of a month each. The vines are pruned and washed, and some eight-inch pots, with large holes in the bottom, are placed on the top of the soil (passing the rod through the hole in the bottom), and filled with the same soil as the vines are potted in. These are soon filled with roots, and are of great service in assisting the vines with a fresh supply of food. When this is finished, the vines are placed in a temperature of 45° by night and 50° by day, and the pots partly plunged in a gentle bottom-heat of about 70°. and frequently syringed. The walls and paths are also sprinkled to keep the atmosphere moist. In a fortnight after the vines are placed in heat, the temperature should be allowed to range between 50° and 55° by night, with a proportionate rise by day. This should be continued for another fortnight, and increased to 65°,

which must be continued until the beginning of January, when the night temperature should range from 70° to 75°, according to the weather, and that of the day from 75° to 80°. Syringing overhead must be discontinued when the young buds are a couple of inches long; but the atmospheric moisture must be regularly kept up until the berries begin to colour, with the exception of when the grapes are in bloom; at that season it must be kept rather dry, but not so thoroughly dry as we frequently see practised.

The bunches should be thinned immediately the berries are large enough, and not more than six or eight bunches allowed to each vine, as these numbers are as many as an ordinary vine will finish off well. When they are first brought into the house, those intended for training up the roof should be brought down horizontally, to equalize the flow of sap and insure the bottom buds breaking strongly. Those intended for dinner-table decoration are fixed to trainers, made with stout iron rods, about three feet high, and with three prongs at the bottom, made to fit inside the small pot, and a ring of stout wire on the top, forming a flat trellis of two feet across, to which the vines are trained. It is not necessary to bend these down, as all the buds on the trellis will be on the same level. The buds which break up the stem should be removed as fast as they make their appearance.

The compost in which the vines are grown consists of good turfy loam chopped up roughly, and mixed with two pecks of partly-decayed horse-droppings, and half a peck of "inch" bones, to each barrowful. When in full growth, we give them weak manure-water about twice a week, and clear water when required. The vines must not be allowed to suffer for want of water, for when that happens more mischief is done than is commonly supposed, and I have known more than one total failure ensue from this cause. Some growers allow them to become so dry that a large proportion of the roots perish, and then wonder why the grapes shank, or are deficient in colour. Too much water is quite as injurious as not enough; the vines, therefore, should have no more than is sufficient to keep them in a free, healthy, growing condition. The whole of the pot-vines here are started in a house used for growing pine-suckers through the summer, and when sufficiently advanced to bear the heat of the fruiting pinery are removed into that structure, where they remain until the grapes are ripe. We thus obtain a good lot of grapes with no expenditure for fuel beyond what is required for starting them.

DESTROYING ANTS.—Powdered chalk has been recommended for driving ants out of melon frames. The chalk should be sprinkled over the surface of the bed. Thousands may be destroyed in a very short space of time with the aid of a sponge and a little powdered "lump" sugar. A rather coarse sponge is preferable, and it should be placed in an earthenware saucer, such as flower-pots are stood in, and then sprinkle all over with finely-powdered sugar. Stand the saucer upon the soil, and in a very short time the ants will swarm into the sponge, and may then be destroyed by shaking them out of the sponge into a vessel of hot water. Replace the sponge in the saucer, shake more sugar over it, and replace in the frame again, and repeat every morning until the frame is cleared of these pests. We cannot possibly answer letters privately.

CAPE COWSLIPS.

BY THOMAS TRUSSLER,

Head Gardener, High Leigh, Hoddesden, Herts.



THE pretty pendulous-flowered *Lachenalias* are easily grown, readily propagated, and moreover continue in flower such a length of time, that in directing attention to them I feel bound to express my surprise that they are not more generally cultivated in small gardens. All those at present in cultivation are useful for forming edgings to flower-beds in prominent positions, which are filled with hyacinths, and other bulbous plants that flower in spring. But they are most valuable for the decoration of the conservatory and indoor apartments, because they are so neat in growth, showy in appearance, and are not quickly affected by draughts, and other injurious influences to which flowering plants, placed in indoor apartments, are usually exposed.

A very few words will suffice to show the manner in which they should be managed to produce robust plants and large well-developed spikes of flowers. For flowering early, pot a batch of bulbs either in the second or third week in August. To succeed the first batch, and to bloom without the aid of artificial heat, September is a capital time for giving them their annual shift. In putting them in fresh pots, first take them out of the pots, and then separate the large bulbs, which may be expected to flower, from the small offsets which have formed round them during the past season. After this is done, pot them at the rate of six bulbs to each six-inch pot, in good fibry loam two parts, and one part each of rotten dung and leaf-mould, with a sprinkling of silver-sand. Bury the bulbs about an inch below the surface, and fill the soil in rather firm. When the potting is completed, place the pots in a cold frame, and apply just sufficient soft water to keep the soil moist, and thus enable the bulbs to make a good start. When the young leaves make their appearance above the surface of the soil, it will be well to place a portion of the stock in the greenhouse, and from thence, after a few weeks' stay, into the forcing-house, or other structure, where they can have the aid of a gentle warmth, with the advantage of plenty of light and air. The foliage of *Lachenalias* soon becomes drawn if they are placed in close confinement, or a high temperature; therefore they should be kept near the glass, where they can enjoy the full advantage of the light, and just sufficient air to keep the growth dwarf and sturdy, and only have sufficient warmth to maintain a steady growth. The second lot should be taken to the greenhouse a fortnight or three weeks later, and not have any artificial heat; and a third batch to succeed these may be left in the frame until they begin to come into flower. By this arrangement a continuous supply can be kept up for a period of about three months.

Water must be applied freely after the pots are filled with roots, and the growth has made considerable progress above ground. With

the compost prepared in the manner here described, very little manure-water will be required, and, in unskilful hands, its use had better be dispensed with. When the flowers begin to fade, the plants should be removed back to the cold frame, and have the lights drawn over them in wet or frosty weather. Allow them to remain there until the growth is completed, and then the water supply must be lessened in a gradual manner, and finally withheld. As the foliage dies away, place the pots on their sides in such a manner as will prevent any water reaching the soil. Frequently cultivators stand the pots out of doors without attention until they are repotted, and the bulbs, for lack of a sufficient supply of moisture before they have finished the season's growth, are dried up, and, as a matter of course, do not attain their full size. Or, on the other hand, in a rainy season, they continue growing too long, and are, therefore, unable to become thoroughly matured before the time arrives for starting them again. Hence the cause of the failures we hear of occasionally. The pots with the bulbs at rest can be stacked upon their sides, either indoors or out. In the latter case, they should have the advantage of a shady position, for it is by no means advisable to expose the bulbs to the scorching influence of a summer's sun. The young offsets can be planted thickly in the same sized pots, and they will make strong flowering bulbs for the following spring.

There is yet another way in which these plants can be turned to account for indoor decoration. Instead of putting the bulbs in pots in the manner advised in the foregoing remarks, take a wire basket of medium size, and place a layer of moss entirely over the wirework, to keep the soil in its proper place. Put a layer of soil over the bottom of the basket, about an inch in thickness, and at a distance of three inches apart, insert the bulbs in the soil, with the crown or growing point downwards; then proceed to fill the basket with soil, and as each three-inch layer of soil is added, put a row of bulbs entirely round the basket at a distance of about two and a-half inches from each other, with the crown facing towards the wirework. When the basket is filled, plant the surface in the ordinary manner. Keep the basket in the frame with the soil just moist until the young growth begins to peep through the wire-work, and then suspend it in the greenhouse, and water more liberally. In a short time the whole basket will be enveloped in a mass of foliage, and the effect when the plants are in bloom will be indescribably beautiful. A basket of *Lachenalias*, grown as here advised, was exhibited at one of the spring meetings of the Royal Horticultural Society at South Kensington, and it was, as it well deserved, much admired, and excited a considerable amount of interest, as few indeed were those who saw it who were aware of the adaptability of these plants for cultivation in suspended baskets.

The best way to grow them for outdoors is to pot them in much the same way as advised above, and then grow them in the cold frame, with plenty of air to keep the foliage and flower-stems dwarf, so that they will be able to resist all weathers when turned out. The simplest way of displaying them in the open air is to plunge the pots in the beds or borders just before the flowers are fully

expanded. Treated this way, they are unequalled for forming edgings to hyacinths and tulip beds. It will not do to push them on in a high temperature, or keep them in a close atmosphere; or, as soon as they are taken out of doors, the foliage will be blown about, and the flower-spikes will probably be injured past recovery.

The following selection comprises the best and most distinct sorts at present in cultivation, but there are a few others well worth growing where room can be found for them:—

Lachenalia tricolor.—Leaves and flower-stems beautifully spotted; the latter average in well-grown specimens about eight or nine inches in height, with between twelve and eighteen flowers on each spike; the colours are bright red, yellow, and green, which undergo several changes as the flowers advance in age.

L. aurea.—A remarkably fine kind, with large bright yellow flowers.

L. pallida.—A rather strong grower, with flower-spikes about a foot in height; the flowers are large in size, and of a pale blush colour; wonderfully good.

L. luteola.—Like the preceding, a strong grower, with beautifully spotted leaves and flower-stems; the latter grow about nine inches in height, bearing fine large flowers of a pale yellow colour.

L. pendula.—The flower-stems of this beautiful kind grow to a height of about twelve inches, which, with the foliage, are beautifully spotted; a free grower, with fine large flowers, which are bright red, yellow, and green in colour.

DAHLIAS.—No. IV.

BY JOHN WALSH.

PREPARING THE BLOOMS FOR EXHIBITION.



WE have now arrived at a critical stage in the growth of the Dahlia, and the success or otherwise which will attend the cultivator's efforts will depend upon the manner in which the blooms are prepared for the exhibition table. One of the greatest enemies the cultivator has to contend with, is the earwigs, for they abound everywhere, and unless they are kept under by trapping they will do an immense amount of mischief; even if they are reduced in number to the lowest possible minimum, the blooms must be carefully protected, for one insect is quite sufficient to disfigure and render unfit for exhibition a very large number of blooms. Several devices within the last twenty years have been introduced for the purpose of trapping earwigs; but it is a questionable matter whether the trap of flower-pot and moss has been surpassed. At all events, nearly all the leading growers for exhibition use no other trap, and by its aid keep this troublesome pest in subjection. The usual plan for preparing the traps is to fill flower-pots, five inches in diameter,

about half full of dry moss, and then to place them bottom upwards upon the stakes supporting the growth. The end of the stakes will prevent the moss from falling out of the pot, and the earwigs will congregate in the moss during the daytime. Then if the pots are examined every morning, soon after eight o'clock, all that have taken refuge in the moss can be destroyed by shaking them into a vessel of hot water. A large number of pots may be examined in a very short space of time by taking the pot in one hand and holding it over the water, and then drawing the moss out with the other, and giving it a sharp shake to dislodge the earwigs; it may then be returned to the pot and the latter replaced upon the stake. The prudent cultivator will not depend wholly upon the pots placed upon the stakes, but will put others bottom upwards upon the ground close to the stem of the plant, and elevate one side sufficiently to afford means of ingress. Hay, or indeed any dry material of a similar character, may be employed instead of moss if more convenient. Snails are not capable of doing much harm after the plants are full-grown, but they should be looked after sharply and caught by laying cabbage leaves on the surface of the border, as they will take shelter underneath and may then be readily caught and destroyed. The only other insect pests that are likely to do much harm are thrips, and it is only in dry seasons that they will be found troublesome, and the best means of keeping them in check is by frequent washings of the foliage with the garden engine or syringe. The protection of the flowers from the above-mentioned pests and the vicissitudes of the weather must now engage our attention, and we must at once consider the most desirable means of effecting the desired object. First of all, a number of stakes of the desired height must be procured, and also a number of boards, seven inches square, and half an inch in thickness. The boards must have a hole in the centre, with a cut from one side to allow the stalk to pass, and a larger hole on one side to fix it on the top of the stalk. The buds are fixed in the centre of the board as soon as they begin to expand, and the space about the stalk and the slit in the board are packed with cotton wool to prevent the earwigs reaching the flower. The blooms are then covered with a flower-pot turned bottom upwards, and usually a cork is placed in the hole in the bottom to exclude the light. As the colours of many of the varieties undergo a considerable change when the blooms are kept in the dark, it is preferable to knock the bottom out of the pot, as shown in Fig. 1, and then it can be covered with either wire-netting of a very fine mesh, a square of glass, clear, or painted to subdue the light, or a piece of thin board. The blooms of varieties that require a con-

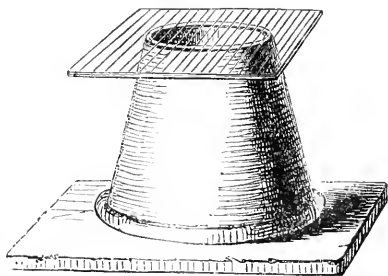


FIG. 1.—DAHLIA COVERED WITH FLOWER-POT.

siderable amount of light may be covered with small bell-glasses, as shown in Fig. 2, which can be covered with canvas or paper,

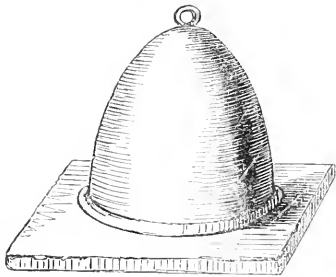


FIG. 2.—DAHLIA COVERED WITH BELL-GLASS.

or they can be painted with newly-made whitewash, which does not wash off or rub off so soon as washes of whitening and size. A half globular frame-work of wire, about six inches in diameter, and covered with canvas, forms a capital shade. The frame should be made so that it can be fixed to the stakes at any distance from the top, and the blooms must be securely fastened to the stake, because if they rub against anything some of the petals will be damaged and the flowers rendered

useless. The frames should be fixed low enough down to protect the blooms from driving rains. Some amateur growers simply

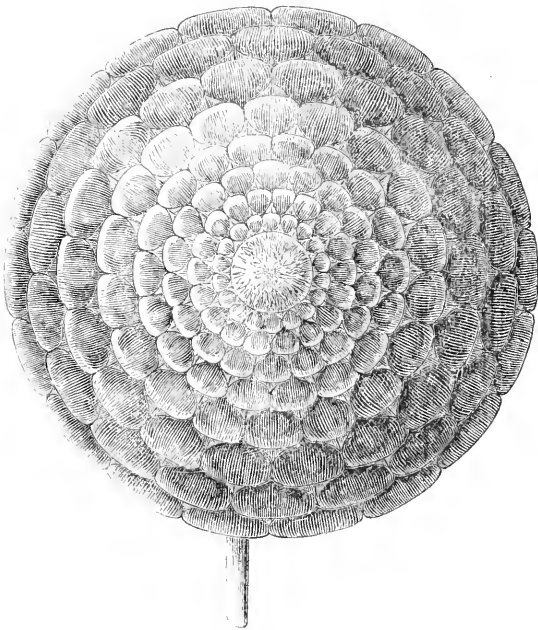


FIG. 3.—FRONT VIEW OF A SHEW DAHLIA.

protect the blooms with bags of rather stout muslin, or rather thin calico, and they certainly answer uncommonly well; but they are not so good as the boards and flower-pots, or the wire frames.

The blooms are put in the bags before they are far advanced, and the latter are drawn together at the stem, but with sufficient room for the flower to expand. In dry seasons, paper bags have been frequently employed with good effect.

The "properties" of the Dahlia have been settled many years since; but to enable the young beginner to know what to look for in making up his stands, a short description of what a good show-flower should be, will, in conjunction with the accompanying illustrations be of considerable service. First, the flower should, in the outline of the disc, present the figure of a circle, as shown in Fig. 3, and in bulk form nearly two-thirds of a ball. The rows of petals should describe regular rings, and should lie over each other as regularly and evenly as shown in Fig. 4,

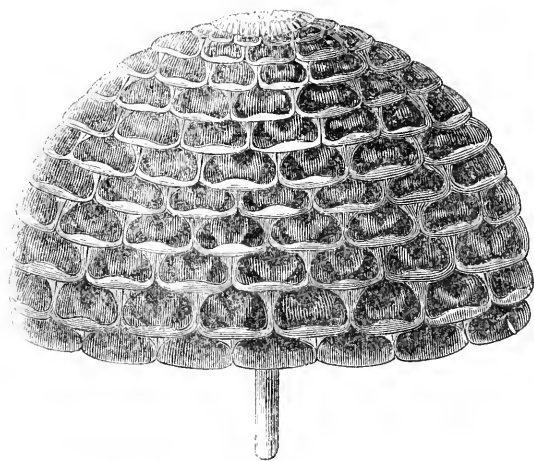


FIG. 4.—SIDE VIEW OF A SHOW DAHLIA.

the sizes gradually diminishing to the centre, which should be well up without a trace of the eye being visible. The petals should close over each other so as to conceal their bases; they should be broad at their ends, free from notch or serrature, firm in substance and smooth in texture. They should cap slightly, but not sufficient to show the back. The colour should be dense and clear; and the edged or tipped flowers should have their tints clear and well defined. The size will of course vary according to the usual size of the flowers of the respective varieties; but the larger the flowers are, provided they show no trace of coarseness and are otherwise well finished, the better.

The blooms should be gathered in the evening of the day previous to the show, unless they are intended for an exhibition held a considerable distance from where they were grown, and then they ought to be cut early in the morning. They should be put in the tubes with which the stand is fitted immediately they are cut,

and fixed securely with a piece of cork. The best way of fixing the blooms is to pass the stems through corks, which fit the tin tubes rather tight, and then thrust the cork into the tube and the flowers will then be unable to move in the slightest degree. In setting up

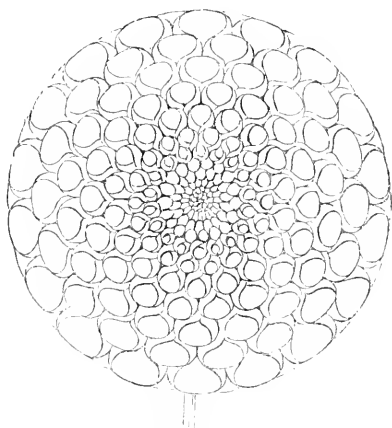


FIG. 5.—FRONT VIEW OF POMPONE DAHLIA.

the stands, due regard must be paid to balancing the colours, so as to preserve a proper balance and to bring out the colours of the several sorts to the best possible advantage. Due regard must also be paid to the size of the blooms, and the largest should, as far as possible consistent with preserving a proper balance of colours, be placed in the back row, and the largest in each row placed towards the centre. It is important that the blooms should be set up in stands properly made, and of the regulation size. The proper length of a box for twelve blooms is two feet; for twenty-four blooms, four feet; and in showing thirty-six blooms, a two and a four feet box should be used; and for forty-eight blooms, two four-feet boxes, and so on, for boxes of a greater length than four feet will be found very heavy and inconvenient in their transmission to and from the exhibition tent. The depth should be seven inches at the back, three and a half inches in front, and the width should be eighteen inches, for both two and four feet boxes. Each box will take three rows of tubes, the two outside rows three inches from the edge of the box, and the middle one exactly down the centre. The tubes should be an inch in diameter, and placed at a distance of six inches apart from centre to centre in the rows. The cork or wooden pegs should, when fixed in the tubes, stand an inch and a half above the surface of the box to hold the blooms up in a bold manner. The boxes should be painted a bright deep green.



FIG. 6.—SIDE VIEW OF POMPONE DAHLIA.

The pompone varieties illustrated in Figs. 5 and 6 are of no use for show purposes, but they are most valuable for the decoration of the flower garden. They are neat in growth, and flower most abundantly; they are all well adapted for forming a background to the dwarf-growing bedding plants, or for a front row to the taller growing show dahlias. The best sorts are those with white and scarlet flowers; but in the majority of small gardens a mixture will be preferable.

THE GARDEN GUIDE FOR AUGUST.

FLOWER GARDEN.—All tall-growing subjects, such as Dahlias and Hollyhocks, should be staked as required, to prevent the flowering shoots being torn off by the wind. Tall-growing Gladioli, also, ought to be supported with neat sticks, to keep the flowers from the ground. The Dahlias must be tied out, and the flower-buds thinned, if intended for exhibition. Remove the flower-spikes from all perennials immediately the beauty of the flower is past, if the seed is not required. Leaving the seed to ripen impoverishes the plants more or less, besides having an unsightly appearance. This is a capital time for sowing seed of these things, as there is plenty of time to get strong plants by the end of autumn, if the seed is got in early this month. Sow in little beds on a shady border, and plant out directly the plants are strong enough to handle. Propagate the stock of bedding-plants at once, excepting the Calceolarias, which are best left until the end of September. All the bedding Geraniums strike better on a warm, sunny border than in pots and frames. Prick up the border, and, after making it firm on the surface, insert the cuttings, and, in ordinary seasons, all the attention necessary until they are rooted will be simply to give them one good watering to settle the soil, and remove all decayed foliage, to prevent its injuring the other. The Verbenas, Cupheas, Heliotropes, and Lobelias require more care. The cuttings should be inserted in pots properly drained, and filled with light sandy soil, and then placed in a cold frame, and kept close and shaded until rooted.

KITCHEN GARDEN.—The principal spring crops must be got in this month, and it is highly important that everything in connection with them be done at the right time. If any delay takes place, the plants will not attain their full size; and, on the other hand, if sown too soon, they get too big, and run to seed directly we get a few warm days in the spring. Sow Cabbage and Endive in the early part of the month, and Lettuce and Cauliflowers about the 20th. At the same time, sow Tripoli Onion, White Stone Turnip, and Black Spanish Radish. In earthing up Celery, be particularly careful to prevent the soil getting into the hearts. As the Celery makes but little progress after it is earthed up, that operation ought not to be performed until after it is nearly full-grown. Take up and store Garlic and Shallots as they complete their growth. Give Peas

French Beans, and Scarlet Runners liberal supplies of manure-water where practicable.

FRUIT GARDEN.—Regulate and train the growth of wall and espalier trees, so that it has free exposure to the light and air, to enable it to get thoroughly ripened. Let the above and pyramids have a thorough wash overhead frequently, to keep them clean and fresh. There must be no more stopping after this; but where the wood is too thick, remove a few shoots altogether. Protect Morello Cherries and other fruit, which it is intended to preserve on the trees after being ripe, with nets, or the blackbirds and thrushes will soon make short work of them. Make new Strawberry plantations as quickly as possible; and if good strong runners are planted, they will form strong crowns this autumn, and bear a good crop next season. To plant Strawberries in October or spring, as is commonly practised, is simply a waste of the ground they occupy for the first year.

CONSERVATORY.—This structure must have a thorough cleansing at once, so as to be in readiness for the reception of the hard-wooded stuff when required. All the wood-work should have a thorough scrubbing with soft soap and warm water, and the walls be washed over with hot lime. All painting ought to be finished at once, so as to allow plenty of time for the effluvia arising from it to evaporate before the plants are housed. There is no danger of frost yet, but if we get much wet weather during the month, choice, delicate-rooted plants, like *Leschenaultias*, *Heaths*, *Genetyllis*, etc., must be removed indoors, to have protection from the wet, or they will suffer considerable injury. After they get indoors, the ventilators must be thrown open as wide as possible day and night. Pot off cuttings of hard-wooded plants that are nicely rooted, to give them an opportunity of getting nicely established before winter. Attend to plants out of doors, and see that they do not suffer for the want of water. Thin out the growing shoots of the climbers, to give the wood intended for next year a chance to get thoroughly ripened.

STOVE.—Still maintain a brisk temperature, and give plenty of air, and use less shade than hitherto, to insure the wood being thoroughly ripened. Shut up early in the afternoon. Encourage winter-flowering plants with weak manure-water, and give less water to plants that have completed their growth. A large proportion of the Orchids will have completed their growth for this season, and will now require more air and a fuller exposure to the light.

FORCING.—Prepare the materials for making fresh Mushroom-beds, and spawn those made last month. Vines swelling their fruit must have a moist, growing atmosphere. Muscats must have a temperature five degrees higher than that required for the Hambro's. Give plenty of air to houses in which the crops are ripe, but nail coarse canvas over all openings, to keep the flies and wasps out. The lights should be removed from the early Peach-houses where practicable. Trees growing in houses with fixed roofs should have plenty of air, and receive a thorough syringing two or three times a day. Sow cucumbers for winter bearing about the middle of the month. Thin out the growth of those in bearing, and

water with weak manure-water. Melons, after they are about half grown, should be elevated above the foliage. It is particularly necessary to keep the plants properly supplied with water at this stage; for, if they get dry at the roots, the fruit will split in all directions as soon as the plants are supplied with water.

HORTICULTURAL NOTES.



THE principal events of July have been the exhibitions of Roses, of which, notwithstanding the unfavourable character of the season, all were more or less successful. The Roses were not at any of the exhibitions equal in quality to the best of those staged during the last two or three years, but they were on the whole of fair average quality, and the only surprise felt by the majority of visitors was that they were so good. The exhibition held at the Crystal Palace at the end of June was very successful, and a second, or supplementary show, is announced for Saturday, the 5th inst., when prizes for table decorations, as well as for roses, will be offered.

The principal rose shows were held at South Kensington, Hereford, Birmingham, and Manchester. The exhibition at the last-mentioned town was of an experimental character, it being the first ever held there, and the results were so satisfactory that we may now look upon a rose show at Manchester as one of its established institutions. In point of quality the best blooms were those staged at the Royal Horticultural Society's exhibition and at Birmingham, and as the other exhibitions did not differ materially, a detailed notice of these shows will be quite sufficient to indicate the varieties which are held in the highest esteem by exhibitors. The competition in the great class for seventy-two single blooms at Kensington was not very severe, and it was apparent from the number of faulty blooms staged that it was a most difficult matter for the exhibitors to put in an appearance at all in that class. The prizes offered for forty-eight triple blooms were very warmly contested, and the blooms were of much better quality. The first prize was taken by Messrs. Paul and Son, of Cheshunt, who presented grand examples of Madame Laurent, Madame Victor Verdier, Madame Caillat, François Louvat, Triomphe de Rennes, Marie Baumann, Camille Bernardin, Antoine Ducher, La Reine, Madlle. Thérèse Levet, Dr. Andry, Duke of Edinburgh, Elie Morel, La France, Alfred Colomb, Centifolia Rosea, Madame Clémence Joigneaux, Souvenir d'Elise, Maurice Bernardin, Baroness Rothschild, Charles Rouillard, and Madlle. Marie Rady. Mr. Turner, of Slough, who occupied the second place, staged fine blooms of Madame Crapelet, Climbing Devoniensis, Maurice Benardin, Baroness Rothschild, Duke of Edinburgh, Horace Vernet, Madlle. Marie Rady, Charles Rouillard, Madame Clémence Joigneaux, Madame Fillion, Miss Ingram, Françoise Lacharme, Miss Poole, Camille Bernardin, Alfred Colomb, and Abel Grand.

Mr. Turner was first for twenty-four varieties, one truss of each,

with grand examples of Miss Poole, Madame Clémence Joigneaux, Duke of Edinburgh, Madlle. Alice Dareau, Marie Baumann, La France, Anna de Diesbach, Madame Victor Verdier, Climbing Devonensis, Général Jacqueminot, Madlle. Annie Wood, Miss Poole, Françoise Treyve, Miss Ingram, Horace Vernet, Maréchal Niel, and Centifolia Rosea, all of which are very fine. Messrs. Paul and Son were first for twelve blooms with Comtesse d'Oxford, and for six with Louis van Houtte, undoubtedly one of the finest of recent introductions. Mr. Turner was second in both classes, and staged twelve very fine blooms of Miss Poole, a variety sent out from Slough two years since.

At Birmingham, the competition was very severe in the trade class for seventy-two, and the first prize was awarded to Mr. J. Keynes, Salisbury, who exhibited amongst others superbly-finished blooms of Xavier Olibo, Ville de Lyon, Caroline Sansal, Baronne Adolphe de Rothschild, Françoise Fontaine, Madame Clert, Edward Morren, in much better condition than it is usually met with; Madame Boutin, Jules Margottin, Duchesse d'Orléans, Sénateur Vaisse, Centifolia Rosea, Hippolyte Flandrin, Gloire de Dijon, Alpaide Rotalier, Reine du Midi, Exposition de Brie, Paul Neron, Madame Eugène Verdier, a large pæony-shaped flower of but little merit for exhibition purposes; Abbé Giraudier, Baroness Rothschild, Madame Fillion, Ferdinand de Lesseps, Madame Hector Jacquin, Fisher Holmes, La Reine, Duke of Edinburgh, Madame Dustour, Baronne Gonella, Dupuy Jamain, Françoise Lacharme, Princess Mary of Cambridge, Madame Charles Wood, Niphetos, Prince Camille de Rohan, Antoine Ducher, Souvenir d'uu Ami, Victor Verdier, Elie Morel, Madame Moreau, La Motte Sanguinea, bright in colour, but flat and second-rate; Clémence Raoux, Charles Lefebvre, Triomphe de Rennes, Madame Marie Rady, Madame Vidot, John Hopper, Josephine de Beauharnais, Mdlle. Marie Rady, Louis Van Houtte, Abel Grand, Alfred Colomb, Marquise de Mortemart, Marie Baumann, Emilie Hausberg, Catherine Mernett, Anna de Diesbach, Devienne Lamy, Camille Bernardin, Pitord, Madame La Boutte, Comtesse d'Oxford, Madame Clémence Joigneaux, Marguerite de St.-Amand, Mdlle. Marguerite Dombrain, Maurice Bernardin, Madame Willermoz, Marquise de Castellane, La France, and Louise Peyronne.

Mr. Keynes was also first for twenty-four new roses sent out by English nurserymen in the spring of 1869-70-71, and staged Clémence Raoux, good; Comtesse d'Oxford, very distinct and good; Charles Turner, poor as shown; Emilie Hausberg, Marquise de Mortemart, Marquise de Castellane, a fine rose for pot culture and garden decoration, but hardly full enough to admit of its being considered a first-rate rose for exhibition purposes; Mdlle. Eugène Verdier, second-rate; Nardy Frères, Thyra Hammerich, Paul Neron, large and of fine form; Reine Blanche, Abbé Giraudier, La Motte Sanguinea, Jeanne Guillot, Louis van Houtte, a most valuable dark rose; Louisa Wood, Catherine Mernett, Dupuy Jamain, Perfection de Lyon, Ferdinand de Lesseps, a decided acquisition; and Madame Dustour.

The number of entries was not so large in the classes for twelve blooms of light and dark-flowered varieties as might have been expected; but the blooms staged were exceptionally fine. In the class for twelve blooms of a light-flowered variety, Mr. Cranston, Hereford, was first, with *Baroness Rothschild*, which is undoubtedly one of the best light-flowered varieties in cultivation; and in the corresponding class for a dark-flowered variety, Mr. Keynes was first, with *Madame Charles Wood*; and Mr. Durbin second, with *Dupuy Jamain*.

The exhibition of the Royal Botanic Society, on the 12th and 13th ult., was the most interesting and successful the Society has held during the present season; but excepting the new plants, nothing calling for especial notice here was exhibited.

The new plants, which received first-class certificates, were—*Coleus Lady Leigh*, a very distinct variety, richly variegated with yellow, green, and chocolate, from Mr. Perkins, of Leamington; golden zonal pelargonium, *Gem of the Tricolors*, a fine variety in the way of Carter's Prince of Wales, from Mr. Kimberley, Stoke, near Coventry. *Amorphophallus spectabilis*, *Alocasia Marshalli*, in the way of A. Jenningsi, *Rhododendron hybridum*, *Dioscorea spectabilis*, a fine stove climber, with richly-marked foliage; *Pteris cretica albolineata cristata*, very elegantly crested; *Goniophlebium glaucophyllum*, and *Bignonia Roezliana*, from Mr. Bull, Chelsea. *Hydrangea japonica speciosa*, a very handsome variety, with variegated foliage, from Messrs. E. G. Henderson and Son; *Rhopala Grantensis*, from Mr. B. S. Williams; *Polystichum angulare pulcherrima* and *Scolopendrium vulgare Whytei*, from Messrs. Ivery and Son; and *Davallia clavata*, from Messrs. Rollisson and Son.

At the last July meeting of the Royal Horticultural Society, prizes were offered for herbaceous Phloxes, Pentstemons, Lilliums, miscellaneous hardy herbaceous plants, and Picotees, and Carnations. The Carnations and Picotees were well represented; but the only exhibitors of herbaceous Phloxes were Messrs. Downie, Laird, and Laing, Forest Hill, who staged wonderfully good specimens of *Pladda*, white, with mauve eye; *George Wyness*, mauve-pink; *Mr. Taylor*, white, flushed with rose; *Captain Speke*, lilac; *James Mitchell*, deep rose; and *Mons. Saison*, brilliant crimson, one of the most richly-coloured phloxes in cultivation. The collection of twelve hardy herbaceous plants, exhibited by Mr. Parker were exceedingly well grown and flowered, and were well entitled to the award received.

The competition in all the classes for Carnations and Picotees was rather smart. The first prize for twelve Picotees in the class confined to amateurs was taken by Mr. Norman, Crescent Road, Plumstead, with magnificent blooms of *General Tulloch*, *Mrs. Norman*, *Morning Star*, *Mr. Davis*, *J. Dixon*, *Mr. Brown*, *William Ingleton*, *Mrs. Delaforce*, *Edith Ingleton*, *Master Norman*, *Prince Arthur*, and *Mrs. G. Naylor*, all of which are first-rate. Mr. Pizzey, gardener to Sir E. Perry, Fulmer, Slough, who occupied the second place for Picotees, was first for twelve Carnations, with clean, well-finished blooms of *Juno*, *James Merryweather*, *Sir R. Peel*, *Count*

Pauline, Mars, Earl Stamford, Sarah Payne, Splendour, Royal Scarlet, Antonio, Prince Albert, and Eccentric Jack.

In the open class for Carnations and Picotees, the honours were equally divided by Mr. C. Turner, Slough, and Mr. Norman; the former taking first for Carnations and the second for Picotees, and the latter first for Picotees and the second for Carnations. In the first-prize stand of Carnations were superb blooms of Colonel Wyndham, James Merryweather, William Cowper, King John, Purity, Sarah Payne, Annihilator, Falconbridge, Juno, Antonio, and Kentish Hero. In the first-prize stand of Picotees occurred magnificent blooms of Master Norman, Morning Star, Prince Arthur, Mrs. A. Ingleton, Purity, John Norman, Edith Ingleton, Mrs. Garrett, Charles Williams, and John Dixon.

The number of new plants brought before the Committee of the Royal Horticultural Society at their first July meeting was more limited than usual. Mr. Bull was awarded a second-class certificate for *Lobelia erinus Omen*, a dwarf and rather compact-growing variety with deep purplish-rose flowers. Mr. Croucher, gardener to J. T. Peacock, Esq., Sudbury House, Hammersmith, a first-class certificate for a variegated variety of *Agave Verschaffelti*, with a band of yellow down the centre of each leaf; and a similar award was conferred upon *Houlettia odoratissima antiquoriensis*, exhibited by Mr. Green, gardener to W. W. Saunders, Esq., Hillfield, Reigate; also upon *Petunia Coquette*, an anemone-flowered variety, white with crimson centre and margin, from Messrs. E. G. Henderson and Son; and for *Lithospermum petraeum*, a pretty blue-flowered species, and *Linum salsoloides*, a pretty dwarf species with white flowers, from Messrs. Backhouse and Son, York. Mr. C. Turner contributed two new show Pinks, *Dr. Masters*, heavily laced with purple-crimson, and *Shirley Hibberd*, heavily laced with light rose. The flowers of both are of large size, full, grand form, smooth, and superbly finished, and were deservedly awarded first-class certificates.

To the second meeting Messrs. E. G. Henderson and Son sent a group of new varieties of *Lobelia erinus pumila*, the best of which were—*Brilliant*, deep cobalt blue, flowers as large as those of *speciosa*, habit very dwarf and compact, but rather more vigorous than the ordinary type of *pumila*; *Celestial Blue*, clear azure-blue, flowers of medium size and freely produced, habit dense and compact. *Purple Prince*, deep purplish rose, free-flowering, dwarf and compact, was also very good. Messrs. J. and C. Lee, Hammersmith, exhibited *Lobelia erinus Purity*, which may be described as a white-flowered *speciosa*. The habit is all that can be desired, and the flowers, which are produced in the most profuse manner, are pure white. Therefore it must be most valuable for bedding purposes, as a white-flowered plant suitable for marginal lines has long been wanted. M. Jean Verschaffelt, Ghent, Belgium, sent an interesting group of Agaves and Cycads, including *Agave mescal striatis*, *A. species nova* (?), a pretty upright grower; *A. elegantissima*, a very beautiful neat-growing species, worthy of a place in the most select collection; *A. Regelii macrodontha*, a strong grower,

armed with formidable spines; *Encephalartos Vroomi*, a noble species, and a new *Zamia* with most elegant fronds.

Mr. Norman, Plumstead, staged a stand of new Picotees, all of which possess considerable merit, but the best were—*Mrs. Brown*, light-edged red, ground clear, edge sharp and definite; *Lady Holmsdale*, heavy-edged rose, very fine and smooth; *Morning Star*, light-edged rose, with pink shade, ground very pure, smooth, and perfect in outline; *William Ingleton*, heavy-edged purple, petals broad and smooth, a fine bold flower; and *Mr. Brown*, edge medium, and of a deep rich crimson hue, a fine bold flower.

Several interesting fruits and vegetables were also exhibited at the last meeting, the most important of which were—*The Amateur's* strawberry, a fine handsome fruit of a dark crimson colour, and most excellent flavour, exhibited by Mr. Bradley, Littledale Halam, near Southwell, Notts; *Ascot Citronelle* grape, a most valuable, rich, and piquant-flavoured white grape, which is said to hang well, and does not crack, raised and exhibited by Messrs. Standish and Co., Ascot; *Bigarreau Noir de Schmidt* cherry, a large and handsome-looking cherry, from the nursery of Messrs. Rivers and Son, Sawbridgeworth; and *Lee's Prolific Black Currant*, the best of all the black varieties, was again exhibited by the raiser, Mr. Lee, Clevedon, Bristol, in splendid condition.

Mr. James, gardener to W. F. Watson, Esq., Redlees, Isleworth, contributed samples of a new wrinkled marrow pea, named *James's Prolific*, the average height of which is three feet, and the pods are long, well filled, nearly straight, and produced from the bottom to the top of the haulm.

TO CORRESPONDENTS.

PLANT LABELS.—*W. H. M.*—The labels referred to are manufactured by Messrs. Bell and Thorpe, Paddock Nurseries, Stratford-on-Avon, who will, no doubt, send a list of prices on application.

SPIRÆA CULTURE.—*Christine*.—Very probably the plants suffered from dryness at the roots. The subject shall have attention shortly.

AQUARIUM FURNISHING.—*J. J.*—We do not recommend dealers, and are, therefore, unable to afford you the desired information.

PLANTING ROSE TREES.—*F. B. R.*—The rose trees should be planted early in November, but they may be planted as late as the March following. The beds or borders in which they are planted should be liberally enriched with hoibed or stable manure previous to planting the trees. The roots should be covered to a depth of about three or four inches. We cannot answer your third query, for the reason that we do not recommend dealers. Standard rose trees may be procured from any good nursery at prices ranging from one to two shillings each, the usual price being eighteen shillings per dozen for established varieties.

B. B.—Fasten the trees with strong tar twine in addition to the haybands. The best remedy for unfruitfulness is root-pruning, as pointed out by Mr. Trussler in the *FLORAL WORLD* for February of the present year. The only way to keep the tender plants during the winter is to put them in the frames, as you have no house, and protect them from frost by means of mats, or other covering material, such as long litter, straw, or refuse hay. *Myosotis sylvatica*, *Silene pendula*, *Cannell's Extra Dark*, and *Belvoir Castle*, *Dwarf Yellow Wallflowers*, *Red and White Daisies*, *Viola lutea grandiflora*, *Arabis lucida*, and *Alyssum saxatile compactum*, are all remarkably showy, and may be purchased at a cheap rate. With the excep-

tion of the Daisies, all the above may be raised from seed, but it must be sown at once to insure plants large enough to bloom satisfactorily next spring. Green and variegated trees Box, Euonymus, Hollies, and Aucubas, and Thuja aurea, and Cupressus Lawsoniana, are all suitable for filling flower beds in winter. Zonal pelargoniums require very little moisture during the winter months. The other question was anticipated by a valued correspondent. The Dahlia tubers were, most probably, injured by the frost.

SKELETON LEAVES.—*A Lady Correspondent.*—We quite agree with all that has been said with respect to the beauty of bouquets of skeleton leaves when tastefully mounted; but we can assure our correspondent that the task of preparing them is not so difficult as she imagines. Select the finest and most perfect specimens, and soak them in a large deep vessel of rain-water; place it in a sunny spot or other warm situation, and shake it occasionally, but not sufficient to stir up the contents, as that might injure the fibres of the leaves. As the water evaporates, fill up with fresh water again, without changing that which remains. Be careful of using any chemical in order to assist decomposition, as you will thereby run great risk of injuring the delicate skeleton, which of course you are anxious to keep quite perfect. But if you are impatient of waiting, a few drops of muriatic acid would hasten the destruction of the soft parts. The most usual plan, however, is to soak the leaves in rain-water only, until the skin which envelops the fibre is quite soft and loose, so that it can be easily removed. The best plan for accomplishing this is to lay each one separately in a plate full of water, and carefully remove the soft parts with a needle, or gentle rubbing with the finger and thumb. Of course, great care must be taken not to break the skeleton; but with a little practice you will be able to do it easily. As soon as the water thickens, so that you cannot well see what you are about, change it, or you will spoil your work. In some cases a piece of soft flannel may be used with advantage; but the final clearing of pulp from the fibres must be performed with a camel-hair brush. The time required for steeping them depends upon a variety of circumstances, such as the kind of leaf, its age, the time of year, the temperature of the weather, etc. The leaves of the ivy and holly require soaking for three or four months, while those of the pear, apple, and poplar will be ready in as many weeks; so that it will be necessary for you to use your own judgment, and discover the time each kind of leaf requires for yourself, by examining them occasionally. Of course it will require some patience and perseverance before "first-rate" skeletons can be obtained; but the task is not so difficult but that any one gifted with ordinary patience and medium talent may be able to produce very creditable specimens. The vessel containing the water may be pretty well filled with specimens, as they will not injure each other unless shaken too rudely, but perhaps rather assist in the process of decomposition. It is not advisable to use any but full-grown leaves, as the delicate fibres of young ones are likely to decompose with the pulp. The best time for selecting them is therefore about July or August, when they are quite mature, but still vigorous. Great care must be taken to choose only the most perfect, for it is obvious that if any portion of the fibres are injured before you macerate them, it will be impossible to obtain a perfect specimen. Hold your leaf, then, up to the light, and if you can see a crack, or any small spots of decay, throw it away, or your time and trouble will be wasted; for when once the skeleton is broken, or otherwise injured, all attempts to repair it prove unavailing. Those leaves which have the toughest fibres are, of course, the best adapted for the purpose, and consequently the soft leaves of rapid-growing plants are useless. Those best adapted for the purpose, and which can be obtained by everybody, are leaves of ivy, holly, magnolia, rose, pear, sycamore, willow, oak, hawthorn, poplar, orange, and lemon, the petals of hydrangea, and fruit of the apple, thorn, and winter cherry. Each kind of leaf has a peculiarity of structure and a beauty entirely its own; so that the differences in the fibrous network, and the variety and elegance of outline observable in the different subjects, give to the pursuit a great charm. The appearance of the skeleton is greatly improved by bleaching, which is accomplished by plunging in spring-water in which has been dissolved some chloride of lime. Two table-spoonfuls of liquid chloride to a pint of water will suffice. In some cases the skeletons will become white in a few minutes but leaves of stronger fibre will take a much longer time. When well bleached, dry them carefully on blotting-paper, and then arrange them tastefully in a vase, and cover the whole with a glass shade, when you will possess a very elegant ornament for your drawing-room or boudoir.



PI. M. J. J. J. J.

TURNER'S NEW PINKS.

(With Coloured Plate of Godfrey.)

THE beautiful pink *Godfrey*, which we have the pleasure of figuring in the present number, is one of a magnificent series of new show varieties, introduced to public notice for the first time during the present season, by Mr. Chas. Turner, of the Royal Nurseries, Slough. The whole of the series, which will be described as we proceed, when exhibited before the Royal Horticultural Society in June, received the highest award the Floral Committee could confer. The fact of their being in the hands of Mr. Charles Turner, who has probably done more towards the advancement of floriculture than any other man living, is a sufficient guarantee of their great excellence; but we have mentioned the fact of their having first-class certificates conferred upon them as a further proof that they are each and all quite distinct from, and superior to, the best in general cultivation.

Before proceeding to describe the varieties here referred to, we are anxious to direct attention to a few of the most essential conditions in the cultivation of the Show Pinks. One of the most important matters is to buy and plant in the autumn, and not wait, as is usually done, until the spring. When planted in the autumn, they become well established by the spring, and flower satisfactorily; but when the planting is left until the spring, there is not sufficient time for them to be well rooted and make much progress before the flowering season. It is also necessary to plant early in the autumn to insure their being established before the winter sets in. The beds, therefore, should be prepared at once, and the plants put out as soon as they are ready for their reception. The preparation of the beds is a very simple affair, and such as can be performed by the veriest tyro, if the hints here given are followed.

Excessive moisture is one of the greatest enemies with which the pink has to contend during the winter; and to avoid the settlement of stagnant moisture about the plants, the surface of the beds should be elevated from six to nine inches above the general level, varying the height according to the character of the soil and situation—beds in low-lying situations, or formed of soils naturally wet or of a retentive character, requiring the greatest elevation. The surface of the bed should be rather higher in the centre, to enable the surplus water after a heavy rain or thaw of snow to escape quickly; but the fall on each side must not be too great, or the occupants will be deprived of their proper share of moisture during the spring and summer months. The soil must be broken up to a considerable depth, and well pulverized, and a plentiful proportion of thoroughly-decayed hotbed or stable manure incorporated with it. If the staple soil is of an uncongenial character, the addition of a liberal layer of turfy loam will be of considerable service in promoting a healthy growth. Leave a space of about two feet between the beds, to enable the cultivator to examine and attend to the flowers, as may

be necessary, without treading on the beds, and for the same reason the beds should not exceed a width of three feet. Beds of this width will conveniently take four rows of plants, and the latter should be put out at a distance of nine inches apart. Plant firm, and fix a small stick to each, to prevent the wind twisting or otherwise injuring the stem. It is of course essential to procure strong, healthy plants; but a first-rate grower, like Mr. Turner, will be careful to supply healthy plants only, so that it is not necessary to say anything further upon this point.

In the spring, if the surface-soil has become consolidated, prick it up lightly. Early in April, cover the surface with a moderate layer of partly-decayed manure, which will serve the double purpose of keeping the roots cool, and checking the too rapid evaporation of the moisture from the soil. From the time the plants begin to grow freely, until they go out of bloom, water the beds twice a-week during dry weather; soft water is preferable, and if slightly flavoured with the draining from the manure heap, so much the better.

So many good papers on the cultivation of the Pink have appeared in these pages, that we have considered it undesirable to offer anything but the briefest remarks upon the cultural part of the subject, and those who are in need of further information will do well to consult the numbers of the FLORAL WORLD for March, 1866, and October, 1868.

The names and descriptions of the series of new varieties are as follows:—

Coccinea.—This is a magnificent forcing variety of the type represented by Anne Boleyn. It usually attains a height of about nine inches, and produces its large, brilliant scarlet flowers in the greatest possible profusion. The flowers are large and full, and will be found most valuable for hand and button-hole bouquets; neatly-grown plants will also be useful for conservatory decoration in the early part of the season, and a bed should be planted with it expressly for furnishing a supply of cut flowers during the early part of the summer.

Lady Blanch.—This is a fine companion to the preceding; it is rather taller in growth, and the flowers, which are produced in the greatest profusion, both when grown in pots and in the open ground, are large, full, and of the purest white. These two are not suited for exhibition purposes, but for home decoration they are unsurpassed.

Godfrey.—As here portrayed, this is a grand show flower of the most refined proportions and superb finish; the flowers are large and full, and the petals are broad, perfectly smooth round the edge, and heavily laced with bright reddish purple.

Alice.—Like Godfrey this is a beautifully finished flower, but differs in the lacing, which in this case is delicate rose purple; a fine exhibition flower.

Shirley Hibberd.—Flowers extra large and full, and superbly finished; petals broad, smooth, and heavily laced with light rose; a magnificent show flower.

Dr. Masters.—This also is a superb show flower, of which it is impossible to say too much. It differs from its predecessor in the colour of the lacing, which is deep purplish crimson, instead of light rose.

Those who purpose forming a collection will find the following selection of twenty-five older kinds of considerable value:—

Attraction, Beautiful, Beauty of Bath, Bertram, Blondin, Charles Waterton, Christabel, Delicata, Device, Dr. Maclean, Edith, Emily, Excelsior, Eustace, John Ball, Lady Craven, Lizzie, Lord Herbert, Marion, Mrs. Maclean, Mrs. White, Perfection, Picturata, President, Rev. G. Jeans. S. H.

THE LACE-LEAF PLANT (*OUVIRANDRA FENESTRALIS*).

BY GEORGE GORDON.



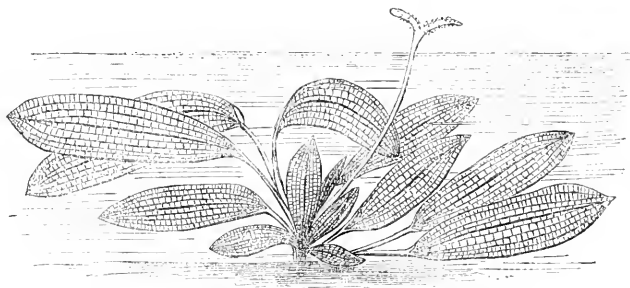
THE singularly beautiful *Ouvirandra fenestralis*, and its congener *Berneriana*, are seldom seen in any but the stoves of the most wealthy, whereas they are just the plants that the enthusiastic amateur who has the convenience of a stove should take in hand. They are certainly peculiar in their requirements, but when the details are well understood, there is nothing difficult in their management, and it will be found that attention, rather than skill, is of the greatest importance.

When recently conversing with the Rev. W. Ellis, the well-known missionary, who had the honour of first introducing living specimens of these plants to this country, on the conditions under which they are met with in the greatest perfection in their native habitats, and the immense difficulties he had to encounter in bringing them home alive, the thought struck me that a few hints on their cultivation may be of service to some of the readers of the FLORAL WORLD. The cultural directions which follow are, it is hardly necessary to say, founded on my personal experience in their cultivation, and it may with safety be said, that if they are strictly acted upon, failure will be impossible.

The blades of the leaves of *O. fenestralis* usually attain a length of about fifteen inches, and a width of three inches, and are supported on gracefully arching petioles which vary in length according to the depth of water above the surface of the soil. About fourteen nerves run from the base of the leaf, gradually expand, and converge again towards the apex, so as to form a lengthened oval shape, and are connected together with cross veins; and from the entire absence of parenchyma, they are simply a network of brownish green threads, as shown in the illustration of the leaf, and also of the entire plant, which accompany this. The leaves of *O. Berneriana* are longer in the blade, of a brighter green, and are made of much stouter network or veins. Of the two, the former is the most elegant, but both should be grown by those who care for this

class of plants. To grow them successfully, they should have twelve or fifteen inches of water above the surface of the soil. An inverted bell-glass, placed in a large pot, makes a capital aquarium to grow them in, and is quite as suitable as the most expensive affair that could be manufactured. But the circular aquariums are stronger, and have a better appearance, and are therefore preferable; the square aquariums would answer perfectly, but they are expensive, and it will be better to say nothing about them, further than to indicate their suitability for the purpose. If a circular aquarium is employed, one eighteen or twenty inches in diameter would be the best size, and then there will be no difficulty in providing the proper depth of water. These plants can be grown either planted out in a bed of soil placed in the bottom of the glass, or in pots stood on a bed of small gravel or pebble-stones in the bottom. Planting them out is preferable; but the difference between growing them turned out and in pots is so very slight, that the directions will apply with equal effect to both methods.

In preparing the aquarium for the plants, place a layer of crocks in the bottom to a depth of about four inches in the deepest part, and on the crocks place the compost for the roots to run in. This should consist of good fibry loam and peat, plentifully mixed with

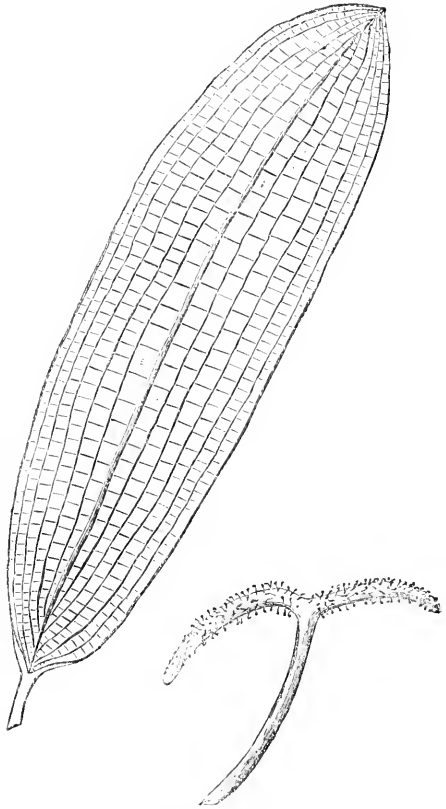


OVIFANDRA FENESTRALIS. (Complete Plant.)

broken crocks and silver sand, thoroughly incorporated together and used in a rough lumpy condition. From four to six inches is a good depth of soil, regulating it according to size of the plants and glass. When the plants are placed in position, the soil should be filled in about the roots and pressed very firm. When this part of the work is finished the soil should have a good soaking of water, through a fine rose, to settle it properly, and clear the foliage of any particles of soil adhering to it. The aquarium can then be filled with rain water, which should range in temperature from 70° to 80°; 75° being a safe medium. As it is desirable to do this without disturbing the soil, and making the water muddy, do it carefully, for the sediment which settles on the leaves will not contribute to the health of the plant. To pour in the water without disturbing the soil at the bottom, place a saucer in the glass, and then stand a flower-pot in the saucer, into which the water should be poured

rather slowly. The water will run through the hole in the bottom of the pot into the saucer, and distribute itself in the glass without causing any disturbance.

To grow them to the highest degree of perfection, a little trouble must not be objected to. A can of soft water should be placed on the hot-water pipes, and kept full at all times, to be devoted expressly to them. Every morning when the other plants are being watered, about one-third of the water should be drawn off, with a siphon, and the glass filled up with the warm water which has been kept on the pipes for the purpose. Or if drawing the water off every morning is too much trouble, take the can in one hand, and place the other hand just under the surface of the water, and pour the water into that hand, and let the water overflow for a short time. This will effect a change of water with but little trouble. The reason for placing the hand underneath the water, is to prevent the fresh supply stirring up the mud. A small siphon may also be fitted to empty a portion of the glass every day, which could be filled up as above described, if preferred, but I like the overflowing best. Once a week, or once in every two weeks, the glass should be emptied with a siphon, and the inside have a good washing to remove every particle of *confervæ* and other accumulation. When this is done, refill with the pot and saucer as advised in the preceding paragraph.



OUVIRANDRA FENESTRALIS. (Leaf and flower-scape.)

Both species can also be most successfully grown in pots placed in large wooden tubs. They should be put in rather large pots, and the rim of the pots elevated to within about twelve inches of the surface of the water. They may also be grown in sitting-rooms, or in the greenhouse, in an aquarium heated on the principle shown at page 95 of the *FLORAL WORLD* for May, 1862.

With respect to their propagating, it is not necessary to say much, because it is not a question of much importance to the amateur, for one good specimen of each species will be quite sufficient; there is however, very little difficulty in increasing the stock; for when grown vigorously the plants will flower and seed very freely. The flower-scapes when they make their appearance above the surface, and are in proper condition, should be brushed lightly over with a soft camel's-hair brush, to insure the flowers setting. After this they should be left alone, and the seed will drop into the water, and soon take root in the soil. Some of the seeds will root suspended in the water, and float about some time before acquiring fixture. It is of little use to attempt to gather the seed when ripe, and then sow, for there will be little else but failure; but if left alone, there will be no difficulty experienced in raising a young stock.

VIOLAS AND PANSIES FOR BEDDING.

BY A HEAD GARDENER.



AFTER the lamentable failure of *Viola cornuta*, and its congener *V. lutea*, as bedding plants, it is a most difficult matter to persuade people that any of the violas, or their near relatives the pansies, are adapted for the embellishment of the flower garden during the summer months. Yet there can be no doubt in the minds of those who have paid any attention to them that several, with proper management, are most valuable bedders. In some soils and situations, both the pansies and violas succeed most satisfactorily, and produce a succession of bloom throughout the summer season; but in others they make but slow progress, and go out of bloom just at the moment they should be at their best. They all require during the summer season a moderately moist and comparatively cool soil, and to attempt to grow them in soils of a naturally dry and hot character would be most unwise. The only way to ascertain whether they will thrive in certain soils and situations is to plant a few of each of the varieties that will be mentioned in a trial bed, and then if it is found that they do well a stock should be propagated. This season has been very favourable to this class of plants, and our beds of violas have been the admiration of all who have seen them. They were also especially good last year, notwithstanding the summer being one of the hottest and driest within the memory of the present generation. The staple soil of the flower garden does not differ materially from that of hundreds of other flower gardens, for it is neither very light or very heavy, and moderately deep. The preparation of the beds is effected in a very simple manner; they are dug up to a moderate depth and a barrowful of old hotbed manure, and the same quantity of decayed vegetable refuse, incorporated with the soil of each bed, eight feet in diameter; smaller beds, of course, have less, and larger ones more. The beds that are to be filled with violas or pansies are not planted with spring-flowering plants because the two former classes of plants

must be established in their summer quarters long before the latter go out of bloom. Many of the failures of the two violas mentioned at the commencement, may be safely attributed to late planting. The early part of March is the most suitable period for filling the beds, and then the plants have sufficient time to become well established before the hot weather sets in. Independent of this consideration, it is most important to plant early, for the period of their coming into bloom is regulated by the time they are planted, and as our summer seasons are so very short, every day is of consequence. To be able to plant early, the cuttings must be struck comparatively early in the autumn and be well established by the winter, to admit of the plants being wintered without protection, beyond that required to protect them from an excessive amount of moisture or severe frosts. They are all reputed hardy; but in soils in which they succeed most satisfactorily during the summer, a great risk is run of losing a considerable part of the stock from the combined action of the frost and rains during the winter. Damp is a greater enemy than cold, and if they are kept moderately dry, and the frame in which they are wintered ventilated freely whenever the weather is favourable to air-giving, the severest frosts only will be capable of doing any harm to them when the lights are closed and a mat thrown over the glass. The best plan of admitting air in unsettled weather is by tilting the lights both at the back and the front, and then a current of air will pass over the plants without their being saturated with moisture in case of heavy rains. In very damp foggy weather the lights may be closed with advantage; but the plants must not be deprived of a due share of air, or the danger of their perishing will be greater than if they were growing in the open border. The cuttings can be struck any time during the months of August and September; but the third and fourth week of the first-mentioned month is the most desirable period for putting them in, as it affords them plenty of time to become well established by the winter, without becoming too large. Select the young side-shoots that have not attained to a flowering size; take them off just below the third joint from the top; and after removing the lower pair of leaves insert them in pans or boxes filled with sandy soil, and then place them in a cold frame. Shade when necessary, keep rather close, especially during the first fortnight, and sprinkle the cuttings lightly once or twice a day to keep the foliage fresh until they are furnished with roots. When nicely rooted, plant at a distance of three inches apart each way in a bed of light sandy soil, made up in a cold frame, or if a frame cannot be spared make up the bed in the open and protect them from frost by means of mats or other covering. When planted in the spring they can be lifted with a trowel, and if carefully handled they will hardly feel the shift. Several very fine new violas have been introduced quite recently, and the best, so far as my experience has gone with them, are, of those with yellow flowers: Parker's *V. lutea major*, golden yellow, and Dickson and Co.'s *V. lutea pallida*, clear primrose yellow, and *V. sauveolens major*, clear deep yellow. Of the dark-flowered varieties: Dickson and Co.'s *V. amæna oculata*, and *V. lutea Purple King*, deep purple with

yellow eye. The most effective of the dark-flowered varieties of an anterior date to the above is Henderson's *V. Imperial Blue Perfection*; but the most beautiful is Williams's *V. Blue Perfection*, which has finer flowers, but does not appear to bloom quite so early in the spring or produce its flowers so continuously during the summer months as Henderson's variety, which, by the way, is only suitable for planting in masses. Amongst the yellow-flowering varieties, *V. lutea grandiflora*, raised a few years since by Mr. Tyerman, Curator of the Liverpool Botanic Gardens, still stands pre-eminent; the flowers are large, of a rich golden yellow, and are produced in the greatest possible profusion throughout the summer and far into the autumn. Established plants will commence flowering in February, and continue in bloom, more or less, until the following autumn; but when especially intended for summer decoration, spring planting is desirable. The best yellow-flowered bedding pansy with which I am acquainted, suitable for summer bedding, is *Pride of Rufford*, a variety sent out by Mr. Cannell, of Woolwich, in the early part of the present year. In growth it is vigorous and wiry, and produces a succession of flowers from early in the spring until the autumn. It is used very extensively at Enville Hall, for bedding purposes, and enjoys a very high reputation wherever it is grown. It is by no means expensive, for when first sent out the price was only a few shillings per dozen. Other good bedders, which however, are only suitable for spring decoration, are Ware's *Cloth of Gold*, yellow; Downie's *Imperial Blue*, deep purplish blue; *Great Eastern*, white; Hooper's *Sunshine*, coppery orange, very distinct; Hooper's *Mrs. Shirley Hibberd*, rosy lilac. The Cliveden varieties, in the several colours of blue, white, and yellow, are showy, but decidedly inferior to the above.

EARLY TULIPS.



THESE beautiful and gaudy-coloured flowers are among some of the most useful that can be found for the decoration of the flower garden during the spring months. That this is so, is proved by the fact that they are so much in request for spring work in the geometric garden. But their use is by no means limited to the flower garden; as for pot culture, scarcely anything else can compete with them during winter. It is possible, by judicious planting, to get the Early Single *Van Thol* in flower by the middle of November, and even earlier; then to succeed this well-known variety, there are such precocious flowering kinds as *Scarlet Van Thol*, *Golden Prince*, *White Pottebakker*, *Royal Standard*, and others, all of which are invaluable for growth in pots for the decoration of the conservatory, and for windows.

There are two distinct classes of tulips in our gardens: the one represented by the early-flowering kinds now under notice; the other by the late-flowering, or show tulips. The former we are

informed, were obtained from such species as *Tulipa nutans*, and *T. suaveolens*; the latter from the gaudy *Tulipa Gesneriana*. Respecting the late-flowering or show kinds, something shall be said later.

Messrs. Veitch and Sons, of Chelsea, are in the habit of planting out each winter a number of beds of the early-blooming tulips, to test their adaptability for bedding purposes. Set down in the midst of their nursery, the beds make a charming and effective display; and visitors to the nursery have found them to be one of its not least interesting features. I thought it well, in looking through them, to grasp them in their several shades of colour, and by this means endeavour to show the best and most distinct in each section.

Taking the white flowers, the two best are undoubtedly *Princess Helena*, and the well-known *White Pottebakker*. The former is an excellent variety for bedding, the flowers pure white, the habit dwarf and erect. It deserves to be highly recommended, and is not very expensive. The useful old *White Pottebakker*, which comes a little later in bloom, yet holds its own as a good, cheap, serviceable white variety, and will do so for years to come. It has a stiff rigid habit; the flowers large, and of good form. *Comte de Mirabeau* may be classed with the whites, though it gets somewhat tinted with pale lively pink when the flowers have been out some time; it is not so large, nor is it of such a good build, as *White Pottebakker*, but is useful as a variety and comes into bloom with *La Belle Alliance*, a capital brilliant scarlet-crimson flower. *Comte de Mirabeau* appears to be identical with *La Reine*, or *Queen Victoria*.

The earliest of all the yellow tulips is *Chrysolora*, of a capital hue of pure yellow. This should be noted as a very useful early-flowering variety for bedding purposes. *Prince de Ligne*, a variety that has been highly spoken of, is inferior to *Chrysolora*, both in colour and build, and has pointed petals. *Yellow Prince* is an excellent bedder; it has fine large showy flowers, and a nice upright rigid habit, and can be bracketed with *Chrysolora* as the two most useful of the single kinds. *Yellow Pottebakker* is a fine bold showy tulip, but apt to come striped with red: under which form it is known as the *Red-striped Pottebakker*.

The earliest scarlet tulip is *Brutus*; it is vivid in colour, and has a very slight yellow feather on the edges, and being dwarf in habit and not high in price, it is very useful for massing. *Scarlet Van Thol* is an inestimable bedding tulip, early, dwarf, and fine in colour, and very cheap; a bed of this is a floral picture of no common order. It may be stated that it comes into flower about two days earlier than *La Belle Alliance*; the latter is a grandly effective tulip, and in the gleaming sunshine the hue is very rich and bright. *Vermilion Brilliant* is also a fine showy tulip, of a rich vermilion-crimson hue, and comes into bloom about the same time as *Scarlet Van Thol*, and is larger than this well-known variety. *Couleur Cardinal* is a splendid bedding tulip, having a most unusual dwarf, rigid habit; the flowers are of a rich dark red, with a vivid crimson feather on the edges; it is a little late in blooming, but it serves the important purpose of giving a succession of bloom. *Couronne*

Pourpre is a very fine dark shaded red tulip, perhaps the deepest coloured of all; and it comes into flower with *La Belle Alliance*, to which, by reason of the peculiar bright hue of the latter, it offers an admirable contrast; it, too, has a dwarf erect habit. *Paul Moreelse*, a distinct flower of a bright cerise-crimson hue, is well worthy the attention of bedders, being of a fine and striking tone of colour.

In the way of buff-coloured tulips, *Thomas Moore* stands alone in its peculiar distinctiveness of character. If not quite so effective as the yellow selfs, it is yet worthy of attention, because having so much individuality.

There is a grand wealth of violet-coloured flowers, or those having violet in their character. The grandest of all is *Proserpine*, a truly regal tulip of a rich bright silken violet rose hue, of very large size, and magnificent build. It is unrivalled as a bedder or for growth in pots. Its high price is against its extended use, and yet this also shows that the supply scarcely keeps pace with the demand, for the high price has been maintained for a considerable period. The darkest of all the flowers of this shade is *Wouvermann*, of a deep purplish violet hue and very distinct; *Van der Neer* is rather paler than *Wouvermann*, and as a flower is of a splendid build, and of large size; this also is a fine bedding variety, but high in price. *Queen of Violets* is a fine pale-coloured flower of good build, and quite distinct, and appears to be identical with *President Lincoln*. Another good pale violet flower, and very useful, is *Moliere*. A newer variety, of much the same shade as *Proserpine*, is *Cramoisie Pourpre*, but later and not nearly of so good a build.

The edged flowers comprise some splendid tulips, large and showy. The premier is *Keizer Kroon*, bright shining red, broadly edged with deep yellow, magnificent alike for beds or pots; a bed of this grand variety, on a bright spring day, is a sight long to be remembered. Next comes *Duchesse de Parma*, a large and showy flower, having an orange-red base, and feathered with yellow; this, too, is a very effective bedder. *Duc d'Artemberg* is much in the same way, but smaller, and of scarcely so deep a colour. *Princesse d'Autriche* is a broken or feathered form of *Duchesse de Parma*, the base being streaked with yellow. A bed of *Duchesse de Parma* is almost certain to show the broken form; while a bed of the broken form is very apt to show flowers having an unbroken base. *Le Matelus*, white, flushed with rose, may be described as an excellent fair-weather tulip, but gets washed out in wet weather. *Rose Luisante* and *Rouge Luisante* appear to be the same; if there is any difference between them, the latter has more colour in the base. At any rate, it may be safely recommended as a good dwarf early tulip.

The most numerous section consists of striped flowers, as of these there is a great variety, and they comprise some very pretty and distinct types. There is a very fine and handsome rosy-cerise self tulip named *Cramoisie Superb*, which appears to be identical with one known under the name of *Monument*, or nearly so. The broken form of this has white stripes; it is very handsome, and known under the name of *Cramoisie Royale*. It is very effective both for pots or beds. *Roi Pepin*, having crimson flakes and stripes on a light

ground is a very pretty dwarf growing tulip, but better adapted for pots than beds; besides which, it is one of the most expensive of the varieties grown. *Royal Standard* is a pretty and useful striped flower, the ground white, with feathering of rosy-crimson. *Bride of Haarlem* is something in the same way, but more colour in it, and of better quality, and a good forcing variety, which *Royal Standard* is not. *Joost van Vondel*, crimson, with a pale feather along the base of the florets, and occasionally with white stripes, is a flower of very fine build and large size, and effective in pots, but also good for beds, being dwarf in growth and keeping so, however richly grown, and will do for a self-bed, as the stripe is generally somewhat indistinct. *Fabiola*, a distinct variety of a rosy-violet ground flaked with white, is better adapted for pots than beds, as when grown in the open ground the colours are apt to come dull. *Grand Duc de Russie* appears to be identical with *Fabiola*. *Globe de Regnant*, deep violet, striped and feathered with white, is a good useful tulip, though rather dull-looking. *Golden Standard*, having golden stripes instead of white, is also a good useful dwarf bedding variety.

The double tulips are much more restricted in numbers than the single kinds, and with the exception of a very few well-known serviceable varieties, are not near so much in request for bedding purposes. The glorious old *Tournesol* stands ahead of all as yet, and of other edged varieties. *Gloria Solis* comes next for effectiveness, and is also very cheap. *Velvet Gem* has the same coloured base as *Gloria Solis*, and a very slight feather of yellow on the edges of the florets. *Duke of York* is a distinct, but scarcely effective edged flower when used in a bed; it has a dark rose-coloured base, and an edging of white, but it is very pretty in pots. *Couronne de Roses*, deep bright crimson, is a most acceptable bedding variety, being dwarf in growth, and very showy. The finest self-scarlet is *Imperator Rubrorum*, it is large, full, and very showy. The *Yellow Tournesol* is a good yellow self, and, as compared with yellow rose, has a more erect habit. All the double flowers are apt to hang their heads and consequently are not so effective in beds as the single kinds, which are more rigid in the flower-stalks, and are not so apt to fall about.

The short duration of the blooming season is a complaint often laid to the charge of tulips, and is used as an argument against their use in the flower garden. Generally speaking, the case is a little over-stated against the tulip; they do continue in bloom for a considerable period, and if a little attention be only paid to their relative precocity, a very fair succession of bloom can be obtained. It is certain there is nothing else can give such bold imposing masses of colour during the spring months as the tulip. My advice to spring gardeners is, always have a base to the beds in which you plant your tulips. I once saw at Ealing Park a charming spring bed, and that, too, composed but of simple elements: namely, a base of the white-flowering *Arabis albida*, from the midst of which rose single red hyacinths. Looked at from the distance of a hundred yards or so, with a dark background of shubbery to throw it up, this was a very pleasant floral picture indeed. This illustration serves to show how tulips can be used in conjunction with other things; some

to bloom earlier than the tulips, and others later. Then foliaged-beds are being much introduced into our spring gardens, and make such excellent bases for tulips.

Nor must beds of mixed tulips be overlooked. Some of these are very charming indeed, and we advocate their use in consequence, even though some may be a little dwarfer in growth than others. A bed of mixed tulips among a few beds of self-coloured flowers form a nice and acceptable contrast to the masses of colour, in the same way that a bed of foliaged plants softens the effect of glaring masses of colour in the summer flower garden.

HOMO SUM.

THE AUTUMN AND WINTER MANAGEMENT OF FRUIT TREES UNDER GLASS.

BY WILLIAM COLE,

Head Gardener, Eling Park, Middlesex.



DURING the autumn and winter months the proper management of fruit trees under glass does not require a vast amount of skill, yet it is of sufficient importance to admit of attention being directed to it without any apology being necessary. In dealing with this question it is impossible to ignore the fact, that a very common impression prevails to the effect that the trees are able to take care of themselves from the time the fruit is gathered until they start into growth again. That this impression is erroneous, all who have paid any attention to fruit-growing will be prepared to admit; but it is necessary to point out its existence in justification of a large proportion of the remarks that will follow.

One of the principal points in connection with the management of fruit trees in the autumn is their full exposure to the weather: when the lights can be taken off and the foliage exposed to the beneficial influence of the autumnal dews and rains, a considerable amount of labour in syringing the trees will be saved. There are a few cultivators who yet believe in the doctrine, that after the fruit is gathered, the red-spider should be looked upon as a blessing, rather than as a plague. They imagine that with the maturation of the fruit the functions of the leaves are completed, and therefore suppose that the sooner they fall off the better, to more fully expose the young wood to the air and light. The thorough ripening of the wood is of considerable importance undoubtedly; but it must be borne in mind that the embryo flower-buds are formed in the autumn, and that healthy foliage plays a most important part in their formation; hence it is important to keep the leaves clean and quite free from insect pests of any kind, until they fall naturally. When the trees are uncovered, the rains and dews will prevent the red-spider or thrips making much headway, and will also materially

assist in swelling up the buds. Trees growing in houses with fixed roofs should, to compensate for the benefits they are deprived of, be syringed at least three times a week, from this time until the end of September; and if at all infested with black or green fly, or with thrips, they should be fumigated three or four times, with two days between each operation. Trees that are uncovered should be smoked two or three times, or more if necessary, before the lights are taken off, provided there is the least vestige of either of the above-mentioned pests upon them. Clear water is valuable as a preventive, but when either the green-fly or thrips have become firmly established, something stronger is necessary to dislodge them, and nothing can possibly surpass tobacco smoke, when used in a judicious manner. All fruit trees in pots should be removed to the open, where they will have full exposure to the sun and to the air throughout the day. The pots should be stood upon a bed of coal-ashes to prevent the worms passing through the holes in the bottom; and to keep the roots cool, and to prevent the soil drying up too quickly, pack some loose material, such as partly decayed leaves, or tan, or cocoanut-fibre refuse, between and about the pots. With reference to winter management, it must be said that trees do not of course require so much moisture about the roots after they have completed their growth, as they do when growing freely and have also a crop of fruit to support; but at no stage must the soil be allowed to become dust dry. Speaking in a general way, sufficient moisture should be administered to keep the leaves from flagging, and no more; and in winter the soil should be kept moderately moist only. One of the chief causes of the flower-buds of fruit trees grown under glass dropping off prematurely, is due to the soil being kept too dry during the winter. An excessively high temperature in starting the trees and exposing them to sudden changes will also cause the buds to fall off, but the most general cause is undoubtedly dryness at the roots. A moderately thorough soaking of water about once a month during the winter season will suffice; and to prevent the borders being kept in a constant state of saturation when the trees are at rest, the lights should be put on early in November. It is also worthy of remark, in connection with this branch of the subject, that all outside borders of early houses should be covered early in the last-mentioned month to retain the warmth of the soil as far as it is possible to do so. A layer of newly gathered leaves, about fifteen or eighteen inches in thickness, and thatched with long litter or straw, forms the most effectual covering, as it throws off the wet and also assists in keeping the soil warm. It is not my intention to say anything about pruning and training, but it will perhaps be useful to many to know, that weakly shoots which will not be required, may be removed, if the trees are overcrowded, and the wood that will be required for laying in, for bearing next year's crop, will be properly matured through receiving a fair share of light.

SCHIZANTHUS CULTURE FOR CONSERVATORY DECORATION.

BY A KENTISH GARDENER.



FEW of our half-hardy annuals are so well adapted for pot cultivation as these useful plants. Whether they are not generally known, or whether cultivators have found something else to suit their taste better, it matters not; but certain it is they are not so extensively grown as they deserve to be, for their management is so simple that any one with a cool and light airy greenhouse can grow them; indeed, it is in this position they succeed the best.

The varieties known as *S. pinnatus*, *S. pinnatus Prestii*, *S. Hookerii*, and *S. Grahami*, are all erect-growing kinds, and when well done will attain the height of three or four feet. Sow the seed on a warm border out of doors the first week in September. Sow very thinly, and be careful to secure a proper amount of moisture in the soil, so that the seed may soon vegetate; for if this is not attended to, the seed becomes parched by the action of a bright sun or a long-continued drought. When well up, they should be thinned out to twelve inches apart, to secure sturdy, compact-growing plants. If kept free from weeds after this, they will take care of themselves till the first week in October, at which time they should be taken up with a trowel, and potted in well-drained six-inch pots. The soil should be light, with a liberal sprinkling of sand; but in potting, the greatest care is required with their roots, or they will be injured, for they are many in number, but very slight and tender. Half-a-dozen plants of each sort will be enough for small gardens; but it is best to take enough, in case one or two should be lost during the winter. When all are potted, stand them in a cold pit or frame for a few days, or on a shady shelf in the greenhouse; but when well established in their pots, remove them at once to a light airy shelf in a cool greenhouse, putting them as near the glass as possible. In this position they will want but a moderate supply of water during winter, for the object is to keep them as much at rest as is consistent with safety. Imperfect drainage is fatal to them during November and two following months, so that they must be carefully examined if symptoms of ill-health are perceptible, for when the soil becomes water-logged, they damp off at the collar, and of course never recover.

As the days lengthen in the spring, and the sun's power increases, they will begin to make a fresh growth, which should be encouraged if the end of February is near at hand, by shifting them at once into their blooming pots. For an ordinary greenhouse, an eight-inch pot will suffice; for a conservatory of any pretensions, a ten-inch pot may be used with advantage. This shift to the blooming pots is recommended, because I have found that to remove them successively from one sized pot to the other, their roots are so

slender and delicate, that to prevent an injury in removing them is almost next to impossible. Neither is it desirable to do so, for when once started again, they make rapid progress, and are all the better for not receiving any check. Employ a moderately heavy soil for them to bloom in; one half of good loam, and the remaining half some turfy soil, well mixed together. Place a neatly-trimmed stake for the leader of each plant, which is all the training they require, for to give more is to spoil their beauty, and if they do require it, it is sure and certain evidence that the culture has not been good, or they would not want it. They must have no pinching, but abundance of fresh air when the thermometer stands above 35°. When introduced amongst the first batch of pelargoniums and other spring flowers, they are very effective.

ANTIRRHINUMS AND PENTSTEMONS.

BY AN AMATEUR FLORIST.



SINCE the reaction which has taken place in favour of hardy flowers, the two classes of plants named at the head of these remarks have increased in popularity to a wonderful extent, and to speak of the beauty of these flowers, or otherwise extol their merits, would be entirely out of place. This being the case, the cultural details can be dealt with, and the names of a few of the best sorts indicated without further preface. The improvement which has been effected within the last few years in the flowers of both classes, has been very marked, and it might be said with safety that all sent out more than four or five years since are quite surpassed, and to buy them would be little less than a waste of money. The principal improvements we have to boast of are in the main due to the efforts of Messrs. Downie, Laird, and Laing, of Stanstead Park Nurseries, Forest Hill. Messrs. E. G. Henderson and Son, of St. John's Wood, have assisted in the good work by raising a series of dwarf-growing Antirrhinums that are certainly most valuable for flower-garden decoration and for pot-culture. The Continental florists have also paid considerable attention to the Pentstemon, and have sent us over some good varieties; but the flowers of most of the continental varieties are too short in the tube, in proportion to their size, to satisfy the florist. The varieties raised at Forest Hill are free from this defect, and after looking at *W. E. Gumbleton*, and *Stanstead Rival*, two varieties sent out from thence during last spring, I have almost come to the conclusion that further improvement is impossible. A set of new varieties is sent out from the above-mentioned nurseries every spring, all more or less good, and from those sent out in the spring of the present year, the following are such as no grower of Pentstemons should be without, namely:—*Colonel Long*, claret crimson, white throat, delicately pencilled; *Delicatissimum*, pure white, tinted with bright pink; *George Arner*, purplish maroon, with white throat, richly tinted with dark crimson; *John Wilson*, bright rosy crimson,

pure white throat, pencilled with rose; *Lady Boswell*, deep pink. throat white, with broad margin of carmine pink; *Miss Baillie*, brilliant rosy scarlet, pure white throat, veined with scarlet; *Magenta*, bright magenta, flushed with purple, the throat painted with dark claret; *Polly King*, rosy crimson, white throat, pencilled with crimson; *Rev. C. P. Peach*, purplish crimson, white throat, finely pencilled with carmine; *Stanstead Rival*, bright scarlet crimson, pure white throat, slightly pencilled with light carmine; *W. E. Gumbleton*, deep purplish rose, throat pure white..

Those who take Pentstemons in hand for the first time should begin with the older varieties, and the under-mentioned twenty-four will form the best collection that could be had without the newer varieties mentioned above; namely, *Agnes Laing*, rose, white throat; *Arthur McHardy*, scarlet, throat white, pencilled with crimson; *Arthur Sterry*, rosy purple, white throat, *Black Knight*, maroon, light throat; *Candidate*, purplish rose, white throat; *Colin Bell*, rosy scarlet, throat pure white, heavily painted with crimson; *Gloire de Dennice*, pink, throat light, prettily painted; *Grandis*, carmine, throat white, pencilled with crimson; *John Pow*, red, white throat; *James Rothschild*, crimson purple, clear white throat; *Melanie Lalayette*, delicate rose, white throat; *Monarch*, deep crimson; *Mrs. Peter Utor*, crimson, throat white, pencilled with red; *Madame Louis Schmitzer*, white, tinged with purple; *Painted Lady*, rose, throat white, painted with crimson; *Purple Perfection*, purplish crimson, throat white, varied with rose; *Novelty*, pink throat, painted with crimson; *Purple King*, deep purple-crimson, throat white, veined with rose; *Purple*, purple-violet, white throat, pencilled with deep rose; *Queen Victoria*, white, tinted with rose; *Rosy Gem*, rosy crimson, throat pure white; *Souvenir de Matthieu Pernet*, purplish amaranth, throat pencilled with crimson; *Stanstead Surprise*, deep purple, white throat; *Snowdrop*, pure white; *W. P. Laird*, light blue, pure white throat.

The most beautiful of the new Antirrhinums sent out by Messrs. Downie, Laird, and Laing last spring are:—*Charming*, delicate pink, prettily striped and mottled with deep rose; *Clio*, yellow and buff, mottled and striped with red; *Bitrix*, white, striped and splashed with scarlet; *Fortuna*, pure white, striped with rosy purple; *Orange Boven*, brilliant crimson-scarlet, with deep orange lips; *Queen of Crimson*, intense crimson.

The following eighteen older varieties from the seed-bed of the same raisers are, perhaps, the most desirable of the older kinds, and are well entitled to a place in the most select collection, namely:—*Alice*, pure white, striped with rose; *Artist*, purple, mottled with white; *Bridesmaid*, white, striped with rosy crimson; *Climax*, rose, striped with crimson; *Carnation*, white, striped with rosy scarlet; *Firefly*, scarlet and white; *George Gordon*, intense glowing crimson, smooth and perfect; *Grand Duke*, bronze and crimson striped; *Gladiator*, white, striped with rosy scarlet; *Gazelle*, sulphury white, striped with rose; *Harlequin*, French white, striped with rose; *Leopard*, light bronze yellow, striped with rosy crimson; *Mathilde*, rose, striped with dark purple; *Miss Ruth*, French white, striped

with bright rose; *Mrs. M'Donald*, white, veined and splashed with rose; *Nonpareil*, white, striped with rosy crimson; *Striped Unique*, white, striped with rosy crimson; *Pretty Polly*, white, marbled with pure yellow; *The Bride*, orange, striped with red; *Yellow Gem*, bright yellow.

The following collection of dwarf-growing varieties, sent out last year by Messrs. Henderson, are very desirable. The names and colours are as follows:—*Brunel*, French white, flaked lilac; *Coronation*, white, yellow, and rose; *Crown Jewel*, crimson, scarlet, yellow; *Elegantissima*, pure white, with creamy centre; *Elfrida*, white and canary yellow; *Fire King*, scarlet, white and yellow; *Gertrude*, rose, buff, and yellow; *Golden Drop*, yellow, lemon, and rosy scarlet; *Josephine*, lilac, yellow, and purple; *Mirabile*, white and rose; *Ne plus ultra*, golden yellow; *Queen of Beauties*, scarlet, purple, and orange.

The cultivation of Antirrhinums and Pentstemons differs so very little that one set of directions will do for both. The former are the hardiest, and reproduce themselves more faithfully from seed, and that mode of raising a stock can be heartily recommended to those who have an opportunity of procuring seed from a first-rate collection. In very severe winters Antirrhinums grown in unfavourable situations will probably suffer, but the remarks upon wintering a stock in frames must be supposed to apply wholly to the Pentstemons, glass being in small gardens too valuable to admit of its being devoted to the protection of Antirrhinums.

In propagating a stock, those who prefer raising seedlings must commence at once, for the seed should be sown early in autumn, and then good strong plants can be had for blooming early the following summer. Seed sown as late as the middle of September in pans, and placed in a cold frame, or under a hand-glass, will produce good plants if pricked off into a bed in a rather dry and sheltered corner, and then planted out into their permanent quarters early in the spring. Sow in pans filled with light sandy soil, and place under shelter until the plants are nicely up, when they can be taken out of doors, and a few days afterwards pricked out about three inches apart, in a bed which has been prepared by deep digging, and if the soil is heavy, by mixing some light sandy stuff to enable them to root quickly. Toward the end of the following February, or any time in March, plant out in a bed of good soil, or in clumps of two or three together, along the second row of the herbaceous border. The plants should be not less than a foot apart, whether in beds or clumps, so as to give them sufficient room to develop themselves, but a space of eighteen inches will be preferable.

The cuttings can be struck during this and next month, or early in the spring; but the present season is preferable, because they can be struck without the assistance of artificial heat, and the plants come into bloom much earlier in the season. When the cuttings are struck, they can be kept in a cold frame through the winter, or treated exactly the same as the seedlings. As the young plants are rather tender, and consequently susceptible to injurious influences, damp being one of their greatest enemies, it is well to give them

every opportunity of resisting it, by selecting a dry sheltered position for the transplanting bed. A dressing of leaf-mould should be applied in addition to the sandy stuff mentioned when speaking of the seedlings.

The varieties mentioned above will make a glorious bed, if mixed with due regard to their various heights and colours, and the effect produced will be quite equal to that capable of being produced by any other class of plants. The beds should be prepared by trenching them deeply, and working in at the same time a liberal dressing of thoroughly-decayed manure and leaf-mould. Where the plants are to be turned out singly, or in clumps of three together, in the mixed borders, the ground should be dug up deeply where they are to be planted, and a few spits of manure added. Few plants will pay much better for liberal treatment than those we have under consideration. The superiority of the spikes and individual flowers, when the plants have a little attention, over those produced by others planted without the soil undergoing any preparation, will be so apparent as to repay the little time and labour expended more than a hundredfold. The flower-spikes should be removed immediately the beauty of the flowers is over, unless it is intended to save seed, and those which flower early will throw up flower-spikes a second time. In an extra sharp winter it is advisable to cover the old stools with coal-ashes, but it should be removed before the plants start into growth.

The plants raised from cuttings struck in autumn may be put in three-inch pots, and wintered in a frame with just sufficient protection to prevent the frost doing them any harm. Planted out as early in February as the state of the weather and condition of the soil will permit, they will soon become established, and produce an abundance of bloom throughout the summer, if the old flower-spikes are removed when it becomes necessary.

FLOWERING PLANTS FOR TABLE DECORATION.

BY J. W. SILVER,

Head Gardener, The Laurels, Taunton.



THE FLORAL WORLD for June a list of plants with ornamental foliage, adapted for dinner-table decoration, was given, and a promise made that a list of flowering plants, suitable for the same purpose, should follow. It would, perhaps, have been more satisfactory if the list had been given in the issue for the following month, but the demands upon our time during the exhibition season are so great and every moment is so occupied, that very little time is spared for writing. We will commence with

STOVE PLANTS.

ANTHURIUMS.—One of the most useful and effective flowering

plants adapted for the embellishment of the dinner-table is the well-known *Anthurium Scherzerianum*. It is certainly the most useful of its class, on account of the brilliancy of its vermilion red spathes, and also for the length of time they remain in good condition. It succeeds well in a compost consisting of equal parts fibrous peat and sphagnum moss, to which may be added a liberal proportion of broken crocks, charcoal, and silver-sand. The pots in which the plants are put should be perfectly clean and well drained, and in potting it is desirable to place on the top of the crocks a layer of the roughest of the compost, sufficiently thick to bring the ball of the plant level with the rim of the pot. When this is done spread out the roots of the plant carefully, and then pack the remaining compost about them. The soil should be built up in a convex form, so as to elevate the base of the plant about three inches above the rim of the pot. Covering the surface with growing sphagnum, gives the whole a fresh and pleasing appearance, and materially assists in retaining a certain degree of moisture about the foliage.

EUCCHARIS.—The lovely *E. Amazonica*, when well grown and flowered, is very effective. A stove temperature is required throughout the winter, but during the summer months the temperature of a close greenhouse will be sufficient. To over-estimate its value is difficult, for it may be had in flower three or four times throughout the year. The most desirable way of growing specimens for the table is to place three bulbs in a six-inch pot, and keep them in a shady part of the house until rooted into the soil. When well established, lessen the supply of water, and expose them to the light, but it is not necessary during the season of rest to withhold water altogether. At the same time, it will, perhaps, be well to say that only enough is required to keep the foliage from flagging. In about four or five weeks increase the supply of water, and the flower-spikes will soon make their appearance, and, by judiciously acting upon the advice here given, a constant supply of flower may be secured throughout the whole season. Frequent shifts are not necessary, but when in active growth a little weak manure-water may be advantageously given. Use a compost of two-thirds silky loam, and one-third well-decayed cow-manure, with a moderate addition of silver-sand, and let the pots be well drained.

THYRSACANTHUS.—The graceful growing *T. rutilans* is charming as a table plant when grown properly. Young plants in five-inch pots are preferable, and cuttings struck in the early part of the spring, and grown on vigorously, will make beautiful little specimens by the autumn. The terminal point should be pinched out of the main shoot when only a few inches high, to induce them to break and form bushy specimens. It is also important to keep the plants near the glass to prevent their becoming drawn up weakly. The most suitable compost is prepared by well incorporating together one-third each of good turfy loam, fibry peat, and leaf-mould, and then adding a liberal proportion of silver sand.

GESNERA.—*Zebrina*, *Refulgens*, and *Exoniensis* are the best varieties for the dinner-table, as the foliage is very beautiful, as well as the flowers being showy and attractive. The successful culture

materially depends upon obtaining a full development of growth previous to the period they should be in bloom. This can be most effectually secured by giving the assistance of a genial bottom-heat during the growing period. When the growth is matured, the plants coming into bloom may be moved to a drier atmosphere in the stove, and they can then be used for the decoration of the dinner table, as required. As a rule, a stunted growth and poor spikes of bloom may be attributable to the want of a brisk temperature, combined with a moist atmosphere, and a free exposure to light during the spring and early summer months. Put from six to eight tubers in a five-inch pot, and handsome specimens will be produced with very little trouble. Almost any light rich soil will suit them, but one-third each of loam, peat, and leaf-mould, and a mixture of plenty of silver sand will suit them best.

JUSTICIA.—When well bloomed, and the foliage well developed, *J. carnea* is exceedingly useful for table decoration. Young plants are preferable, and the same treatment as advised for the *Thyracanthus* will grow the *Justicia* well. Great attention must be paid to the plants when in vigorous growth, as it is most important to have them as dwarf and compact as possible.

The above selection does not by any means exhaust the list of plants suitable for the dinner-table, but it will be quite sufficient for medium-sized establishments.

GREENHOUSE PLANTS.

I will now proceed to mention a few subjects which may be cultivated in a greenhouse.

CHINESE PRIMROSE.—The most effective are the red and white single varieties. The striped varieties, and those having flowers of an intermediate shade, are not so effective. To insure a stock of large-sized plants, sow the seed in the beginning of May, and grow steadily on throughout the summer. Pot them in a moderately light and rather rich compost, and keep them near the glass.

FUCHSIAS.—These, trained as pyramids, from one foot to eighteen inches high, produce a very pleasing effect. It is important to select suitable varieties, and for the table I consider the following to be the best six:—*Wave of Life*, *Avalanche*, *Marvellous*, *Enchantress*, *Souvenir de Chiswick*, and *Rose of Castile*.

SALVIA.—The brilliant-flowered *S. splendens* may also be mentioned as being exceedingly bright and telling, as it blooms when flowers are generally scarce. Cuttings struck early in the spring, and then grown on freely in a warm greenhouse, and near the glass, will produce fine medium-sized specimens by the autumn.

CYCLAMEN.—The varieties of *C. persicum* are certainly unsurpassed amongst greenhouse flowering plants. Specimens with an abundance of flower should be used. Those with deep red and white, with red base, are the most effective. Their cultivation has been so fully described in past issues of the **FLORAL WORLD**, that it is not necessary for me to do more than direct attention to their adaptability for the decoration of the dinner-table.

SUPPLEMENTARY NOTE ON FINE FOLIAGE PLANTS.

MARANTAS.—In the paper on ornamental-leaved plants, the mention of this beautiful genus was accidentally omitted, and I now propose to supply the deficiency. Marantas can be grown to any desired size without difficulty, but the specimens grown in five or six inch pots will be the most useful. They are all very readily propagated by division just as they are beginning to make new growth. To do this without materially injuring the plants, turn them out of the pots carefully, loosen and separate the roots with the hand, and then divide the crowns with a sharp knife. Trim the roots a little if they require trimming, and put each portion into a five or six inch pot, and if convenient, partly plunge the pots in a



MARANTA ZEBRINA.

genial bottom-heat, and where the plants will enjoy the assistance of a moderately moist atmosphere. A light open compost, consisting of equal parts turfy loam, fibry peat, and leaf-mould, and a sixth part of silver-sand, will grow them to perfection. They should also be grown in a shady part of the stove, as the foliage when exposed to the sun during the summer loses that fresh velvety appearance for which it is remarkable. *M. zebra* and *M. Warscewiczii* are the two most useful for the table, because of their graceful habit of growth, which is so well shown in the accompanying illustration. *M. rosea-picta*, *M. Veitchii*, *M. fasciata*, *M. imperialis*, and several others, may be employed for the same purpose, but the two first-named are the best, and they are moreover cheap, and within the reach of all who have a stove in which to cultivate them.

W. & A. G. & Co.

NEW NOTES ON PROPAGATING BEDDING PLANTS.

BY JOHN WALSH.



PROPAGATING a stock of bedding plants is not so great a labour as many amateurs imagine, yet it is sufficiently difficult to make a heavy tax on the time and attention of those who have not much practical knowledge of the matter. For the assistance of this class of flower gardeners I purpose giving a few practical directions upon propagating the various classes of bedding plants now in the greatest request, and as they will be couched in the plainest terms possible, they cannot fail to be useful.

GERANIUMS.—These are well entitled to have precedence over all other classes of bedders; for in dry seasons nothing can equal them, and they thrive and flower abundantly in the poorest soils. The object of these remarks is not to advocate the claims of bedding geraniums, but to show the way to propagate a stock with the least possible trouble. It is utterly unnecessary to put cuttings of any of the varieties in frames or under glass of any kind. Indeed it is objectionable, because they do not strike so freely as when inserted in the open border. The first steps it will be necessary to take will be to select a south border or an open quarter, and break up the ground and mark it out in three feet beds. When this is done, make the surface smooth and firm with the spade. The object of dividing the border into beds is simply to enable us to go between the beds to remove the dead leaves when required, and give the cuttings any other little attention that may be necessary. If the soil is heavy, it is as well to mix a little river sand or other gritty substance with the surface soil. In ordinary loams this is not required. The beds being ready, the cuttings are inserted and made firm; and after they are all put in, they have one good watering to settle everything in its place, which is all the assistance they will receive from the watering-pot until they are taken up and potted. The cuttings are put in about an inch apart in the rows, and the rows are about four inches from each other.

In turning our attention to the preparation of the cuttings, it is necessary to say the cuttings should be taken from the beds in such a manner as not to spoil their appearance. At this time of the year, the cuttings must be cut rather long, so as to have a portion of rather firm wood towards the bottom. When the portion inserted in the soil is too soft and sappy, it soon rots, and the cuttings are consequently lost. All the leaves with the exception of two or three at the top should be removed, for many years' experience proves that they root quicker than when they are burdened with too much foliage. The leaves soon die off, and injure the other leaves, and in wet weather very often rot the growing point of the cutting itself, if not removed.

As a rule it is desirable to take cuttings up directly they have roots half an inch long. They recover from the shift quicker, and do

not feel it so much when moved at this stage, or when just callused, as they do when left to become thoroughly rooted and grow wild before being taken up. Thousands of geraniums are wintered in boxes and pans, but, to tell the truth, I must say that I never liked it so well as keeping them in pots, for the reason that those round the side grow away strong, and half smother those in the centre, many of which towards the spring are of very little use, whilst the others have every opportunity of growing too rank, through having too large a feeding ground. A plan found to answer well, is to put three plants in three-inch pots, keep them there until February, and then pot off singly. There is not much fear of one smothering the other; and quite as many plants can be stowed away in a given space when potted this way as when they are put in boxes or pans.

When they are potted off, stand the pots out of doors on a hard bottom until the appearance of frost renders it dangerous for the plants to remain without protection. Where the plants are to remain in pits and frames through the winter, whether heated or not, if the structures are ready for their reception, it is as well to place them in their proper places at once, and take the lights entirely away until the coldness of the weather renders it necessary to put them on again. This saves the trouble of a second shift. All the geraniums should have no more water through the winter than is necessary to keep them alive, unless it is thought desirable to place them in heat for propagating. In that case, they will require the application of that element in proportion to the heat of the house in which they are.

The above remarks apply with equal force to the section with variegated leaves, and it is more important to strike these out of doors than the green leaves, for they are more difficult to strike in pots than the last-mentioned. The variegates should be kept on the greenhouse shelves through the winter, for damp so soon catches them; the green-leaved kinds will do very well in a dry pit, if it has the advantage of sufficient piping to dry up the damp and keep out frost. It is, however, much the best to keep them all as quiet as possible through the winter, and then, when the young plants are potted off in the spring, they start away vigorously, and make grand plants for turning out when the proper time comes for their being transferred to their summer quarters.

CALCEOLARIAS.—Though these valuable bedders suffer very severely in dry seasons, we must not discard them. They will no doubt regain a considerable share of their popularity this season, as the past summer has been so favourable to them. It is too early to begin propagating these yet; and they ought to be left until the end of the present month. From the end of the month until the middle of the next, a better time could not possibly be had. The wood is in a much better condition for emitting roots about that period than earlier in the season. Take the cutting with three joints, cut it close under the bottom one, from which the pair of leaves are removed, and cut the top leaves, if large, about half off. This enables the foliage to stand up stiff, instead of falling about, as is the case when the foliage is left its whole length. Calceolarias are

much better when grown in the cold frame through the winter than they are in heated structures. They make better plants, and are ready for turning out earlier in the season, and are consequently better able to become established before the dry hot weather sets in. We never take much trouble with them, but make up a bed of soil about six inches in depth in a frame or turf-pit, and mix a little thoroughly-decomposed dung with the loam, and sprinkle sand over the surface, and give it a good watering. The cuttings are put in about an inch apart every way, and after another watering the operation is completed. The lights are put on and a mat thrown over them in bright weather. They will require very little water besides a sprinkle with the syringe to keep the foliage fresh when they are first put in. So soon as the cuttings can bear air, give a little at first, and afterwards as much as the weather will allow, for by this time we shall be in the midst of winter. In the spring, they can either be potted up into three-inch pots, or, what is better, planted out in a bed of good soil in a cold frame; or, failing that, a temporary one may be erected with a few boards for the sides, and strips of wood across to keep the mats, with which the frame will require to be covered, from falling on and breaking the plants. Plants treated this way will come up with good balls of soil and take root in the fresh soil much better than those kept in pots; such, at least, has been my experience with them.

VIOLAS.—A fresh stock of these should be propagated every year, for the plants become weedy if left in the beds the second season. They must not be coddled, and the best way of dealing with them is to put in the cuttings during the first or second week in the present month, in a cold frame, in boxes. Then early in the spring plant them out as suggested for the *calceolarias*, and plant out early. The frame must not be kept shut up during the winter, excepting in very damp or frosty weather, or mildew will be developed and a large proportion of the stock will perish. Flowers of sulphur dusted over the foliage will be the best means of checking mildew after it makes its appearance.

MISCELLANEOUS BEDDERS.—Under this heading will be included the whole of the other remaining subjects which require attention at this season, such as *Verbenas*, *Heliotropes*, *Variegated Alyssum*, *Petunias*, dwarf *Lobelias*, and other plants of a similar character. The general way is to strike this class in the autumn, in a cold frame, and frequently with very good results, but I have long been convinced that it is by no means the best. Nothing equals a mild hotbed for placing the cuttings on after they are inserted in the cutting-pot. When there is plenty of time, room, and cuttings, this is not of much importance; but where there are no more of these things than is just sufficient, a mild hotbed will repay itself twentyfold in a much larger proportion of rooted cuttings than would be the case were they placed in a cold frame. The cuttings should be removed to colder quarters directly they are rooted, for it is impossible to keep them too stocky. The pots require filling with light sandy soil, a layer of sand on the top, and a good drainage at the bottom. Five or six inch pots or shallow pans are the best

size to use. Watering and shading must of necessity be attended to, but guard against overdoing either. Plants of the above-mentioned subjects are best kept in a cool, dry, airy house through the winter, with just sufficient heat to keep out the frost and dry up all superfluous moisture in damp weather. Dust the foliage with sulphur immediately mildew makes its appearance, and fumigate with tobacco paper if greenfly or thrips show any signs of infesting the plants. *Lobelia speciosa* can be raised pretty true from seed, and with careful selection the plants will come so true that it would require a sharp eye to know whether they had been raised from seed or cuttings. To save seed, pick out about half a dozen plants that combine all the qualities of a good *Lobelia*, and the produce is always good. The varieties of *Speciosa* and also of *Pumila* must be raised from cuttings. If cuttings are scarce, cut a few plants down; they will soon commence to make new growth and furnish an abundance of cuttings. To avoid interfering with the arrangements in the flower garden, a few plants of each kind should be planted in a shady corner, and then there will be no difficulty in the matter. A close observance of the few rules here laid down, in combination with an ordinary amount of common sense, will not fail to produce the most satisfactory result, and it will be entirely the cultivator's own fault if he fails to realize his highest anticipations.

HORTICULTURAL NOTES.



THE intense heat with which the early part of the August was characterized has had a most beneficial effect upon the crops of the farm and the garden with but few exceptions, and has been most favourable to the ingathering of the harvest.

At page 184, after a wide range of observation, extending over almost all parts of the country, I expressed an opinion to the effect that there would be fair crops of almost all kinds of fruit, and I am glad to find that my anticipations have been fully realized. Some crops in certain districts have failed altogether, and the same crops in others have been altogether as good.

Since my last notes no exhibitions of importance have been held in the metropolis, excepting the supplementary Rose Show, which was in every way a grand success. Several important exhibitions have been held in the provinces, notably those at Glastonbury and Taunton, two important districts in the west of England, and it is impossible to give an adequate idea of the enthusiasm which pervaded all classes in the districts on the show-days; and the display of horticultural produce was grand in the extreme. Particulars of either of these exhibitions would be out of place here, but it may be said with justice that each and all of the exhibitors acquitted themselves well. In the list of prize-takers the name of a respected and valuable contributor to the FLORAL WORLD, Mr. J. W. Silver, head gardener to J. B. Saunders, Esq., of Taunton, was conspicuous by reason of its appearing against the first prize in so many classes

Perhaps some day or other Mr. Silver will tell us how he managed to bring to such marvellous perfection the exotic ferns in the great open class for ten. The specimen of *Adiantum Farleyense*, exhibited by Mr. Silver in the first prize group of six fine foliage plants, was one of the best ever seen, and the finest specimen fern in the exhibition.

The display of roses at the Crystal Palace on the occasion of the supplementary exhibition was not quite so extensive as on the occasion of the great rose show in June; but the blooms were, on the whole, much finer, and presented a much fresher appearance. The leading trade and amateur growers put in an appearance, but it is unnecessary here to particularize the exhibitors or give the names of any of the varieties shown excepting of those in the stands of sixty single trusses exhibited by Messrs. Paul and Son, Cheshunt, and Mr. R. B. Cant, Colchester, who were first and second. The best blooms in the first prize collection were those of Alfred Colomb, Baroness Rothschild, Comtesse d'Oxford, Marquise de Castellane, Francoise Treveye, Mrs. Charles Wood, Elie Morel, Paul Neron, a showy rose, but too coarse for exhibition, Xavier Olibo, Perfection de Lyon, John Hopper, Captain Lamare, distinct in colour, but not first-rate in form; Madlle. Marie Wood, Madame Caillat, Mrs. G. Paul, Maréchal Vaillant, Marie Baumann, Alice Dareau, Sénateur Vaisse, Céline Forestier, Antoine Ducher, Madlle. Marie Rady, Edward Morren, La France, L'Abbé Giraudier, Abel Grand, Madame Boutin, Reine du Midi, Souvenir de Mons. Boll, Beauty of Waltham, Charles Rouillard, Léopold Hausberg, Gloire de Vitry, Gloire de Santenay, Nardy Frères, Maurice Bernardin, Sophie Cocquerell, Leopold I., Devoniensis, Black Prince, Maréchal Niel, Pierre Notting, Emile Hausberg, Duc de Rohan, La Reine, Madame Victor Verdier, Comte de Nanteuil, Camille Bernardin, Madame Laurent. In the collection from Mr. Cant occurred exceptionally fine blooms of Ferdinand de Lesseps, Prince de Portia, Sénateur Vaisse, Maurice Bernardin, Louis van Houtte, Edward Morren, Camille Bernardin, Pierre Notting, Mons. Joigneaux, Exposition de Brie, Duchesse de Caylus, Devienne Lamy, Victor Verdier, Christine Nilsson, Maurice Bernardin, Thérèse Levet, La Ville de St. Denis, Comtesse de Chabriland, Horace Vernet, and Madame Clémence Joigneaux.

Very liberal prizes were offered for dinner-table decorations; but they were far below what they should have been. The tables were mostly over-decorated, and with but few exceptions, the exhibitors appeared to have entirely overlooked the simple fact of space being required for such things as plates, glasses, etc., and other accessories of the dinner table!

The exhibition of Zonal Geraniums, held at South Kensington, August 2nd, was to all but regular Geranium fanciers a very tame affair, no prizes being offered for collections of established kinds of any but the variegated varieties. The most noticeable advance in any class was that shown in the class for Bronze Zonals, in which Messrs. Downie, Laird, and Laing, Stanstead Park Nursery, Forest Hill, were first with *Marshal McMahon*, a variety which is perfectly distinct from, and superior to, all existing varieties. The leaves are

large and leathery, of the finest possible form, and the zone, which is very broad, and laid on with most mathematical precision, is of the most intense chocolate hue. Except for a regulation which ought never to have existed, they would have been second with the *Rev. C. P. Peach*, a very fine variety, with broad chestnut-red zone on a clear golden-yellow ground. They also exhibited a collection of seedling varieties, many of them being exceptionally good, and specimens taken from the open border of *Impératrice Eugénie*, *Black Douglas*, and *Reine Victoria*, all of which are grand bedders.

In the class for the best Golden Zonal, Mr. C. Turner was first with *Miss Morris*, a magnificent variety, with medium-sized and most richly-coloured leaves, the zone being broad, well defined, and of the most brilliant carmine hue. Messrs. J. Carter and Co. were second with *Prince of Wales*, which still remains one of the best in cultivation; and Messrs. Bell and Thorpe, Stratford-on-Avon, were third with *Macbeth*, also first-rate, but upon this occasion not presented in good condition.

Mr. Turner was also first for a Silver Zonal with *Mrs. Rousby*, a most valuable acquisition to its class. The leaves are of medium size, and the zone, which is broad and well-defined, is of the most lively carmine hue.

Only two Silver Variegated varieties were staged, and the first prize was awarded to Mr. Pestridge, Uxbridge, for *Blushing Bride*, a useful free-grower, with white-tinted flowers. The second prize was taken by Mr. Turner, with *Miss Kingsbury*, an old variety, now proved to be one of the best of its class for bedding purposes in existence.

W. R. Morris, Esq., offered two prizes for the best six seedling Golden Zonals, and one for the best single specimen selected from the competing groups of six. Both first prizes were carried off by Messrs. Downie, Laird, and Laing, who, it is worthy of remark, have only taken this section in hand during the past two years.

The competition in the classes for varieties grown for their flowers was rather spirited, and several good kinds in the respective classes were staged. For the best Zonal the first prize was taken by Mr. Mann, Brentwood, with *Triumph*, a fine variety with large flowers of fine form and of a deep scarlet crimson hue; and the second by Mr. C. Turner, with *Madame Jules Elysse*, a Continental variety with clear salmon flowers, tinted with vermilion. Mr. Turner was also first for an ivy-leaved variety with *Willisi*; and Mr. Macintosh, Hammersmith, occupied the second place with large well-flowered specimens of the old white-flowered Ivy-leaf. Messrs. Bell and Thorpe were first for the best Double Zonal with *Miss Evelyn*, a grand variety with pink flowers; and for Nosegays they were first with *Charles Dickens*, rosy scarlet tinted with purple, quite distinct in colour, and valuable both for bedding and pot culture. The second prize for Doubles was carried off by Messrs. J. Carter and Co. with well-flowered examples of *Charles Glyn*; and the second prize for Nosegays by Mr. H. Cannell, Woolwich, with *Master Christine*, the best of all, with flowers of a rosy pink hue.

New Picotees were shown rather extensively by Mr. Norman,

78, Crescent Road, Plumstead, and Messrs. Wood and Ingram, Huntingdon. The former was granted first-class certificates for *Mrs. Ingleton*, light-edged red, and *Ada Ingleton*, light-edged purple, and *Charles Williams*, heavy-edged red; and the last-mentioned firm received similar awards for *Delicata*, light-edged purple, and *Miss F. Ingram*, heavy-edged red.

First-class Certificates were conferred upon *Dracæna Fraseri*, a strong-growing species, with large bronzy leaves distinctly margined with bright carmine, exhibited by Mr. Fraser, Lea Bridge; and upon *Juniperus chinensis aurea*, a very beautiful and constant variety of this well-known conifer, in habit exactly resembling the normal form, but the young growth is tipped with deep golden yellow; exhibited by Mr. M. Young, Godalming.

The Gladioli show at Kensington, although not very extensive, was remarkably bright and attractive. The leading trade growers were Messrs. Kelway and Son, of Langport, and Mr. Douglas, gardener to F. Whitbourne, Esq., Loxford Hall, Ilford. The varieties staged by Messrs. Kelway and Son in the open class for twenty-four were—Renon, Clarissa, Lacépède, R. C. Tucker, Robert Fortune, Ophir, Orphée, Le Gouve, Virginie, Phidias, Luna, Lord Bridport, Yeletes, Adolphe, Brongniart, Yellow King, Madame Vilmorin, Curipede, Rival, Archelaus, Aristophanes, Lady Bridport, Astrea, and Araxineus. The following new varieties were shown and awarded first-class certificates. By Messrs. Kelway and Son, *Lord Bridport*, blush tinted pink, lower petals lightly blotched with maroon-crimson; *Hogarth*, blush feathered with purple; *Pictum*, pink painted with vermilion; and *Julian*, blush feathered with deep purple; *Archelaus*, white, lightly feathered and tinted at the edge with pink; *Yellow King*, creamy-yellow, ground striped with carmine edge; *Astrea*, deep glowing scarlet, with small violet feathers; *Araxineus*, vermilion, throat lightly feathered with purplish rose; *Phidias*, deep glowing purplish rose tinted with violet; wonderfully rich and telling; *Lady Bridport*, blush-pink, small feather of deep crimson; this was not awarded a certificate, but it was one of the very finest of the seedlings. By Mr. Douglas, *Mrs. Francis Whitbourne*, blush, feathered with violet-crimson, and striped at the edges with reddish carmine; *Talisman*, purplish crimson, with light rose centre; *William Earley*, creamy-yellow ground, striped with bright reddish carmine.

Hollyhocks were also shown well at the Gladioli exhibition, although the competition in none of the classes was very spirited. Several good stands were however staged. The first prize for six spikes was awarded to Mr. W. Chater, Saffron Walden, with superb examples of Fair Helen, Hercules, Majestic, Peri, Fascination, and Bullion. Mr. Chater also exhibited fine spikes of Othello, Queen of Yellows, Cygnet, Marmion, and Alexander. Mr. Chater was also first with a stand of twenty-four single blooms, comprising well-finished examples of Nonpareil, Walden Primrose, Majestic, Splendidum, Alfred Chater, Constance, William Brand, Mochana, Monarch, Joy, Conquest, Eclipse, Carus Chater, Invincible, Prince Alfred, Leviathan, Bridesmaid, Champion, Competitor, Incomparable, and Fred

Chater. Messrs. Paul and Son second. Only one stand of blooms from an amateur grower was contributed, and they were poor.

The principal exhibitors at the Metropolitan shows are well nigh worn out with the strain upon them, occasioned by the frequency with which the shows are held; and a short time since they held a meeting at Anderton's Hotel, for the purpose of appointing a committee to consult with the leading societies in reference to fixing the exhibitions for next year. A very general opinion prevails amongst exhibitors, that if each society were to hold one good exhibition, it would be better for every one.

G. G.

THE GARDEN GUIDE FOR SEPTEMBER.

FLOWER GARDEN.—Plant out layers and pipings of Carnations, Pinks, and Picotees as soon as they are well rooted. Select an open situation, and dig the ground up deeply before planting. Divide and replant Daisies and Polyanthus for spring bedding, if not already done. Look after Dahlias, and support them with stakes as it becomes necessary, and protect from earwigs by setting traps. Fill a few small pots with moss, and turn them bottom upwards upon the stakes used in supporting the branches. Seedling herbaceous plants ought to be strong by this time, and ready for planting out; but there is yet time for sowing seed, if still undone. Transplant evergreens, and propagate either by cuttings or layers. With the aid of favourable weather, turf laid now will become nicely established by winter. Finish the propagation of the stock of bedding plants as quickly as possible.

KITCHEN GARDEN.—Thin the winter crop of Turnips to the proper distance apart, and the Spinach slightly, if too thick. Hoe the ground between the rows to destroy every vestige of weed before it has time to seed, and thus render it unnecessary to tread the ground when in a soft state from the autumn rains. Plant out a good breadth of the Green Curled, and Broad-leaved Batavian Endive, and Brown Cos and Drumhead Cabbage Lettuce for the winter. Tie up for blanching those sufficiently advanced. Take up and store Potatoes, and the Onions not sufficiently matured for taking up last month. Make an elevated bed for the reception of a frame to receive the Cauliflower plants to stand over the winter. Hand-lights and ground vineries are invaluable adjuncts to the kitchen garden for protecting young plants of various crops, and for preserving Lettuce, Endive, and many other things after they have reached maturity. Plant out the main crop of Cabbage for spring use at a distance of two feet apart, and insert a strong Colewort plant between each four, to draw during the winter. Sow Chervil, Corn Salad, and Radishes for a late supply. Earth up Celery and Leeks, selecting a dry day for that purpose.

FRUIT GARDEN.—Expose the fruit on wall-trees to the light by removing the leaves which overshadow it. Early Apples and Pears

must be gathered as soon as the stalk parts readily from the tree, and placed in the fruit-room until fit for the table: for, when allowed to remain on the trees until ready for consumption, they lose their fine brisk flavour, and eat flat. Some of the Pear-trees will have pushed again; cut the shoots recently made back to within three leaves of their base. Pyramidal and cordon trees that are making a strong growth require root-pruning; the end of this month, or as soon as the crop is gathered, is the best time for performing that operation. When done early, they make fresh roots, and become re-established before the winter. Fresh plantations of Strawberries may still be made with a considerable chance of success, but such heavy crops of fruit must not be expected as from those planted early last month.

CONSERVATORY.—Plants that have tender constitutions, like Heaths, Epacris, Chorozeas, etc., must soon have the shelter of the greenhouse or pit. Give the structures intended for their winter quarters a thorough cleansing, and whitewash the walls with hot lime previously to bringing the plants indoors. Pay particular attention to the roots with respect to moisture; and, whilst guarding against keeping them too wet, see that they do not suffer from drought. Shift on Cinerarias, Calceolarias, and Primulas as the case demands. Those intended for early flowering must go into their flowering-pots at once, if they have not yet received their final shift. Place Fuchsias, as they go out of flower, outside for a week or ten days, to insure the wood being well matured before packing them away for the winter.

STOVE.—Nearly all the summer-flowering occupants of this structure have now completed their growth, and require more light and air, and less warmth than they have been receiving lately. They should, therefore, be placed in the coolest end of the house, and winter-flowering subjects, such as Gesneras, Justicias, Poinsettias, Thysacanthus, etc., must have every encouragement for acquiring strength before the light declines too much. Orchidaceous plants must also have free exposure to the light, to effect a thorough maturation of the newly-made pseudo-bulbs; and unless that is done, few flowers next season must be expected. Withhold the syringe after the beginning of the month, unless in exceptional cases, and maintain the necessary atmospheric humidity by sprinkling the floors.

FORCING.—Pines swelling their fruit must have liberal encouragement; the temperature should range from 80° to 90°, with a bottom-heat of 85°. Reduce the temperature, and ventilate somewhat liberally, even if extra fire-heat becomes necessary. Give all the air possible to Vines from which the crop has been gathered, and keep the atmosphere dry in houses in which the grapes are hanging. Those just colouring also require plenty of air, even if artificial warmth is required to maintain the proper temperature. Young Cucumber plants must be raised at once, where a supply is required throughout the winter. Melons ripening must have extra warmth to finish them off quickly, or they will be insipid and flavourless.

PITS AND FRAMES.—Pot off intermediate stocks in good turfy loam, mixed with a liberal proportion of rotten manure and leaf-mould. Sow Mignonette for late work, and thin that already up to about five plants to each five or six-inch pot. Give abundance of air to cuttings of bedding plants that are rooted, and draw the lights off altogether when thoroughly established.

TO CORRESPONDENTS.

PLANTING SPRING-FLOWERING BULBS.—*A Subscriber, Harrogate.*—Although very frequently done, it is not good practice to plant hyacinths, tulips, and crocuses in the same bed, because they flower at different periods, and at one time the beds present the appearance of pictures without frames, and at another frames without a picture. Planting several classes of bulbs in the same bed is only advisable when the arrangements of each class are made independent of each other. The bulbs can be planted rather close together, and a distinct arrangement of hyacinths, tulips, and crocuses may be made in the bed. You would then have a display of crocuses first, followed by the hyacinths and tulips. If this cannot be done conveniently, plant each bed with a distinct class of bulbs. All beds intended to be planted with spring-flowering bulbs should be planted with dwarf-growing plants, such as Forget-me-nots, Arabis green or variegated, Alyssum saxatile, Daisies, and the golden-tipped Stonecrop, for the purpose of giving them a bright and cheerful appearance during the winter, and to bring out the flowers of the bulbous plants to better advantage during the spring months. Those who have hitherto been accustomed to beds of hyacinths and tulips planted in the usual manner, will be astonished with the wonderfully superior effect produced when they are in bloom. It is practically impossible to have all the bulbs mentioned in your letters in bloom at the same time.

RAISING PELARGONIUMS FROM SEED.—*An Amateur, Huddersfield.*—The whole subject was exhausted in a series of papers which appeared in the *FLORAL WORLD* for February, April, June, and July, 1860. The numbers may be obtained from the publishers, or through a bookseller.

WEATHER GUIDE.—*A. H.*—We are much obliged by your offer, but are unable to accept it. Judging from the forecast of the summer quarter, we are afraid you will not do much towards proving “that it is possible to foretell the character of the weather months beforehand.”

BANKSIAN ROSES.—*D.*—The simplest and safest way to deal with the young plants is to leave them where they are until the early part of November, and then plant them in their permanent quarter.

MAKING NEW LAWNS.—*J. V.*—Spargula will form a capital lawn, but it requires careful management, especially when first planted, hence it is that it is seldom seen. Lawns can be laid down with grass seed, and, in some cases, eventually surpass those laid down with turf. The ground requires careful preparation, and seeds of suitable grasses must be sown. The mixtures of lawn-grasses sold by respectable firms are in every way suitable, and if you specify the size of the plot to be laid down in giving the order, you will have the proper quantity sent.

SEEDLING AURICULAS.—*A Young Florist.*—Seedling Auriculas that are now strong should be potted separately in small pots, in a light mixture of loam from rotted turves two parts, clean leaf-mould two parts, thoroughly decomposed hotbed dung one part, and silver-sand one part. In this mixture they will winter well, and may be shifted into larger pots early in the spring, when they first begin to move. A simpler way of wintering is to plant them out in a bed five inches apart, so arranged that a frame can be put over them for the winter. Many will show bloom in the spring, and the best of such may be potted to keep; the worst are to be weeded out and destroyed. If any of them throw up blooms this autumn, pick the blooms out; autumn blooming should never be allowed. Unless they are crowding each other, it will be better to wait another week before potting them.

GLADIOLI IN POTS.—*R. K., Kensington.*—Gladioli in pots should be kept growing in the open air until their leaves begin to wither, and then it is well to lay the pots on their sides near a wall or fence facing south, to ripen off the bulbs. If treated in this way they will bloom finely next year, but if the leaves are prematurely destroyed, or the bulbs are kept too wet when they ought to be ripening, they will, perhaps, perish next year, instead of blooming. Treat *Watsonias* in the same way.

Amateur.—The **FLORAL WORLD** for 1862 and 1863 is not to be had at present bound together in one volume, but can be supplied bound in two distinct volumes. A few copies of the volumes for 1867 and 1868 are still to be had, price 7s. 6d. each, but the numbers for January and February, 1866, being quite out of print, the publishers are unable to complete a volume for that year. All the remaining numbers are procurable.

SHOW PELARGONIUMS.—*A Young Gardener.*—August and September are two good months in which to purchase show pelargoniums, and the under-mentioned are the most desirable of the older kinds:—*Large-flowering Varieties.*—Alba Formosa Alabama, Archbishop, Attraction, Emperor, Bonnie Charlie, Beacon, Charles Turner, Claribel, Corsair, Harold, Hebe, Hermit, Heroine, King Arthur, Lady of the Lake, Luna, Lord Clyde, Lord Napier, Maid of Honour, Milton, Mary Hoyle, Mr. Rassam, Nonpareil, Nabob, Olivia, Orange Spot, Peleus, Prince of Denmark, Progress, Queen of Roses, Rustic, Shakespeare, Troubadour, Victoria, William Hoyle. *Fancy Varieties.*—Agrippa, Belle of the Season, Brightness, Helen Beck, Miss-in-her-teens, Arabella Goddard, Leotard, Delicatum, East Lynne, Excelsior, Fanny Gair, Silver Mantle, Miss Dorling, Cloth-of-Silver, Duchess of Buccleuch, Formosa, Marmion, Madame Sainton-Dolby, Andromeda, Lady Carrington, Mrs. Mendal, Mrs. A. Wigan, Lady Dorothy Neville, Princess of Teck, Undine.

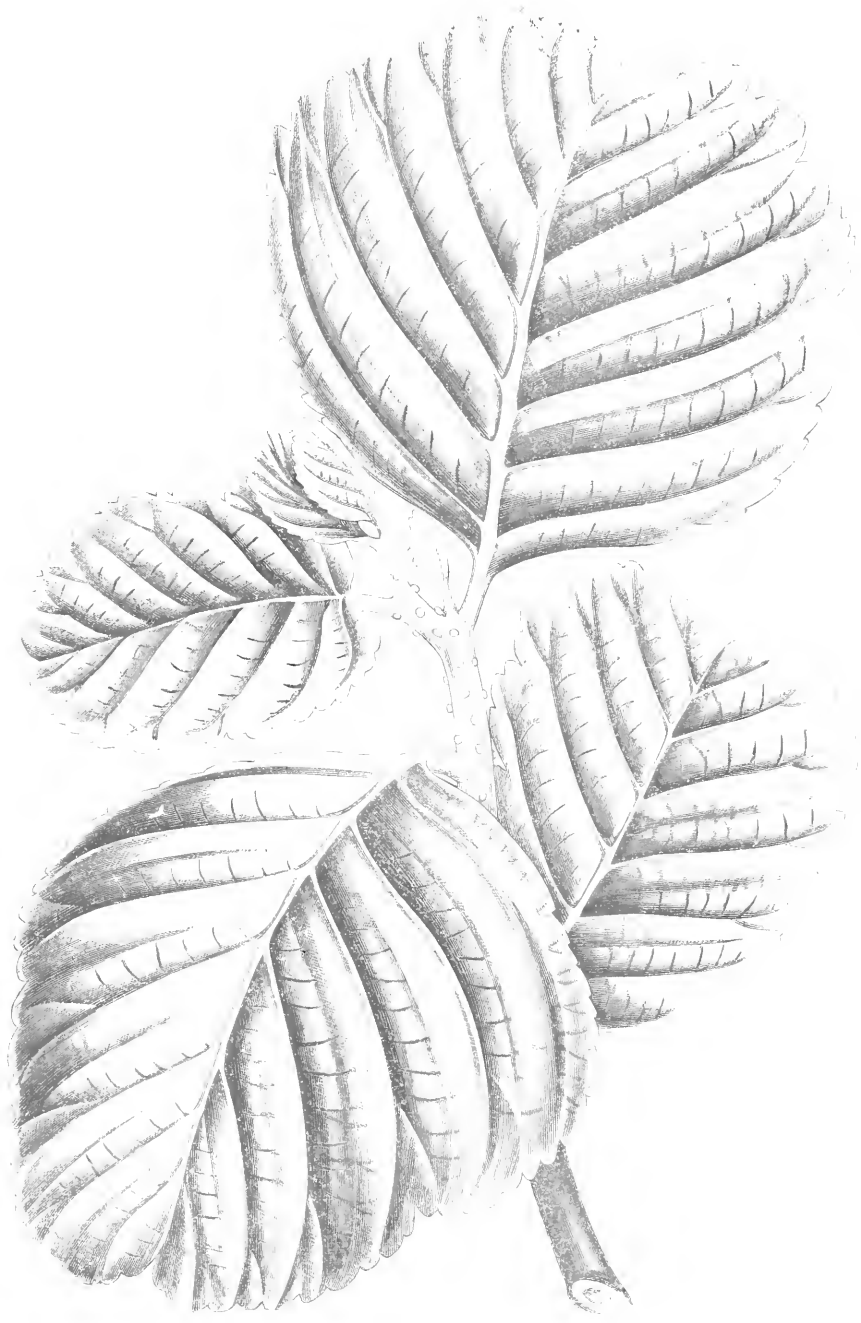
BEST THIRTY VERBENAS FOR POT CULTURE.—*R., Sussex.*—Ace of Trumps, Ada King, Anatole Leroy, Annie, Annie Keynes, Achievement, Beauty of Kent, Conspicua, Duke of Edinburgh, Florence Fiddian, G. P. Tye, Géant des Batailles, Isa Key, King of the Verbenas, Lotty Eckford, Lord Leigh, Lady Langlesbury, Mrs. S. R. Hole, Mauve Queen, Miss Wimsett, Mrs. Eckford, Mrs. Pochin, Master Jacobs, Mons. Wood, Nemesis, Out-and-Outer, Polly Perkins, Princess of Wales, R. H. Vertegans, Reine des Roses, Shakespeare, Shirley Hibberd, Spot, Thomas Lawdon, Violet Perfection.

PROPAGATION OF CLEMATIS.—*Amateur.*—The best way to propagate *Clematis cœrulea* is to select at once a vigorous shoot and lay it down. Let it spring up again, and then nick with a sharp knife the back of every joint, and peg each joint into a pot filled with a good potting compost, and plunge each pot to the rim. Every joint will thus make a plant, and every such plant will be better than those from layers made in the ordinary manner.

MYOSOTIS DISSEMINATA.—*W. H.*—The best way to bloom this gem in February would be to take cuttings now, and grow them into good sized plants in a cool frame. Use very rich soil after they have made good roots, and give plenty of water till the middle of September; then give them no more than will just keep them green and fresh. In December bring a few into a house kept at about 50°, and in January bring in a few more, and they will bloom on all points of their new growth.

A BELT FOR A FOUNTAIN.—*R.*—Nothing better for the vicinity of a fountain than Pampas grass, *Elymus glauca*, *Tritoma nvaria*, Hydrangeas, Fuchsias, *Lysimachia thyrsiflora*, *Oenothera Fraseri*, *Calla Ethiopica*, *Osmunda regalis*, *Athyrium Filix-femina*, *Arundo donax*, and other such plants of graceful habit and fond of moisture. You cannot have anything grand to flower in winter, but you may plant the banks with winter acouite, Christmas rose, and primroses.

PROPAGATING PELARGONIUM.—*Lady Plymouth.*—The best place in the world, because the surest, to strike the whole of the variegated pelargoniums, including the gold and silver zonals, at this season, is a nice warm border facing the south. We have struck thousands this way, and it is seldom one goes off. If you put in this way the few cuttings of Lady Plymouth which you mention, you will experience no difficulty in rooting them, and you can calculate upon having nineteen plants for every twenty cuttings. Prick up the soil, and then make the surface firm; and after putting in the cuttings, water moderately, and then leave them alone until they have roots half an inch long, when they may be taken up and potted.



GARDEN TREES.

(Illustrated with Coloured Plate of the Golden-leaved Alder.)



THE season has returned in which to purchase and plant deciduous trees, and those who begin early will have the best prospect of making a satisfactory end. In the mild autumnal days, when showers are frequent and the ground is warm, trees carefully transplanted make new roots in their new positions with great rapidity, and in the succeeding spring present their leaves and flowers so freely and vigorously as to afford no hint in their appearance of having lately changed their place. But with every delay there is an augmentation of the injury which every tree must inevitably suffer by removal. In the first case the injury is trifling, and recovery therefrom rapid. The longer we defer to plant, the more serious is the injury, and the recovery is slow in a corresponding degree, so that it comes to this at last, that trees planted in the spring are as likely to die as to live, and to move a tree when it is coming into leaf, is to put its life in jeopardy.

On the subject of planting, the foregoing remarks are all that we can afford space for at present. The prevailing poverty of gardens troubles us, and having to accompany the plate of the golden alder with a few remarks, we embrace the occasion to say that ornamental trees are not made enough of in our gardens, the tendency of planters being towards forest trees rather than to such as we may properly call "pictorial," or perhaps more properly *garden trees*. The immense variety of majestic, graceful, and even of grotesque forms at our command, the diversities of colours of leaves and flowers, the changing aspects of those that present us now with tender green leafage, now with wondrous sheets of bloom, and anon acquire the fiery hues that accompany the falling of the leaf, afford a succession of delights to those who have planted wisely and made a proper distinction in the selection of their trees between the garden and the park, between the dressed ground and the rustic woodland, or far-stretching forest. Of all places in the world where beautiful trees appeared to be best appreciated, the suburbs of London must have honourable mention. Indeed the rural surroundings of the great metropolis are rich in whatever money can buy and taste dispose of, and the occasional demonstrations of mere cockneyism are swamped out, as it were, from the general aspects of the outdoor world by the bountiful displays of high-class arborescent vegetation. But there is room for improvement here as elsewhere, and we look forward to the development of a taste for true garden trees, and propose to promote it by these observations, and the lists of selected subjects that will supplement them.

Beautiful trees are not despised in this country, though the dwellers in towns give less attention to them than they should for their own bodily and spiritual health; and those who profess to love trees, manifest their love in a way too cheap and hasty to secure

them the "praise that comes to constancy." The joy with which anyone in treaty for the purchase of an estate speaks of the "timber" upon it, and the earnestness with which a "want of timber" is deplored, demonstrate a larger love of trees than we should anywhere expect to find if we were to judge the case by the practices that prevail in planting. Lovers of trees, and we may say the designers and improvers of rural scenery, tend always to tread in ancient tracks. We have no epithets of depreciation to spare for oaks and elms and beeches, and we do not incline to say a word against the soil-exhausting ash, or the heaven-hiding and lumpy-headed chestnut. We revere these trees; we glory in groves of them; we are never weary of their aspect at any season of the year, and even when they are leafless we can find beauty and majesty in their outline. Our complaint against the landscape gardeners and the amateurs in trees is that, in the formation of the gardenesque, they make small effort to obtain variety of effects, and trust too much to the trees of the forest and the park for the decoration of the garden. It is even so, but it should be far otherwise. What should we say of the gardener who filled the borders on the terrace, and the beds in the parterre with "pimpernels and wilding thyme," but that he had mistaken his vocation, and sought on the breezy hills of Britain for flowers when he ought to have been on a voyage to the Cape? There are garden flowers as there are woodland flowers, there are garden trees as there are forest trees, and the artist who can determine the proper scope of his work will always recognize the distinction between them; he will not go to the extreme of saying that oaks and elms, and limes and beeches, should never be seen in gardens; for we should hesitate and consider many times ere we should arrive at a determination to cut down a fine example of a forest tree in any garden; but we repeat that these are not the subjects to be first thought of when the resolve has been taken to form a garden, and the question arises as to the selection of trees for it. Yet, for garden purposes, pictorial trees abound: trees of large growth, of middling growth, and of miniature growth; trees that flower in spring, that fruit in summer, that become glorious with colour when autumn passes her burning hand amongst the leaves. We have weeping trees and laughing trees; we have solemn-leaved trees that enrich the well-planned scene with their deep tones of colour, and we have variegated-leaved trees that light it up with their grey and golden and silvery hues; we have trees with leafage like lace or gauze, and we have trees with foliage so ponderous that one might imagine they had been cast in bronze, with the object solely of creating beneath them the best possible imitation of midnight, in contrast to the radiance of mid-day at midsummer all around. We can imagine many of our readers asking, "Where are these wondrous trees? Let us see them; help us to select, and purchase, and plant, that we may realize the outdoor pleasures you bespeak in connection with these things." Where are they? In the nurseries! But how to see them, "there's the rub." We may read of a golden-leaved tulip-tree, or a purple-leaved maple-tree, or of a poplar that drops its thick-leaved boughs

in exquisite order round it, to form a perfect canopy of verdurous coolness " 'gainst the hot season ;" but to see such things, even with a view to purchase them, is difficult. Yes, it is so. At the nurseries we may find them all, even to the latest novelties, but it may be that nine-tenths of all the trees we wish to see are to be found only in the shape of puny examples fresh from the hands of the propagator. The nurseryman cannot help it: he must make the most of plants that have cost him large sums of money, and it is his business to cut a costly tree into as many pieces as the leaves upon it, and make of every leaf, with the incipient bud at its base, an article of merchandise, which in years to come shall, under some cultivator's care, display characteristics of beauty, of which at present it does not afford a single foreshadow.

Well, it cannot be helped. To indicate a defect in the economy of an art, especially if the indication be made, as this is, in the midst of its practitioners, is a great step towards its rectification. We need a national arboretum, but we cannot hope for anything of the sort whilst South Kensington is considered the centre of artistic energies, while it is in reality only the centre of systematic jobbery. To keep away from politics we close up here, and add the promised lists, which comprise none but good things.

TREES FLOWERING IN SPRING (including the best for garden borders, shrubberies, and front lines).— Snowy Mespilus, *Ame-lanchier botryapium*, white, 15 feet, very elegant; Weeping Almond, *A. communis pendula*, pink, 15 feet, pendulous; Double-flowering Peach, *A. persica flore-pleno*, peach, 8 feet; Double-flowering Cherry, *Cerasus domestica flore-pleno*, 15 feet, white; Dwarf Almond, *C. japonica multiplex*, 5 feet, pink, pretty; Weeping Cherry, *C. pendula*, 10 feet, white, very elegant; Judas Tree, *Cercis siliquastrum*, 10 feet, red, distinct and fine; Double Scarlet Thorn, *Crataegus oxyantha coccinea plena*, 12 feet, red; Double White Thorn, *C. o. multiplex*, 12 feet, white, very beautiful; Single Scarlet Thorn, *C. o. punicea*, 15 feet, scarlet, very showy; Weeping Laburnum, *Cytisus laburnum pendula*, 8 feet, yellow; Double-flowering plum, *Prunus domestica flore-pleno*, 8 feet, white; Double Pink-flowering Plum, *P. triloba*, 8 feet, rosy pink, pretty; Chinese Crab, *Pyrus malus spectabilis*, 4 feet, rosy pink, lovely; King Charles's Lilac, *Syringa vulgaris Charles X.*, 12 feet, deep red; White-flowered Lilac, *S. v. alba*, 12 feet, white; Cut-leaved Persian Lilac, *S. persica laciniata*, 8 feet, reddish lilac.

BEAUTIFUL LAWN TREES (of a distinct and graceful habit, for planting singly in conspicuous positions).— Weeping Birch, *Betula alba pendula*, 12 feet, weeping tree, D.; Evergreen Chesnut, *Castanea chrysophylla*, 20 feet, spreading tree, E.; Judas Tree, *Cercis siliquastrum*, 20 feet, spreading tree, D.; Plum-leaved Thorn, *Crataegus crus-galli prunifolia*, 15 feet, erect tree, D.; Cut-leaved Thorn, *C. oxyantha laciniata*, 12 feet, spreading tree, handsome, D.; Fern-leaved Beech, *Fagus sylvatica asplenifolia*, 20 feet, spreading tree, D.; Weeping Beech, *F. s. pendula*, 15 feet, tree, pendent branches, D.; Weeping Ash, *Fraxinus excelsior pendula*, 15 feet, tree, pendent branches, D.; Spiny-leaved Gleditschia, *Gleditschia horrida*, 15 feet;

spreading tree, D.; Panicle-flowered Kōlreuteria, *K. paniculata*, 15 feet, spreading tree, D.; Tulip Tree, *Liriodendron tulipifera*, 20 feet, spreading tree, D.; Imperial Paulownia, *P. imperialis*, 25 feet, spreading tree, lilac flowers, D.; Weeping Poplar, *Populus tremula pendula*, 20 feet, tree, branches pendent, D.; Oval-leaved Photinia, *Raphiolepis ovata*, 10 feet, spreading shrub, E.; Venetian Sumach, *Rhus cotinus*, 8 feet, spreading tree, elegant, D.; Mop-head Acacia, *Robinia inermis*, 8 feet, small standard tree, D.; Maidenhair Tree, *Salisburia adiantifolia*, 20 feet, erect tree, D.; Weeping Willow, *Salix purpurea pendula*, 20 feet, tree, D.; Weeping Lime, *Tilia alba pendula*, 15 feet, tree, drooping, D.; Weeping Wych-Elm, *Ulmus montanus pendulus*, 15 feet, tree, graceful, D.

CONIFEROUS TREES FOR LAWNS (including thoroughly hardy, most elegant-habited sorts, in any soil or climate).—Chilian Pine, *Araucaria imbricata*, 25 feet, distinct and telling; Deodar Cedar, *Cedrus deodara*, 40 feet, graceful, quick grower; Erect Green-leaved Cypress, *Cupressus Lawsoniana erecta viridis*, 20 feet, very fine; Graceful Cypress, *C. L. gracilis*, 20 feet, very elegant in growth; Pyramidal Juniper, *Juniperus pyramidalis stricta*, 10 feet, compact-growing; Rigid Juniper, *J. rigida*, 15 feet, ends of shoots pendulous; Variegated Red Cedar, *J. virginiana variegata*, 6 feet, very beautiful; Nordmann's Silver Fir, *Picea Nordmanniana*, 20 feet, fine habit; Spanish Silver Fir, *P. pinsapo*, 20 feet, distinct, beautiful; Large-coned Pine, *P. macrocarpa*, 50 feet, very bold; Pyrenean Pine, *P. pyrenaica*, 40 feet, bold in outline; Blunt-leaved Retinispora, *R. obtusa*, 6 feet, very elegant; Golden-leaved Retinispora, *R. pisifera aurea*, 6 feet, golden tipped; Feathery-leaved Retinispora, *R. plumosa*, 6 feet, graceful habit; Umbrella Pine, *Scriadopitys verticillata*, 30 feet, very distinct; Golden Yew, *Taxus baccata aurea*, 5 feet, golden leafage; Elegant Yew, *T. b. elegantissima*, 6 feet, golden variegation—this is the best variety; Glaucous-leaved Thujopsis, *T. borealis glauca*, 10 feet, compact, variegated; Weeping Thujopsis, *T. Standishi*, 10 feet, pendulous branches; Gigantic Arbor-vitæ, *Thuja gigantea*, 20 feet, superb; Golden Arbor-vitæ, *T. orientalis aurea*, 3 feet, compact and handsome, fickle in growth.

VARIEGATED-LEAVED TREES (including many which have rich and varied colours in spring and early summer).—Variegated Cut-leaved Maple, *Acer pectinatum variegatum*, 15 feet, elegant, D.; Variegated Sycamore, *A. albo variegata*, 30 feet, showy, D.; Variegated Negundo, *A. negundo variegata*, 20 feet, margined white, D., a splendid tree; Golden leaved Spanish Chesnut, *Castanea vesca variegata*, 30 feet, golden margin, D.; Golden-leaved Catalpa, *Catalpa syriacifolia aurea*, 30 feet, very showy, D.; Purple-leaved Nut, *Corylus avellana purpurea*, 12 feet, distinct, D.; Variegated Thorn, *Cratægus oxyantha variegata*, 15 feet, silver stripes, D.; Purple Beech, *Fagus sylvatica purpurea*, 30 feet, leaves black, purple, D.; Golden Beech, *F. s. var.*, 20 feet, yellow edge, D.; Aucuba-leaved Ash, *Fraxinus aucubæfolia*, 30 feet, spotted, D.; Golden-blotched Elæagnus, *E. reflexa maculata*, 20 feet, showy, E.; White Beam Tree, *Pyrus aria*, 40 feet, under surface of leaves white, D.; Variegated Weeping Mountain Ash, *Pyrus aucuparia pendula var.*, 20 feet, D.; Variegated Turkey Oak, *Quercus*

cerris variegata, 30 feet, yellow margin, D. ; Golden Oak, *Q. concordia*, 30 feet, golden leaves, D. ; Black Oak, *Q. nigra*, 30 feet, blackish leaves, distinct, D. ; Silver-leaved Alaternus, *Rhamnus foliis argenteis*, 10 feet, silver variegated, E. ; Variegated Narrow-leaved Alaternus, *R. angustifolia var.*, 10 feet, E. ; Silver-leaved Lime, *Tilia argentea*, 40 feet, under side of leaves, white, D. ; Silver Elm, *Ulmus campestris variegata*, 30 feet, white variegation, D. ; Golden Elm, *U. c. aurea*, 30 feet, bright golden leaf, D. ; Variegated Weeping Wych-Elm, *U. montana pendula var.*, 15 feet, D. ; Golden-leaved Tulip Tree *Liriodendron tulipiferum, var. aureo-pictis*, richly variegated ; Purple Weeping Elm, *Ulmus campestris pendula purpurea*, 20 feet ; Golden-leaved Alder, *Alnus glandulosa aurea*, rich golden leafage (see coloured plate).

TREES RICHLY COLOURED IN AUTUMN (just before shedding their leaves, a number of which are fine for park or garden).—Norway Maple, *Acer platanioides*, 30 feet, leaves die off yellow ; Scarlet Maple, *A. rubrum*, 30 feet, leaves die off red ; Virginian Bird Cherry, *Cerasus virginiana*, 20 feet, leaves die off yellow ; Cockspur Thorn, *C. crus-galli*, 15 feet, decaying leaves bronzy red ; Yellow-berried Thorn, *C. flava*, 15 feet, decaying leaves yellow ; Pear-leaved Thorn, *C. pyrifolia*, 15 feet, leaves die off yellow ; Dark-leaved Spindle Tree, *Euonymus atropurpureus*, 8 feet, dies off red and purple ; Broad-leaved Spindle Tree, *E. latifolius*, 15 feet, decaying leaves purple ; Three-spined Gleditschia, *G. tricanthos*, 40 feet, decaying leaves yellow ; Black Walnut, *Juglans nigra*, 30 feet, yellow, showy ; Panicle-flowered K lreuteria, *K. paniculata*, 20 feet, yellow ; Liquidambar, *L. styraciflua*, 30 feet, yellow and crimson ; Tulip Tree, *Liriodendron tulipifera*, 40 feet, yellow ; White Mulberry, *Morus alba*, 20 feet, yellow, valuable for its fruit ; Red-flowered Pavia, *P. rubrum*, 6 feet, brown-red ; Leafy Pear, *Pyrus vestita*, yellow ; neat and pretty ; Arbutus-leaved Pear, *P. arbutifolia*, 6 feet, crimson ; Scarlet Oak, *Quercus coccinea*, 40 feet, red, valuable for its timber ; Mirbeck's Oak, *Q. Mirbecki*, 20 feet, yellow, fine for parks ; Venetian Sumach, *Rhus cotinus*, 8 feet, yellow, useful for small lawns ; Stag's-Horn Sumach, *R. typhina*, 20 feet, red ; Veined-leaved Sumach, *R. venenatum*, 10 feet, scarlet ; Lime Tree, *Tilia europaea*, 40 feet, yellow, useful for avenues. S. H.

CULTIVATION OF THE GLADIOLUS.



THIS magnificent autumnal flower adroitly evades inclusion in any of the classifications usually adopted in books and catalogues. We cannot class it with hardy perennials, because, as a rule, it cannot be left in the open ground during winter, as we might leave a lily, a tritoma, or a phlox. If we class it with bulbous flowers, the cynical critic will rebuke us on the ground that the so-called bulb of the gladiolus is nothing of the sort, and may not be treated in precisely the same way as a bulb, whether in ordinary cultivation, or for the purpose

of increasing the stock. We, therefore, make it the subject of a separate paper, a proceeding happily justified by its high character as a decorative plant and its rapidly increasing popularity.

The advance of this noble flower in popularity is a matter for the greatest satisfaction. It is strange that its capabilities should have been known to cultivators years and years before they took it in hand in earnest; but they have done this at last, and our autumn displays are made peculiarly splendid with its rich varieties of colour; and its graceful outlines afford an agreeable relief to the predominance of ungraceful subjects which then usually prevail. One great and glorious advantage of its habit and constitutional character is that it will ripen seed in our gardens, and to this may be added that it is not a difficult subject to hybridize, so that the raising of seedlings—the greatest charm of all the charms of floriculture—is within the range of the Englishman's garden pleasures.

In the cultivation of the gladiolus, the matter of first importance is the kind of soil required. In constitution and requirements the gladiolus stands exactly midway between the *ixia* and the *crocus*. Like those useful members of the Iridaceous order, it has a root which, in botanical language, is called a "corm," and which never flowers more than once. While growing aboveground, the corm is forming duplicates of itself in the ground below. It is to the interest of the grower not only to promote the development of the leaves and flowers, but also of the offsets, for these are his stock in trade, and if he does not save them in good condition, he must buy again: but if his system of cultivation is perfect, he needs but a first start in the roots that are desirable, and he may increase his stock from year to year *ad libitum*.

In our experimental garden gladioli have been grown in every kind of soil—in peat, in common garden loam, in land heavily manured, in hungry sand, and in carefully prepared mixtures. It is evident by their behaviour that they are not so particular as to soil as is generally supposed. Downright drought and starvation are ruin to them; excess of manure is equally destructive; but in any free and moderately generous soil they grow well, flower freely, and perpetuate themselves in useful progeny. The result of much observation and frequently repeated experiments is that peat is favourable to a good bloom, but not to a fair development of offsets; that heavy damp soil is unfit for them, but is easily improved by the addition of leaf-mould and thoroughly rotten manure; that sandy road-drift is first-rate to ameliorate any kind of stubborn stuff; but that the best soil of all is just such as *Lilium lancifolium* thrives in, consisting of bits of turf, fibrous loam, fibrous peat, leaf-mould, rotten manure, and sharp sand, in about equal proportions. This is free, porous, water will not readily lodge in it, yet it does not become dry quickly, as is the case with sandy peat, and it is full of nourishment. A few years ago it was the prevailing opinion that animal manure, such as rotten dung, was quite unfit for them. This was a mistake, though not quite founded on fallacy. The fact is, an excess of manure, or rank manure, or any such powerful stimulus as a rose or a cauliflower would accept with relish, is pretty sure to

cause disease in gladioli. But a fifth part of thoroughly decayed manure in a sweet friable state is of great service, both to bring out the colours rich and true, and promote the formation of a strong brood of offsets. In its native country the gladiolus is subject to a deluging summer, with much heat and a not severe winter, which is comparatively dry. In a mild autumn the leaves are reluctant to die down, which shows that after flowering it is the nature of the plant to grow freely; it is like the crocus in that respect, and needs its leaves in the same manner to assist in the formation of the progeny. The early flowering of the crocus enables it to finish off its growth with fair weather if the gardeners do not cruelly cut or plait its graceful leaves, and so it just suits our climate. Not so with the gladiolus; our autumnal frosts often overtake it before it has finished its season, and this fact affords a point of some importance for the consideration of the cultivator. It is evident that a boggy soil must be very injurious if the bulbs are left in the ground to a late period of the year. We may be sure that plenty of water in summer, and dryness with shelter in the winter, are circumstances favourable to flowering and increase. Thus we learn on what principle to form the bed for these flowers. A well-drained position, a deep sandy, free nourishing soil, containing not a particle of anything rank or strong, some amount of shelter if possible, but full exposure to the sun, or only partially shaded, and water at hand in case of a dry season, when there should be plenty given from the end of May to the end of July, after which the heavens will probably supply all they want.

It follows, from the foregoing considerations, that if we could leave the bulbs in the ground all the winter, it would be far better than taking them up. Unfortunately, as a rule, there is some risk in doing so, for a hard frost after heavy rains might sweep them all off; yet, if they really passed through the winter unhurt, the next season's growth would be more satisfactory than if they were taken up with their leaves green and sappy, and dried off like onions. The fact is, the young corms are never perfected till the leaves die naturally; and here is one of the great advantages of pot culture, which enables us to place them under cover till they finish off naturally, without any disturbance of the roots. The *Gandavensis* section is the most hardy, and the safest to leave out, and if the beds are well drained and somewhat sheltered, a covering of decayed tan or quite rotten manure, or even sawdust, two or three inches deep, will keep them. But the *Ramosus* section is too tender to treat in this way, and under some circumstances the *Gandavensis* race are safer all winter dry and under cover than in the ground. There is a bed of *Brenchleyensis* in our garden which has not been disturbed for five years. There have been no perceptible losses, and the bed has thickened so much that during summer the mass is like a huge tuft of some strong-growing grass, with myriads of showy flowers scattered through it. But while this thickening has been going on there has been degeneration: the growth is weak, and the flowers are small—evidence enough that they have exhausted the soil they are in, and must be moved now or go to ruin. This, perhaps, is an

argument for lifting, apart altogether from the risks attendant upon the coldness and humidity of our winters. When we have wrought up a florist's flower to a high condition, we find that it must be well fed to keep it true, and to maintain in its full extent the field for further improvement. Hence the majority of our most prized florist's flowers require to be perpetually propagated, replanted, renewed from buds and germs and seeds. The question arises, then, if it will not always do to leave them in the ground, what shall we do with them? First, then, let there be no haste to dry them off, and do not completely dry the young corms at all. Lift them, and pack them close in boxes or beds of earth in sunny pits or greenhouses, and keep the soil in which they are packed so slightly moist that it will not soil the fingers if crumbled between them. If the soil is really wet, there will be an outbreak of mildew; but a moisture sufficient to prevent untimely ripening is perfectly safe and beneficial. When the leaves turn yellow, and it is obvious their season of activity is over, lift them, shake off the soil, and lay them in a dry, sunny place: the best possible place for them is a dry, warm shelf in a greenhouse. They will soon be ripe, and you will have corms of several sizes—large ones for next season's flowering, and small ones that will not flower, but must be grown on to flowering size. The advice to take them up in October, and dry them off quickly, has had much to do with the disease that has prevailed, there can be no doubt, for it often happens that the offsets are then not sufficiently grown to have an independent existence, and forcing them into this by hasty drying and separating is a process of weakening which will show its results hereafter. We have treated these and cannas by one and the same process with the best success, by packing them pretty close in boxes with gritty soil in a nearly dry state, and placing them in pits to finish their career for the season.

The best way to keep them through the winter is in sand. Long exposure to the atmosphere is injurious. If kept in a warm place, many of them will begin to grow prematurely, and in that case must be immediately potted, and kept dry and cool, but safe from frost, till April, and then should be placed in the open air, in a shady place; and when the pots are full of roots, they may be planted out without so much as removing the crocks. The potting process is unquestionably the best, because of the long season of growth it allows of; but any kind of forcing is injurious. Those who desire to have a prolonged bloom should begin to pot in January, and continue with succession batches till the end of March, after which the corms may be planted in the open ground with safety. If potting is not convenient, keep the bulbs cool and covered till the first week in April, and then plant them. That late planting is not of necessity ruinous has been proved on several occasions, for we have seen in the month of September a large batch blooming in a very satisfactory manner that were not planted till somewhere about the previous Midsummer Day. The usual advice is to plant them three inches deep. This is not deep enough; large corms should be six inches deep, and the smallest four inches. A

very effective way is to plant them in clumps of threes a foot apart every way. But, to bring them out to the best advantage, a mixture of other subjects is advisable, and for this purpose there is nothing so good as the canna, because of the grandeur of its leafage, in which respect the gladiolus is deficient. As this noble flower thrives in peat, an effective mode of displaying it is to plant in April a collection of the most showy varieties in the front of an American bed, where they will have the advantage of a rich background of rhododendron leafage.

BEST ONE HUNDRED GLADIOLI.

Achille, Adolphe Brongniart, Anais, Apollon, Argus, Belle Gabrielle, Bernard de Jussieu, Calypso, Carminata, Charles Dickens, Clémence, Cuvier, Comte de Morny, Diana, Chateaubriand, Cherubin, Duc de Malakoff, Dr. Lindley, Edulia, El Dorado, Eudymion, Etendard, Eugène Scribe, Eurydice, Félicien David, Fénelon, Flore, Florian, Fulton, Galilee, Homer, Impératrice Eugénie, James Watts, James Veitch, John Waterer, Lady Franklin, La Fiancée, Lord Byron, Lord Granville, Lord Raglan, Madame Desportes, Madame Dombain, Madame de Sevigné, Madame Domage, Madame Furtado, Madame Vilmorin, Madame Adèle Souchet, Madame Basseville, Madame Binder, Madame de Vatry, Madame Huquin, Madame Roubourdin, Madame Rougier Chauvière, MacMahon, Maria, Mary Stuart, Maréchal Vaillant, Mathilde de Landeroin, Meyerbeer, Michel Ange, Milton, Molière, Monsieur Camille Bernardin, Monsieur Lebrun d'Albanne, Mozart, Napoleon III., Nemesis, Newton, Ninon de l'Enclos, Ophir, Oracle, Oscar, Penelope, Princess Clothilde, Princess Mary of Cambridge, Princess Mathilde, Prince of Wales, Princess of Wales, Princess Alice, Racine, Rebecca, Rembrandt, Reine Victoria, Rev. M. J. Berkley, Roi Léopold, Rubens, Semiramis, Sir J. Paxton, Sir W. Hooker, Shakespeare, Schiller, Stephenson, Stewart Low, Thalie, Thomas Methven, Thomas Moore, Ulysse, Uranie, Vesta, Vicomtesse de Belleval, Virgil, Walter Scott.

TWENTY-FOUR SPLENDID CHEAP GLADIOLI FOR GROUPING.

Aristotle, Brenchleyensis, Bowiensis, Chateaubriand, Cardinalis, Couranti fulgens, Daphne, Don Juan, Dr. Andry, Fanny Rouget, Formosissimus, Floribundus, Gil Blas, Gandavensis, Impératrice, Janire, John Bull, Madame Coudere, Mars, Mons. Blouet, Mons. Vincheon, Mons. Georgeon, Queen Victoria, Triomphe d'Enghein.

S. H.

A FEW WORDS ABOUT ROSES.

BY W. D. PRIOR, ESQ.



THE current season has been singularly prolific in lessons about roses. In the first place, the cessation of the customary annual issue from France, consequent upon the great war, has afforded an opportunity for more thorough trial than usual of the newer varieties already here. In the second place, the exhibitions having extended over a much wider time, particularly owing to the admirable and deservedly successful supplementary Rose Show at the Crystal Palace, more varieties have been brought under review than possibly ever appeared before. Practically, Rose Shows have extended from the 24th of June well on to September, because specimens of cut blooms have formed items at all flower shows up to the latest date. The professed rosarian, however, will not have confined his observations to such a limited area. Public and private collections of celebrity will have been visited, and their specialities noted, and principles duly developed from the whole combined sources at command. Some of the results attained by such an exhaustive criticism may appear, perhaps, somewhat startling—open to objection, it may be—but they cannot be advantageously ignored. Thus, a complete revision of the catalogues appears to be imminent, because it is no longer possible to give the *best* twenty-five or the *best* fifty varieties, as was formerly the case. Setting aside a distinct few, there are now so many illustrations of specific styles, that the choice of their individual representatives is matter of the nicest consideration—often resolving itself into a simple matter of opinion. When it is said a revision of the catalogues must take place, it is not meant that trade growers must materially diminish the number of varieties included in the stock they cultivate; but that the *selections* of the choicest hitherto received must be remodelled in accordance with the qualifying lights afforded by the latest experiences. Henceforth, then, it will be desirable to give, not the *best fifty*, but *fifty of the best*, roses, etc., by such authorities as wish to escape challenge of their verdicts. Such, however, is the course we shall follow, subject to any special modifications circumstances may render necessary. Another result of *our* examinations is a grave doubt whether future attempts to obtain perfection in the rose ought not to be carried out through entirely different strains to those lately employed. We have obtained great size; we have increased the dimensions of petals—particularly the depth—and likewise their substance; but we have undeniably decreased their number, and, in too many cases, have lost true doubleness, for there is scarcely a modern rose of any note which, when *fully* open, does not expose a defective centre, or display *an eye*. If we take good specimens of Baronne Prevost, Gloire de Dijon, Malmaison, and numerous older roses, we shall find the small centre petals buckling over, as it were, and never, under any circumstances, permitting the “seed-process” to be seen;

whereas a few hours' trial of a full-blown flower—even of Alfred Colombe, and modern roses of equal repute—inevitably reveals the eye. This is so patent a defect, that no effort ought to be spared to get rid of it. We had better abandon new roses altogether, whatever other merits they possess, than allow this vicious feature to become ineradicably fixed, going back to some of the best of older kinds as seed-bearers for our future novelties. Coarseness, and its concomitant raggedness, is also another frequent defect found in new roses—that is, on the stands. It is by no means certain, in all cases, whether this fault actually belongs to the rose itself, or is not rather developed by the grower, in his attempts to secure abnormal size. Many of these huge roses at the exhibitions are by no means similar monstrosities upon the bushes in the rosery. Indeed, the case is, in some respects, analogous to prize beasts and fatted pigs at a Cattle Show.

Another curious idea which is apt to arise in the mind of an old rosarian is, whether we are not getting certain bygone varieties, forgotten by most, over again under new names—a little improved, it may be, by superior cultivation. It is certain that, with adroit management, it would not be a very difficult piece of deception to palm off roses of kinds now forgotten. How many of our modern judges could detect a bloom of *L'Enfant du Mont Carmel*, or *Noemie*, or *Toujours Fleurie*, if placed upon the show-table amongst others? This reflection suggests an interesting experiment for any rosarian suitably placed for carrying it out. Early in November, let a breadth of proper soil, where the climate is favourable for superior development of roses, be prepared, and half-a-dozen strong plants of the *Manetti* be procured and carefully planted, of each of the following old kinds, for instance:—*Reine des Fleurs*, *Baronne Hallez*, *Baron Heckeren*, *Cornét*, *General Brea*, *General Pelissier*, *Gloire de Parthenay*, *Jacques Lafitte*, *L'Enfant du Mont Carmel*, *Leon des Combats*, *Madame Masson*, *Marquis d'Ailsa*, *Prince Imperial*, *Toujours Fleurie*, and *Triomphe de Paris*. All of these, well grown, possess the element of size, as well as symmetry. Let the ground be well mulched, and let them receive the best possible culture, liquid manure and disbudding; and let the blooms thereof be exhibited at the Shows the next season under the denomination of “seedlings”—of course, no pecuniary imposition being attempted. We imagine two certain results would follow. Few would detect their real character, and their undoubted beauty and superior points would excite universal admiration. Some such comparison is required from time to time, before any varieties should be suffered to lapse into oblivion, and before mere novelties should be allowed to finally supersede first-rate kinds already in cultivation; and for this reason: there is considerable accident in the repute of roses, owing to the compulsion competitors are under to cut what they have, and not what they would choose, on fixed dates. Did circumstances permit, we would carry out this experiment ourselves. Meantime, we look with considerable interest for some enterprising amateur to work out the idea as a valuable phase in lessons upon the rose.

There is also wide scope for ascertaining accurately the relative

possession, amongst newer roses, of that important property, continuity of bloom. There are certain that we have remarked by no means to be relied on in this respect, particularly when seasons are unfavourable. Others, again, are apt to deteriorate in the quality of their autumn bloom. Many complaints have reached us that the remarkable rose, Baroness Rothschild, exhibits this defect, in common with that celebrated old variety, Madame Damage, the autumnal flowers of which seldom present the almost redundant doubleness of those produced in the summer season.

We completed our observations for the summer season at the extensive rose-grounds of Mr. John Fraser (Lea Bridge Road Nurseries), in company with that eminent rosarian himself. These will result, in due season, in not a little change in the selected lists, which have hitherto held a certain position in our opinion, and even more, as our Transatlantic cousins say, indistinct divisions into new and old, in giving future selections of the best varieties, which will be forthcoming at the appointed time.

ZONAL PELARGONIUMS FOR POT CULTURE.



PROPAGATING zonal pelargoniums for the decoration of the conservatory and the embellishment of the flower-garden, will be proceeded with in earnest during the next three or four weeks, and possibly a selection of the varieties most suitable for the conservatory will be useful to many. One of the most prevalent mistakes in the cultivation of the zonal pelargoniums for conservatory decoration is the growing of the most popular bedders, which are, with but two or three exceptions, utterly unfit for the purpose, and even when well grown have a very ragged and unfinished appearance. It is also a very frequent occurrence to meet with competitive groups at public exhibitions, made up entirely with such varieties as Stella, Christine, Trentham Scarlet, and others of a similar character, and when they come before me to judge, I always feel inclined to withhold the prizes altogether, for, however well they are grown, the collection does not have a satisfactory appearance, or create a favourable impression on the visitor. None of the double-flowering varieties are suitable for the flower-garden, but a reform in the selection of the varieties is none the less necessary, for some cultivators adhere to those varieties which were first introduced, and are now quite surpassed. It is, of course, impossible for all geranium growers to keep pace with the introduction of new varieties, neither is it desirable; to buy all that are distributed every year would incur an unnecessary expense, and burden the houses with plants, practically speaking, not really worth the room they occupy. At all events, such is my experience, and, no doubt, it is not by any means singular. My collection is not, perhaps, so large as many others, for it only contains two hundred and sixty varieties. Room cannot be spared for more, and when a new one is added to the

collection, one of the worst has to be destroyed to make way for it. So large a number is not, of course, necessary when they are merely required for the conservatory, but a greater interest is attached to the cultivation of twenty distinct varieties, one plant of each, than would be attached to the same number of plants of say two or three sorts. Therefore I should recommend each cultivator to grow a reasonable number, say from twenty to thirty.

The selections of varieties with ornamental leafage, given by Mr. Oubridge, in the July number is so good that the selections now given will be confined strictly to those grown for their flowers. Taking those with scarlet flowers, it may be said with truth that, although *Richard Headly* has been before the public some time, it is still unsurpassed in its way, and can be heartily recommended. *Splendour*, sent out by Cannell, of Woolwich, last year, is in the way of *Sambo* (one of the darkest scarlets in commerce), but the flowers are more perfect in form, and produced in much larger trusses. *Pride of Kent*, by the same raiser, is of a lighter shade, but in other respects it is equally good, and one of the finest of its class. *Jean Sisley* is also good; the flowers of fine form, and produced very freely; for exhibition purposes it is of little value, as the petals drop so soon when the plants are moved about. *Coleshill* is in the way of Lord of the Isles, and very desirable, but its chief value is for winter flowering. *Shades of Evening*, deep rosy scarlet, one of a set sent out by Mr. Groom, of Ipswich, is grand in every respect; Mann's *Amabilis*, deep crimson; Bell and Thorpe's *John Thorpe*, rosy red, and *Shakespeare*, bright red, are all good for pot-culture, as also are *Georje Peabody*, deep crimson scarlet; *Duke of Devonshire* and *Duke of Portland*. *Diana*, velvety crimson, *Iago*, bright orange scarlet, and *Sir Charles Napier*, three varieties raised by Dr. Denny, are most valuable acquisitions for the conservatory, but they are rather expensive as yet.

The varieties with flowers of an intermediate shade of colour are even more valuable than those mentioned above. In the class with flowers of a magenta or bluish crimson shade, Dr. Denny's *Iunthe* must have the first place. The flowers are large, of good form, and the bluish shade is very decided in the lower petals. The second best in the same way is *Madame Mezard*, a variety received from the Continent two or three years since, but as yet little known. It is now cheap, and should find a place in every collection of zonal pelargoniums in pots, for it is not only distinct in colour, but it has a neat habit, and produces its flowers in the most profuse manner throughout the season. *Arthur Pearson* and *Duncan*, two varieties, with flowers of a magenta shade, are remarkably good, and form fine companions to the above; indeed, no collection should be without them.

In the section of pink flowers of the hue represented by Christine, Cannell's *Master Christine* is most valuable. The flowers are of moderately good form, and produced in large trusses in the most profuse manner possible. *Beauty of Lee* is in much the same way as the preceding, and very useful. *Adelaide*, rose pink, *Mrs. Keeler*, delicate tinted pink, and *Surpasse Miss Martin*, are all desirable, and perfectly distinct from each other.

The varieties with painted flowers, of which *Gloire de Corbeny* and *Madame Werle* are types, are most valuable for pot-culture, because of the great beauty of the flowers, and the charming contrast they present to those with scarlet, and other highly-coloured flowers. Hibberd's *Alice Spencer*, tinted with salmon pink; *Maiden's Blush*, tinted with pink; *Miss Gladstone*, white, with pink centre; *Purity* (Eckford's), salmon pink centre; and *Reine Blanche*, white, tinted with blush, are all grand, and the best in the section.

There are a large number of varieties with salmon flowers, but the best, in my opinion, are *Aeme*, rich in colour, and of fine shape; *Madame Jean Sisley*, good colour, and well-proportioned truss; *L'Aurore*, the brightest colour in the section; *Pioneer*, good, fine rich colour and attractive; *Seraph*, dwarf and strong. There are now in commerce several varieties in this section with striped flowers, but, in my opinion, they are not worth growing; they are distinct, but they lack effectiveness, and are, therefore, undesirable.

Three white-flowering varieties are ample in a moderate collection, and the following should be selected. Hibberd's *White Wonder*; Eckford's *Purity*, and Windsor's *Bride*, all of which are first-rate.

Some of the nosegay varieties are also suitable for pot-culture, and, when well grown, are very showy indeed. The best are, *Mr. Gladstone*, deep crimson scarlet; *Wellington*, dark maroon scarlet, one of Dr. Denny's seedlings; *La Pere Hyacinthe*, orange scarlet; *David Garrick*, very rich deep crimson; *Charles Dickens*, cerise purple. The two latter were raised and sent out by Messrs. Bell and Thorpe, of Stratford-on-Avon; they are both first-class, and the latter was voted the best nosegay in cultivation at the Geranium Show at South Kensington. Downie, Laird, and Laing's pink *May Queen*, deep pink; *Lady Hawley*, light orange scarlet; and *Lady Kirkland*, deep rosy purple; and Cannell's *Giant Christian*, light pink; George's *Harry George*, deep scarlet; Pearson's *Chilwell Beauty*, purplish magenta; and Paul's *Claude Lorraine*, purplish crimson.

For a selection of twelve double-flowering varieties, take *Victor Lemoine*, bright scarlet; *Charles Glym*, clear deep scarlet; *Crown Prince*, rosy peach; *Miss Evelyn*, deep pink; *Triomphe de Lorraine*, cherry red; *Mr. Gladstone*, deep rose, shaded orange; *Andrew Henderson*, very rich scarlet; *Ville de Nancy*, rosy scarlet; *King of Doubles*, salmon scarlet; *Scintillant*, bright red; *Sceptre de Lorraine* deep crimson scarlet, and *Victoire de Lyon*, deep violet crimson. The last-mentioned is included, for the sake of its colour only. It is inferior in the quality of the flowers to those mentioned above, but the flowers are not so bad as they have been represented to be.

August 25th.

JOHN WALSH.

THE BEGINNER IN GRAPE GROWING.—No. VI.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.

OUTDOOR VINES.

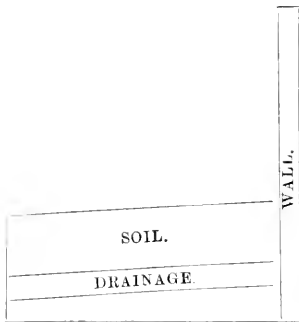


ALTHOUGH the cultivation of the grape vine in the open air is of too precarious a character, in this country, to justify the expenditure of a considerable sum of money in the preparation of the border or the purchase of the vines, it must be said that outdoor vines will amply repay the cultivator for any little attention bestowed upon them. To insure good crops of grapes in the open air the vines must be cultivated—that is to say, they must be planted in suitable soils and situations, and they must have careful management during the growing season. More frequently than otherwise the cultivator, rather than the climate, is at fault; the vines are planted without reference to the suitability of the situation, and left pretty much to themselves, and the climate is blamed for the inferiority of the crop.

A south aspect is best suited to outdoor vines, although with careful management they will do well trained to walls facing south-east or south-west, and that aspect should, if possible, be set apart for them. They also do better trained to high walls than they do to low ones; and walls not exceeding eight feet in height may be more profitably employed in the cultivation of the peach, pear, or cherry, than they would in the growth of the grape vine. Fences also are objectionable, because of the cold current of air which continually passes through the crevices that exist, even in the best constructed fences; and which materially reduces the temperature of the air in contact with the foliage and fruit. Dwelling-houses having suitable aspects present unusually favourable conditions for the production of outdoor grapes, because of the great height of the walls and the large surface they present for the development of the growth. They should therefore be turned to account for that purpose, especially as it can be done without any sacrifice of appearance, for the grape vine is unsurpassed in picturesque beauty by any other hardy deciduous climber.

The construction of the border is second only in importance to the selection of the aspect, as so much of the meed of success depends upon the roots being properly provided for. As shown in the accompanying diagram, the manner of preparing the border does not differ materially from the way in which the borders for indoor vines were advised to be formed in a previous number. The border should be about eight feet wide, and three feet deep; if the situation is cold and wet, it should be elevated above the surrounding level, and the soil kept in its place by a neat nine-inch wall. The soil should be excavated to a depth of four feet, if the border is to

be entirely below the level, and a layer of rough stones or brickbats, twelve or fifteen inches in thickness put in the bottom. The space can then be filled with three parts turfy loam, one part horse droppings, and one part lime rubbish. There is, of course, no



objection to the use of bones, but they are too expensive to be employed in borders for outdoor vines. It is not, of course, necessary to have the borders entirely below or above the surface, but they may be partly above and partly below, according to the exigencies of the case. Even in dry, warm situations no objection whatever exists to their being elevated entirely above the general level. The drain at the lowest part of the border should connect with the main drains, to carry off the water which collects in it.

Grape vines in pots can be planted at almost any time, but the two most suitable periods are July and October, and the last-mentioned is the best month in which to plant vines taken up from the open border. The manner of planting when the vines are intended to cover the walls of a dwelling-house is clearly portrayed in Fig. 2, and when the vines are planted in the manner there indicated, the whole of the wall space can be covered without interfering with the windows or the light in the slightest degree. A slight alteration may be made in the planting if it is considered at all desirable, and four vines, two on each side of the door, may be planted instead of having two on one side, and one on the other, as in the present arrangement.

The advantage of having two sets of vines—one set for the top and the other set for the lower half of the wall—is very considerable, for outdoor vines bear better when trained on the long-rod system, and it is seldom that twenty feet of well-matured rod is produced in our short summers. When the walls do not exceed twelve feet in height, one set of vines will be quite sufficient, and for ordinary walls they should be planted at a distance of four feet apart, and each vine allowed to carry four rods, two fruit-bearing canes and two young ones for bearing the following season. In planting them out of pots, carefully loosen the roots round the outside, and plant them deep enough to cover a few inches of the stem, from which healthy roots will be emitted in a short time after planting.

The long-rod system of training, by which a constant succession of young wood is maintained, is the most desirable for vines in the open air. The first season after planting they should be cut back to within about fifteen inches of the base. In the spring the two top buds should be selected for training horizontally, one to the right and the other to the left; and when the one on the right has attained a length of eighteen inches, and the one on the left six

inches, they should be trained perpendicularly up the walls. These, if strong and well matured, may be left their whole length at the winter pruning, and, the following spring, two young rods should be trained up, at a distance of twelve inches from the base of the others—that on the right of the main stem, on the inside, and that on the left, on the outside of the perpendicular rods. By this system the latter will always be kept at a regular distance apart, and the lateral growth will have ample space for development. For the forcing the second rod on the left, it will be necessary to select a strong shoot at the base of the first, and train it the proper distance horizontally, and then take it up in the manner mentioned above; if more than two bearing rods are required on each vine, a new cane, in the

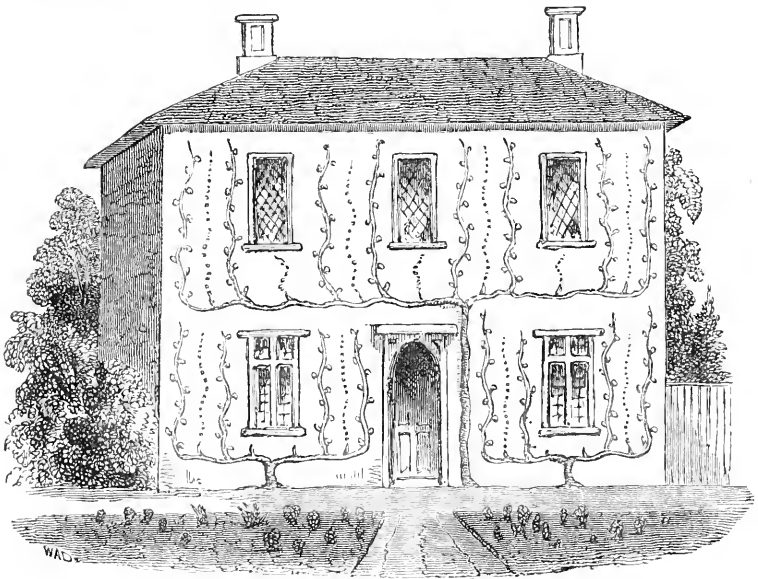


FIG. 2.—TRAINING OUTDOOR VINES TO WALLS OF DWELLING-HOUSES.

manner here mentioned, can be taken up each season, until the requisite number is obtained. Fig. 2 is a fair example of the style of training here recommended, but there should be four rods on each side of the windows.

After the space is fully occupied, the canes which have borne fruit should, at the winter pruning, be pruned back to within a few inches of their base, and the young canes indicated by the dotted lines shortened back to their proper length, and allowed to bear a crop of fruit the following season. In the spring, a number of shoots will push from the base of the cane pruned back in the winter, and the strongest must be selected for training up to take the place of the one removed. This, in its turn, will have to take the place of the present fruit-bearing cane, and, in its turn, have to make way for

others; the young canes should be stopped once during the summer, when they have attained about half their length, to strengthen the lower buds, and also they should be stopped when they have attained their full length.

If the canes are short-jointed, it will be necessary to remove a portion of the lateral growth, when the vines start into growth in the spring. As a rule, the laterals should be about nine inches apart on each side of the rod, and a bunch of fruit left to every alternate lateral. After the bunches are formed, and the grapes gone out of flower, the laterals should be shortened back, and all sub-laterals removed as fast as they make their appearance, to afford the fruit the fullest exposure to the beneficial influence of the sun; the bunches will require thinning lightly when the berries are of the size of very small peas, to enable the latter to attain their full size, which of course it is impossible for them to do when they are left unthinned, as is usually done in the case of vines in the open.

Vines raised from eyes are the best for outdoor, as they are for indoor planting, but as many readers of this do not possess the necessary conveniences or skill for that mode of propagation, a few hints on one or two ways in which a stock can be more readily raised will, in all probability, be useful.

Cuttings afford the readiest means of raising a stock when there is no vine already in the garden, and, with ordinary care, strike very freely. Some time in November select moderately short-jointed and medium-sized shoots, that are well matured; fasten them together, in a bundle, and insert them temporarily in the border, and protect from very severe frost. Early in March cut them into lengths of three or four joints each; remove the two lowest buds, and plant them firmly in well-prepared soil in the open border, deep enough for the bud nearest the top to be just above the surface. With a little attention in watering, and keeping clear of weeds, the larger portion will be nicely rooted by the autumn, and be in good condition for planting, or they may be transplanted and planted out in their permanent quarters the following autumn. In propagating vines by layers, it is simply necessary to select a well-ripened shoot, and after cutting it half way through, in a slanting direction, on the side, that it will be lowest when it is pegged down in the soil, and then fastening them just below the surface, as portrayed in Figs. 3 and 4. This should be done some time during October or March, and a small piece of potsherd placed in the wound, to prevent its closing. One bud only should be allowed above the surface, and the others rubbed off. The layers, under ordinary circumstances, will be well rooted by the end of the summer, but it is generally preferable to defer taking them off until early in the autumn.

Fig. 3 shows the mode of layering in pots, and Fig. 4 that of laying in the open border. If strong shoots are selected, and the layers watered when required, vigorous canes, several feet in length, may be secured the first season. A number of vines may be raised very quickly, by pegging a strong cane down in a shallow trench, and then just covering it with sandy soil. Provided the

soil is kept moist in dry weather, roots will be emitted throughout the whole length of the cane; and as each bud will form nice little canes, a very large number of vines may be raised with very little trouble.

The best sort for the open walls are *Early White Malvasia*, *Miller's Burgundy*, *Espiran*, and *Royal Muscadine*. In very favour-

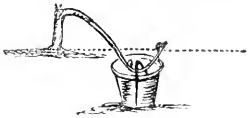


FIG. 3.

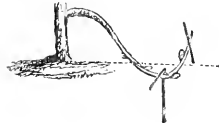


FIG. 4.

LAYERING THE GRAPE VINE.

able situations the *Black Hamburg* may be planted, but as it requires rather more heat than we usually have, it cannot be depended upon. It should be planted sparingly in very favourable situations only.

FORCING ASTILBE (HOTEIA) JAPONICA.

BY THOMAS TRUSSLER,

Head Gardener, High Leigh, Hoddesdon.



DURING the last few years this elegant plant has acquired an immense popularity, especially in the neighbourhood of the Metropolis. But it is not prized a whit more than it deserves, for it is undoubtedly one of the most elegant plants grown for the decoration of the conservatory and dinner table, during the early spring months. The demand for it in this country is now so large, that it is cultivated in Holland very extensively for supplying roots ready for forcing, and these are imported in almost fabulous quantities by the leading dealers in Dutch bulbs, such as Messrs. Hooper & Co., of the Central Avenue, Covent Garden, through whose kindness these remarks are illustrated with a portrait of a complete plant. It is so well known that there are but few who are not more or less acquainted with it, but for the sake of that few, it appears necessary to say that the leaves are of a bright glossy green, and the inflorescence pure white, presenting a charming contrast against the brilliant leafage.

The roots imported, ready for forcing, consist of several crowns each, and should, as soon as they come to hand, be potted in as small a size pot as possible, without their being divided or otherwise disturbed. Use a light rich compost, consisting of loam, leaf-mould, and thoroughly decayed manure, in equal parts. The pots must be well drained, for when the plants are in full growth they will require liberal supplies of water, and unless means are provided for carrying off the superfluous moisture quickly, a danger will exist of the soil becoming sour through its remaining in a constant state of saturation.

Pot firm and bury them just deep enough for the points of the crowns to show above the surface of the soil. After potting, give them a good watering to settle the soil, and set them in a cold pit, but apply sufficient protection during severe weather to prevent the soil becoming frozen.

Unless a large stock is grown they should remain in the frame until February, otherwise a few may be started about a month earlier. For amateurs, who only have a dozen or so, the first mentioned month will be quite early enough to start the first batch in heat. From the pit they should be removed to the greenhouse, and be placed near the glass. In a short time they will begin to show signs of growth, and then, and not until then, they may, a few at a time, remove to a rather higher temperature. A temperature intermediate between that of the greenhouse and the stove is the most suitable, for



ASTILBE (HOTEIA) JAPONICA.

they must be pushed on very slowly, and not be hurried; if it is a matter of necessity to put them in the stove or forcing pit, direct from the greenhouse, place them in the coolest end and allow them to remain there during the first week or ten days, to render the change as slight as possible. To put the case in the clearest manner possible, they should be first started in a temperature of 50°, and have a rise of 55°, from thence a rise to 60°, and then allow the temperature to rise gradually to 70°. It is not essential that these temperatures should be strictly adhered to, but the cultivator will act wisely in adhering to them as closely as circumstances will permit. Those who have not the convenience of a stove or forcing pit may have a beautiful display later in the season by keeping the plants in the greenhouse from the period mentioned above until they are in full bloom, where they can remain or be employed in the decoration of the indoor apartment as may be considered the most desirable. Even when the

conveniences for forcing them does exist, a few should remain in the greenhouse to maintain a succession, until late in the season. At all stages of growth they must be kept near the glass and have liberal supplies of water at the roots. When in the conservatory the pots may be placed in saucers containing half an inch of water, and no more; the plants after they go out of bloom may, provided the season is sufficiently advanced, be planted out in a bed of rich soil at a distance of fifteen inches apart each way; and then if kept free from weeds and watered liberally during dry weather until they are well established, they will form strong crowns for forcing the following season. Those forced early should be kept in a cold frame until the early part of May, which is the earliest moment they should be fully exposed to the weather.

HINTS ON GATHERING FRUIT.



MOST people are disposed to gather the autumn fruits too soon. They see the days shortening, they hear the trees creaking in the wind, and they find the ground strewed with windfalls; and from these premises they jump at the conclusion that the fruit ought to be gathered. But a certain percentage of a crop may fall, from various causes, before the crop is ripe. The diseased portion will lose its hold, or the wind may dislodge what is sound, long before the portion which remains firm is fit to gather. A rule is generally adopted by gardeners, that if the pips of apples or pears are turning brown, the crop may be taken; but we should rather say that a decidedly dark and settled hue of the seed is a safer criterion. As to the objection that waiting late into the autumn causes a loss of the fruit by falling, it has little weight, because it is by this process that the weaker and least sound fruit is got rid of, while the best remains. Taking the crop too early will not only injure the good fruit by causing it to shrivel, but will also render frequent removals necessary in order to separate from the stock the rotten ones, which would of themselves have fallen from the tree if more time had been given.

A most important matter is gathering the fruit without bruising it in the slightest degree. Apples and pears bought in the market are generally much specked, by which their beauty is spoiled; and most of this is occasioned by blows received both in gathering and in rolling the fruit from one basket to another. This can scarcely be avoided when orcharding is carried on largely; but amateur gardeners cannot well give too much attention to gathering their fruit. We find a coat with deep side-pockets better than a basket hung to the ladder—the usual mode of gathering; such receptacles are quite under command, and may be made to hold a good deal.

The kind of weather during which the gathering is performed is a matter of importance. The trees should be thoroughly dry, and a windy day is to be chosen, if possible.

HYACINTHS FOR EXHIBITION.

BY ROBERT OUBRIDGE,

Church Walk Nursery, Stoke Newington.



IN the cultivation of the Hyacinth, whether for exhibition or conservatory decoration, the bulbs should be managed in exactly the same manner, to develop the flower spikes to the fullest extent possible, and ensure a full return for the outlay incurred in the purchase of the bulbs. It should always be remembered that the Dutch put the flower spikes into the bulbs, and all that the cultivator has to do is to bring them out, and therefore the necessary attention should be paid to ensure their being brought out in the best possible manner.

The cultivation of the Hyacinth is a very simple matter, as will be seen by the directions here given, which, it is hardly necessary to say, should be strictly followed. One of the most important points is to select hard, sound, well-ripened bulbs, for the fine spikes of bloom cannot be had from those soft and spongy, even if they are large in size.

The growth must be prolonged over as long a season as possible, and consequently early potting must be practised. Pot the bulbs as early after the appearance of this as possible, especially if they are wanted for very early flowering, and have to be forced. This will give them plenty of time to form roots and get well established. When this is accomplished before they are placed in the warmth, there will be little danger of any of them refusing to push up the spikes at the proper time. Dumpiness can be safely attributed to the bulbs not being properly furnished with roots, and it is a waste of time to put paper caps over them with the idea of drawing the spikes up. The fault lies with the roots, and if they are all right there will be little or no fear of a failure. Good turfy-loam and well-decayed cow-dung, at the rate of three parts loam to two of manure, chopped up roughly and mixed with a sixth-part of silver-sand, forms a capital compost for hyacinths as well as other bulbs.

Use six-inch pots, and let them be well drained, by placing a layer of crocks in the bottom. Put one bulb in each pot; press the soil rather firm in the pots, and when they are filled to within an inch of the rim, insert the bulbs and fill the soil firmly about them. The neck of the bulb should show just above the soil. When they are simply placed on the surface with a little loose soil about them, the weight of the spike will probably topple them over. The soil should be used in a moderately moist condition, and then no watering will be necessary until they come from the plunge beds. When all are potted, make up a good bed of coal-ashes through which the worms cannot penetrate, and stand the pots upon it. This done, turn a small sixty-pot over each bulb, and cover with coal-ashes, spent hops, or cocoa-nut-fibre refuse, to the depth of six or eight inches. Here they should remain for five or six weeks, and then be brought into

the forcing-house as wanted. The young growth must be inured to the light in a gradual manner, and the plants kept near the glass. After they are well started into growth, water liberally, and let them have a breath of fresh air during the warmest part of the day; but it must be admitted without chilling the tender growth.

The bulbs must not be left in the plunge bed long enough for the foliage to grow long and become blanched. Therefore, when the flowers are not wanted until late in the spring, lift them out of the plunging material and place them in a cold frame or pit, where light and air will have free access to them. Those for early flowering must not be exposed to too great a heat, or the flower-spikes and foliage will be drawn up weak and spindly; and at all times keep as close to the glass as possible, because neat, properly-developed foliage that will maintain an erect position without support is nearly of as much importance as good spikes of flowers, and will tell with equal effect in competitive groups.

DO PLANTS ABSORB MOISTURE THROUGH THEIR LEAVES?—Two French botanists, Prillieux and Duchartre, have recently turned their attention to this question, and their experiments lead to the conclusion that it must be answered, contrary to the belief of all the older botanists, in the negative. M. Duchartre's experiments were made for the most part on epiphytes, plants having no direct communication with the soil, and which are yet found to contain potash, soda, alumina, and other ingredients which plants whose roots grow in the earth derive from that source. If these plants derive their sustenance from the moist vapour by which they are surrounded, it is difficult to understand how they can procure these materials. But if they absorb not aqueous vapour, but water itself, we can at once account for the possession of these inorganic materials. To ascertain how far this conclusion is just, M. Duchartre placed several of these epiphytes, provided with their aerial roots, in closed vessels filled with moist vapour; the result was to confirm the observation of Prillieux, that under these circumstances the plants lost weight. If, however, from any cause the plants came into contact with liquid water, it was absorbed readily, and the plants increased in weight. When leaves, flaccid from undue evaporation, are suspended in moist air, they recover their freshness, though they do not gain in weight; hence the inference is drawn that the renewed vitality of the leaves is due, not to the absorption of vapour, but to the transference of fluid from one portion of the branch to another. When leaves, however, are actually plunged in liquid water for a considerable time, they do absorb it in considerable quantities. *

SELF-FERTILIZATION AND CROSS-FERTILIZATION OF PLANTS.—Mr. A. W. Bennett reports in the *Journal of Botany* for October a series of observations on this subject. He states that there are now known to be three modes by which cross-fertilization is especially favoured:—the phenomena of dimorphism and trimorphism, to which Mr. Darwin has called attention; special contrivances for effecting the transference of pollen by insects from one flower to another; and the fact, which has not yet received so much attention, that in the same flower the pistil and stamens frequently arrive at maturity at different times. By observing a number of British plants, he has come to the conclusion that the most usual order is for the stamens to ripen before the pistil (protandry): the simultaneous maturing of the two organs (synacine) is nearly equally common: while the ripening of the pistil before the stamens (protogyny) is far more rare. Although protandry and protogyny do not, in most cases, actually forbid the possibility of self-fertilization, they render cross-fertilization far more likely. The most striking contrast was found to exist between the common harebell (*Campanula rotundifolia*), in which the pollen is discharged and the anthers wither up long before the stigmata are developed; and the *Scrophularia aquatica*, in which the pistil is mature very much earlier than the stamens.

HORTICULTURAL NOTES.



THE exhibition of the Metropolitan Floral Society at the Crystal Palace, August 30th and 31st, and the Meeting of the Royal Horticultural Society, September 6th, are the only occurrences worthy of notice here. There was a decided falling off in the exhibition of the first-mentioned society, which in some measure was no doubt due to the unfavourable character of the weather experienced during the early part of the summer. The last-mentioned meeting was remarkable for the large number of new Dahlias exhibited.

The chief features of the exhibition at the Crystal Palace, August 30th and 31st, were the Dahlias, Hollyhocks, Gladioli, Asters and dinner-table decorations; a few good stands of roses were staged, but the season was too far advanced for them to be presented in a condition to add much to the general effect of the exhibition.

The best Show Dahlias staged in the several stands were Emperor, Memorial, Flambeau, Miss Roberts, Mr. Dix, Delicata, Hugh Miller, Toison d'Or, James Grieve, James Backhouse, John Dunnington, John Kirby, Lady Gladys Herbert, James Bennett, Mrs. Dorling, Flag of Truce, Lady Derby, Golden Eagle, Charles Backhouse, Golden Gem, Sir G. Smythe, Hebe, Lord Derby, Adonis, Commander, Miss Henshaw, Paradise Williams, Lady Jane Ellis, Criterion, Mrs. Wellesley, Golden Drop, Eclipse, Yellow Perfection, Juliana, Netty Buckle, Gipsy King, Chairman, Octoroon, Royalty, Harriett Tetterell, Annie Neville, Indian Chief, Julia Wyatt, Lothair, Leah, Vice-President, Mrs. Thornill, Queen of Beauties, James Cocker, Queen of Primroses, Lightning, Royalty, Grand Sultan, Juno, Artemus Ward, Prince of Prussia, James Hunter, Miss Nilsson, Mr. Dix, Mrs. Bolton, Monarch, Miss Henshaw, Earl Pembroke, Mrs. Dodds, Mr. Wyndham, James Hayward, Mary Keynes, Amy Creed, Edward Spary, W. Lucas, Marchioness of Bath, Vice-President, Queen of Beauties, George Wheeler, John Neville.

The best of the fancy varieties staged were Grand Sultan, Queen of Spots, Miss Wilson, Leopardess, John Salter, Hero of York, Fanny Sturt, Artemus Ward, Mr. Wickham, Miss Annie, Bessie Wyatt, Pauline, Viceroy, Butterfly, Attraction, Mrs. Bunn, Sam Bartlett, John Sealey, Richard Dean, Flora Wyatt, Lightning, Prince of Wales, Monarch, Ebor, Annie Purchas, Master Johnny, Octoroon, Chang, Leopard, Sparkler, Queen Mab, Galatea, Pluto, Coquette, and Gem of Roses.

Hollyhocks were not shown largely, but both spikes and blooms were very fine. In the class for six spikes the best spikes shown were those of Alba Superba, Midnight, Walden Primrose, Fair Helen, Queen of Yellows, Cerns Chater, Peri, Whitby King, Willingham, Defiance, Coronet, Cygnet, and Prince Alfred. The finest cut blooms were those of Prince Albert, Champion, Juno, Coronet, Purity, Triumph, Marvellous, Scarlet Gem, Edward Speed, Eclipse, Fred Chater, Majestic, Hercules, Walden King, Sanspareil, Alfred Chater,

Conquest, Walden Primrose, Carus Chater, Purity, Leviathan. Archbishop, Standard Bearer Goldfinder, Leah, Lord Napier, and Exhibitor.

The finest stand of Gladioli was that contributed by Messrs. Kelway & Son, Langport, in which occurred magnificent spikes of Madame Desportes, Lord Poltimore, Victory, Piccioli, Glow, Estella, Celebrity, Eugène Scribe, Florence, Monarch, Phœnix, Emmeline, Pretender, Felix, Meyerbeer, Le Progès, Mathilde Landevoisin, Etendard, Lucius, Belie Gabrielle, Splendour, Lacépède, Distinction, Day Dream, Mrs. Owen, Climax, Norma, Emblematic, Sir Thomas Symons, Armide, and Molière.

Some seedling Hollyhocks were shown. The best were:—From Mr. Wheeler, of Warminster: *Lady Herbert*, large, finely formed, clear pinky flesh. *Royal Prince*; colour, rich ruby-red. *Fallae*, ruby-red, one shade deeper than Royal Prince. From Mr. W. Chater, Saffron Walden: *Prince Albert*, a fine flower of the grandest character; large, closely packed, the colour pale cream, dashed with warm flesh; quite an acquisition. *Walden King*, a good deep ruby-red. From Mr. J. J. Chater, Cambridge: *Bismarck*, a novel flower. *Peerless*, pinky buff. *Albert Memorial*; colour, ruby-red. *Lady Beauconsfield Improved*, delicate fresh carmine-pink. From Mr. B. Porter, gardener to Mrs. Benham, Isleworth: *Lady Hawke*, rich rosy pink. From Messrs. Kelway and Son, Langport: *Lord Hawke*; colour, pure pink.

Amongst the new Dahlias occurred—from Mr. C. Turner, Slough: *Mrs. Saunders*, delicately tinted with white on a pale yellow ground; *Golden Bull*, a curious shade of buff-orange; *Bob*, reddish buff; *Sybil*, delicate lilac; *H. G. Quilter*, dull buff, centre purplish. From Mr. G. S. P. Harris: *Flower of Kent*, colour clear canary yellow; *Purity*, delicately tipped rosy lilac on a ground of blush; *Cherub*, colour buff. From Mr. Wheeler, of Warminster: *Hogarth*, clear buff. *Sylph*, bright lilac tipped.

Mr. Eckford, of Coleshill, the raiser of the varieties figured in the FLORAL WORLD for last March, sent a remarkably fine lot of new Verbenas, the best of which were *British Queen*, a fine large flower of a delicate pinkish-white colour slightly suffused with palest pink; *Pluto*, dazzling vermilion-scarlet passing into fiery crimson, *Hercules*, clear claret; *Miss F. Bouverie*, deep mauvy pink; *Master Mark*, with carmine shade; *Captain*, rich soft purplish pink; *Lady Edith*, French white with pink centre; *Acme*, deep reddish pink; *Isa Brunton*, fine claret purple; *Memorial*, salmon-pink shaded with carmine, yellow eye; *Lady Gertrude*, pale lilac with carmine eye.

In the stands of Gladioli, staged by Messrs. Kelway & Son and Mr. Douglas, were several fine seedlings. From the former, *Victory*, orange-red with bluish feather, fine and distinct; *Glow-worm*, orange-scarlet, with yellow blotch on lower petal; very brilliant; *Felix*, light scarlet, feathered purple and white; *Magnificent*, very brilliant scarlet with maroon feather; grand; *Lucius*, reddish orange with light purple feather; and *Fairy Bells*, salmon-pink, purple feather; and *Sylvia*, reddish scarlet, feathered with purple, and white stripe down the centre of each petal, from the latter, were remarkably good.

The best of the new Dahlias exhibited at the meeting of the Royal Horticultural Society were—From Mr. Charles Turner: *Kate Haslam*, bright rose pink, large, full, and fine; *Souvenir d'Herbert Turner*, sulphur, changing to French white; *John Standish*, deep bright crimson; *Mrs. Saunders*, yellow tipped with white; *Mrs. Waite*, delicate rose. From Mr. G. Parker: *Lady Herschal*, creamy white, heavily tipped with bright carmine. From Mr. G. Rawlings, Old Church, Romford: *Maid of Essex*, white tipped with rosy purple. From Mr. Lidgard, Hammersmith: *Model*, a bedding variety, with very large flowers of a deep crimson hue. From Mr. J. Keynes, Salisbury: *Dolly Varden*, creamy pink, lightly flaked with purple; *William Keynes*, bright scarlet; *Marchioness of Lorne*, light yellow tipped with rose; *William Laird*, light rose.

New Verbenas were contributed by Mr. C. J. Perry and Mr. Eckford. The most promising from Mr. Perry were *Sunbeam*, deep crimson scarlet; *Distinction*, large, blush-white, purplish-rose centre; *Evening Star*, white, carmine eye; *Sprite*, white, large pink centre; *Coronation*, blush, heavily striped with crimson; *Pink Queen*, deep carmine, lemon eye; *Nelly Mole*, white, rose centre; *Gem*, light blush, deep rose-carmine centre; and *Emma Weaver*, blush-rose, carmine centre. The best from Mr. Eckford were *Purple Gem*, deep bluish purple, likely to be a grand bedder; *The Hon. Frank*, deep pink self; *Isa Brunton*, purple maroon, large white eye, fine; *Sandy*, orange-red self; *Aeme*, pink self; *Captain*, orange-scarlet; *Crown Jewel*, white; *Lady Gertrude*, lavender, purple ring round the eye; *Kingcraft*, deep crimson, white eye; and *Pluto* and *Lady Edith*, described above.

Mr. Pearson, Chilwell, exhibited several new grapes, the best of which was *Dr. Hogg*, a white variety in the way of Foster's Seedling, but better in every way. The vine has a stronger constitution, and the flavour is much richer; altogether it is a very valuable addition to the list of white grapes.

G. G.

COLOSSAL ASPARAGUS.—Mr. Peter Henderson, an American citizen of New Jersey, claims in the *Press* to having at last found a distinct variety of Asparagus. Previously he had repeatedly contended that all the so-called varieties were merely differences produced by culture, soil, and climate. The new variety was grown with the ordinary kind, both having been planted in the spring of 1868, each being then one year from the seed, and both grown to a large extent in a market garden in Long Island. The soil was examined, and found to be as nearly the same as it could well be, yet the two beds of Asparagus showed a difference that left no longer a shadow of a doubt of their being entirely distinct varieties. In the old variety he found no shoot thicker than one inch in diameter, and averaging 20 shoots to a hill, while in the colossal many shoots were found 1½ inch in diameter, and averaging 35 shoots to a hill—an enormous growth when it is remembered that the plant was only three years from the seed. The mode of cultivation is very like the French one—the rows being six feet apart, and the plants four feet apart in the row. The average clear profit annually on the old sort is estimated to be over £56 per acre, and over £87 per acre on the new; but some growers in the same region estimate their profits on Asparagus at nearly double these rates; and it is expected that it will soon prove a very valuable crop to be raised in the Southern States for the early supply of the Northern markets.

THE GARDEN GUIDE FOR OCTOBER.

FLOWER GARDEN.—After the middle of the month the summer bedders have such a wretched appearance, that the sooner they are cleared off after that time the better. Where spring gardening is carried out, the beds ought to be cleared soon, and then filled with the plants for spring flowering. This is necessary to enable them to make a fresh growth, and get established in their new quarters before the weather gets too cold, and stops their progress. A good display of spring flowers can be got up for such a trifling amount of skill and labour, that no flower-garden ought to be bare of flowering plants during April and May. The best things for spring bedding are *Silene*, *Wallflowers*, *Forget-me-nots*, *Arabis*, *Alyssum*, *Aubrietias*, *Pansies*, and *Iberis*, and spring bulbs. Good selections of the cheapest and best bulbs for the open border are given on another page, therefore nothing further need be said about them here. The late *Tulips* must not be planted until next month, and the *Anemones* and *Ranunculuses* are as well out of the ground until next February. Both these subjects prefer well-pulverized soil, and the beds which they are intended to occupy ought to be dug over at once, and the surface left rough, to give the weather greater power to act upon it. Plant every kind of hardy herbaceous plant from the cutting-pot or seed-bed. Take up and pot all zonate and variegated geraniums which are intended to be preserved during the winter, for they seldom do much good after exposure to several sharp frosts. The dead foliage can be removed; but avoid breaking or cutting the branches, as spring is the best time for pruning them. Place under shelter, and protect from frost; but at all other times ventilate freely, and give little water until the turn of the winter, when they will be established in the soil. Securely stake *Chrysanthemums* both in pots and the open borders, to prevent injury from winds. Tie out in a natural manner, and avoid the wretched system of using one stake, and tying all the growth into a bundle round it. Take up *Dahlia* tubers as soon as the tops are dead, and spread them out separately in a cool dry place to get thoroughly dry before storing for the winter. This important point is frequently lost sight of, and a mass of rotten pulp in the spring is the consequent result. It is also necessary to protect from frost, by covering them with dry hay or litter in severe weather. The planting of deciduous trees and shrubs must be pushed on vigorously, and if done carefully, all moderate-sized specimens will scarcely feel the shift. This is also a good time for transplanting evergreens, if not done as advised early in the autumn.

KITCHEN GARDEN.—Much anxiety and disappointment might be avoided during the summer, if proper care and attention were paid to this department at this season. Trench and ridge up all vacant quarters that are not to be occupied during the winter. This will give the soil, brought up from the bottom of the trench, ample opportunities to be thoroughly pulverized. Where the second spit is unfit for bringing to the top, open out a trench in the ordinary

way; but simply break it up, and leave it in the bottom of the trench. Remove stems of Asparagus, dress the beds with rotten manure, and cover with a few inches of soil from between the alleys. Capsicums and Tomatoes, still unripe, must be gathered and laid out singly in a dry room or warm greenhouse to ripen. Take up and store Carrots, Beet, and Potatoes; the Parsnips are as well left in the ground for the present, but on the approach of severe frost it is well to lift a few for immediate use. Lettuce and Endive fit for use must either be lifted and laid in by their heels, or be protected from frost and damp with hand-glasses, ground vineries, or cloches. Tie up successional batches, and choose a dry day for the operation. Towards the end of the month is a capital time for making fresh plantations of Rhubarb. Let the ground be well manured and trenched, and a moist situation selected if possible.

FRUIT GARDEN.—Raspberries, and Currant and Gooseberry bushes, may be planted towards the end of the month, and cuttings of the last two-named fruits struck if desirable. Remove the eyes that will be below the surface, and open out a trench six inches deep, and lay the cuttings in at a distance of four inches apart, and fill in, and tread the soil firm. Gather Apples and Pears as fast as they are sufficiently advanced. Keep the early and late ripening varieties as far apart as practicable, to prevent the exhalations arising from the former interfering with the keeping qualities of the latter. Trench and prepare fruit borders for planting as soon as possible, so that there may be no loss of time in planting the trees.

GREENHOUSE.—House at once every description of plants requiring shelter under glass during the winter. This is particularly necessary in the case of Azaleas, Camellias, Epacris, and other hard-wooded plants, or the heavy rains will drench the soil and do an immense amount of injury, by saturating the soil at a time when the plants are unable to absorb it. Sudden changes must be avoided, and all the air possible must be admitted in favourable weather. The stock of Gauntlet Pelargonium, if well established, and now placed in a genial growing temperature of 55° , and kept near the glass, will maintain a supply of cut flowers throughout the winter. The plants must be strong and well-rooted, or it will be a waste of time to force them. Shift the earliest batch of show Pelargoniums into pots one size larger, and keep the whole of the stock near the glass, and free from insect pests and mildew. Fumigate with tobacco, or tobacco-paper, or dust with tobacco powder, on the first appearance of green-fly or thrip, and dust with sulphur immediately mildew begins to develop itself. Cinerarias and Herbaceous Calceolarias will require the same treatment in this respect. Primulas for early flowering will be materially benefited by being placed in a genial growing temperature of 50° , later batches will make good progress in a temperature five degrees lower: avoid a damp atmosphere. Dry off Cannas and Fuchsias ready for wintering in a dry outhouse, where they can be securely protected from frost. In case of a spell of damp weather towards the end of the month, apply a little fire-heat, early in the day, to dry up the dampness, and change the air within the house.

STOVE.—All except the winter-flowering plants will have completed their growth, and, therefore, require less heat and moisture than hitherto. Euphorbias, Thyrsacanthus, Poinsettias, flowering Begonias, Luculias, and Gesneras, must have every encouragement to enable them to complete their growth quickly. The temperature of the orchid-house must also be considerably reduced, and Cattleyas and Dendrobies have very little water.

FORCING.—Pines swelling their fruit require plenty of moisture, and a close warm corner; but those just ripening require a light open position, with plenty of air to develop the flavour. There will be some difficulty in complying with the requirements of both in the same house; but much may be done by judicious arrangement. Grapes that are to hang for any length of time must be kept dry and cool, therefore all plants underneath must be removed, and a little fire-heat used in damp weather. The house must not, however, be overheated, or the berries will shrivel. Open the ventilators as wide as possible, in peach and orchard-houses, at all times, unless they are used for protecting bedding and other plants; in that case, take advantage of every favourable opportunity for air-giving. See to inside borders, and water if necessary. Of course the soil must not be kept so wet as when the trees are in full growth; but if allowed to get dust-dry, the buds will drop off wholesale directly the trees begin to start into growth in the spring. Strawberries intended for forcing must be protected from the heavy rains. A cold frame or orchard-house is the best place for them after the end of the month. Laying the pots on their sides, one above the other, so as to form a ridge, is also a capital plan for dealing with them when house or frame room is scarce.

PITS AND FRAMES.—Give plenty of air to bedding stuff, and pot up geraniums struck in the open border, before they get too firmly established, or be caught by the frost. They can be potted either singly, or three in each three-inch pot. The last-mentioned plan is the best, because when they are potted off singly they start away, and grow vigorously up to the time of their being turned out into their summer quarters. Auriculas and Pansies must have plenty of air, and careful watering, in fine open weather draw the lights off entirely, but on no account must the stock be exposed to rains. Keep a sharp look-out for mildew and green-fly, and dust with sulphur for the former, and fumigate for the latter.

GLEICHENIA CULTURE.—The splendid ferns of this magnificent family require careful management when young, and it is desirable to give them as much warmth as they will bear without becoming rusty. The soil should be good turfy peat in a rather lumpy state, with quite a fourth part of silver sand and finely-broken charcoal added. The drainage of the pots should be perfect and the plants should always be grown in as small-sized pots as possible, overpotting being carefully avoided. Several of the new species thrive in the greenhouse if taken care of, but such as *G. dichotoma*, *G. furcata*, and *G. pubescens* require the stove.



INGER-POST FOR PURCHASERS OF PLANTS, SEEDS, ETC.

SELECTION OF THE BEST HYACINTHS,
ETC., FOR CONSERVATORY DECORATION
AND EXHIBITION.

A SELECTION OF THIRTY-SIX CHEAP HYACINTHS
FOR THE CONSERVATORY AND FLOWER-GARDEN.

As the single varieties are far superior to the double, twelve only of the latter will be named, and all the remainder will be single.

Double Red—Alida Catherina, Bouquet Tendre, Princess Royal, Waterloo. *Double White*—A-la-mode, Miss Kitty, Prince of Waterloo. *Double Blue*—Blocksberg, Grande Vedette, Lord Wellington. *Double Yellow*—Bouquet d'Orange. *Single Red*—Amphion, Amy, Diebitsch Sabalskanki, L'Ami du Cœur, Lord Wellington, Madame Hodgson, Norma, Robert Steiger, Veronica. *Single White*—Alba Superbissima, Grandeur à Merveille, Grand Vainqueur, Grande Vedette, La Candeur, Mirandoline, Queen Victoria. *Single Blue*—Baron Von Tuyll, Charles Dickens, Grand Lilas, Couronne de Celle, Mimosa, Orondatus, Prince Albert. *Single Yellow*—Alida Jacoba, Heroine.

SELECTION OF THIRTY-SIX HYACINTHS FOR EXHIBITION.

(Double varieties marked thus *.)

Porcelain Blue—Blocksberg,* Grand Lilas, Grand Vedette, Van Speyk.* *Blue Shades*—Argus, Baron Von Tuyll, Charles Dickens, Garrick.* *Black*—General Havelock, Laurens Koster.* *Pure White*—Alba Maxima, Grand Vainqueur, Madame Van der Hoop, Mont Blanc, Snowball, Prince of Waterloo,* Queen of the Netherlands. *Bush*—Bouquet Royale,* Emmeline, Norma, Tubiflora. *Dark Red and Crimson*—Lord Macaulay, Mrs. Beecher Stowe, Robert Steiger, Solfaterre, Von Schiller. *Rose and Pink*—Cavaignac, Madame Hodgson, Queen Victoria, Princess Royal*, Ornement de la Nature. *Mauve and Lilac*—Haydn,* L'Unique. *Orange*—Duc de Malakoff. *Yellow*—Alida Jacoba, Ida.

SELECTION OF THIRTY TULIPS FOR THE CONSERVATORY.

Ten Double-flowering Varieties—Belle Alliance, Couronne des Roses, Gris De Iria, La Candeur, Murillo, Duc Van Tholl, Lord Wellington, Rex Rubrorum, Tournesol, Yellow Rose.

Twenty Single-flowering Varieties.—Bride of Haarlem, Canary Bird, Cottage Maid, Couleur Cardinal, Duchesse de Parma, Golden Prince, Joost Van Vondel, Keizerkroon, La Belle Alliance, La Plaisante, Molière, Yellow Pottebakker, White ditto, Scarlet ditto, Proserpine, Rose Aplatiss, Rose Luisante, Vermilion Brilliant, and Thomas Moore.

EIGHTEEN EARLY-FLOWERING TULIPS FOR THE FLOWER-GARDEN.

Double—Duc Van Thol, Duke of York, Gloria Solis, Imperator Rubrorum, La Candeur, Rex Rubrorum, Rose Eclante, Tournsol, Yellow Rose. *Single*—Bride of Haarlem, Brutus, Canary Bird, Cottage Maid, Duchesse de Parma, Keizerkroon, Thomas Moore, Yellow Prince.

SELECTION OF SIX NARCISSI.

Bazelman Major, Grand Monarque, Grand Soleil d'Or, Czar of Russia, Queen Victoria, and States-General.

SELECTION OF TWELVE VARIETIES OF CROCUS FOR POT-CULTURE.

Albion, Aletta, Wilhelmina, Argus, Comtesse de Morny, La Majestueuse, La Tour d'Auvergne, Sir John Franklin, Ne Plus Ultra, Prince Albert, Sir Walter Scott, and New Golden Yellow.

TO CORRESPONDENTS.

THRIPS OR ACHIMENES.—*V. V.*—The leaves are infested with thrip through having been grown in too dry an atmosphere. They have been exposed to the sun, for some of the leaves are partly burnt. These plants require a moist atmosphere when growing, and plenty of shade in bright weather. When in bloom, cool, shaded, and a liberal amount of water, is best for prolonging the beauty of the flowers. The best advice that we can give you is to dry them off gradually, and burn the dead stems and foliage when they are cut away from the bulbs.

PROPAGATING BOXES.—*Constant Reader.*—It is a bad plan to have boxes for striking cuttings too large. A good size is 3 feet long, 15 inches wide, and 4 inches in depth; $9\frac{3}{4}$ -inch board will make capital boxes, and there will be very little waste in cutting them up for boxes of the above-mentioned size. If the joints fit close together, bore a few holes in the bottom to allow the free escape of the water. These boxes will be invaluable for picking off all kinds of seedlings and cuttings in the spring.

RED GRAPEL.—*Grape Grower.*—Overloading the vines, or not giving sufficient air when colouring, would account for the reddish appearance of your grapes. In cold and rather wet borders we seldom see well-coloured grapes. When the foliage is too dense overhead to admit a proper proportion of light, it is an impossibility to colour grapes well.

PROPAGATING MANETTI STOCKS.—*A Young Rosarian.*—You can easily obtain a stock of these by cutting the strong shoots into lengths of eight inches in the autumn. Remove the lower buds, and plant them in rows in the open ground an inch or so apart; but if you want good roses, grow them on their own roots.

OUTDOOR VINE.—*A. B.*—If you want fine bunches thin them regularly, removing the bunches entirely where they are crowded together, and thinning out the berries in the branches with a small pair of scissors to allow them to swell.

GATHERING EVERLASTING FLOWERS.—*W. C.*—All everlastings should be gathered before they expand fully. To preserve the whiteness of the white ones, we suppose attention to the rule just given to be of the first importance, and, next, to keep them always protected from dust. The white everlastings of the shops are probably bleached by means of sulphur vapour.

FUCHSIA-BUDS DROPPING.—*A. Y. Z.*—Most likely the plants have quite exhausted the soil in which they are growing; this is a very common cause at this time of the year. Shift the young and middling-sized plants you mention at once into good soil, consisting of fibrous loam, leaf-mould, rotten dung, and silver sand; after a few weeks' growth they will bloom finely through the latter end of the autumn. Try a little guano-water, mixed at the rate of half an ounce to the gallon, on the old plants. If they are too far gone, and it fails to have a salutary effect, set them out of doors in a shady position to ripen their wood. Those grown out of shape, and not wanted for propagating, destroy at once.

CULTURE OF AGAVAS.—*A Lover of Succulents.*—All the Agavas and Yuccas require a soil composed of rich loam, a little old, dry, chippy dung, leaf-mould, and a good admixture of broken crocks, lumpy charcoal, and brick rubbish. The pots should be well drained with large crocks at the bottom, then a layer of smaller ones, and then some of the roughest of the soil. They are propagated by suckers, which may be taken off now if of moderate size, and struck in sandy peat and loam. They like sun, and during the summer plenty of water; in winter, very little, or none at all. Broken leaves may be cut off close with a sharp knife, but the less the plants are cut or injured the better. Do not shift to larger pots unless the pots are already full of roots, but, if they really require more room, shift at once without breaking the ball, and give plenty of water and shade for a week. When growing, an occasional sponging of the leaves with soft tepid water will do them good, but they must not be exposed to sun while the foliage is wet.

AEUTILON THOMPSONI.—*A Lady Gardener.*—The following extract from Hibberd's "Beautiful-leaved Plants" will afford you the information in which you are in search of. It is the best and fullest account of this beautiful plant, yet published: "The normal or specific form of the beautiful plant here figured is a very old and lightly-esteemed inhabitant of our greenhouses, which was once in bad repute as an unmanageable stove plant. While treated to a greater heat than was consistent

with its nature it took revenge against the cultivator by perpetually plaguing him by its thin, unwholesome appearance, and its suitability as a breeding-place for all the insect plagues that usually infest plants that are kept in too high a temperature. When it was transferred from the stove to the greenhouse, it acquired better health and considerable beauty; it ceased to be a house of call for vermin; it made a free growth of cheerful light green leaves, and produced abundance of pretty bell-shaped flowers of an orange colour, delicately marked with red stripes. From the greenhouse it was taken to the garden, where it proved so nearly hardy that in many favoured spots in the south of England and Ireland it survived ordinary winters unhurt; and of late years it has been adopted freely by Mr. Gibson in his masterly system of embellishing the parterre with 'sub-tropical' plants at Battersea Park. *Abutilon striatum* has never enjoyed the fame it is entitled to, perhaps because, in the first instance, through ignorance of its hardy constitution it was a troublesome plant to keep alive; and in the second, that when reasonably treated it was so easy to keep and to grow, that very few ever took the trouble to do perfect justice to it. We believe and hope a better fate awaits the beautiful variety '*Thompsoni*.' This, like the species, has had to pass through a fiery ordeal, and at first was thought a worthless thing, because being kept in the stove its beauty was stewed out of it. But, *tempora mutantur*, it is the fashion now to try every stove and greenhouse plant that exhibits distinctive characters, especially distinctive characters of leafage, in the open air; and when put to this test it came through the trial bravely, assumed a quite novel and most attractive aspect, and so became established as a nearly hardy fine-leafage plant, which, if planted out during the summer, makes a display of variegated leafage, in the highest degree beautiful and interesting. In proof of its capability for this kind of work we put out at Stoke Newington, in the early part of May, 1869, the few plants which Messrs. Veitch & Son supplied for the experiment. During the five weeks which followed the date of planting the weather was more like winter than summer, bitterly cold, with fitful gleams of sunshine, and bedding-plants, as a rule, becoming all the while small by degrees though *not* beautifully less. Yet these Abutilons were unhurt, and now, having had a good spell of genuine summer heat, they are so beautifully coloured, and are growing so freely, that we are bound to pronounce the plant admirably adapted for out-door embellishment, and one of the most distinct and attractive of the class, to which it belongs. *Abutilon Thompsoni* was introduced by Messrs. Veitch & Son from Jamaica, where it appears to have originated as a garden variety of the well-known *A. striatum*, native of Brazil. To do justice to it is no difficult task. It will grow freely in very light, rich loamy soil, and its proper place in winter is in a warm greenhouse. During the summer a thriving plant will make a growth of two to four feet, and when allowed to grow naturally it forms a freely-branching pyramidal tree, and flowers nearly as freely as the green-leaved species. It is, however, not in need of flowers to secure for it the admiration of such as can appreciate the beauty of its leaves. These are elegantly lobed, the ground-colour is a lively green, over which is spread a delicate mottling of amber and creamy white in many shades harmoniously blended. Full exposure to solar light is necessary to bring out these colours, therefore when grown under glass it should never be shaded unless there is a risk of blistering, which, as a rule, can be prevented by abundant ventilation. The plant may be increased by cuttings at any season, but the summer is the best time; and of course shade and a close atmosphere are favourable conditions for inducing the formation of roots. There are not many Abutilons in cultivation, but a few continental varieties of *A. striatum*, are much valued for their flowers, which are particularly effective when the trees are planted out in groups in the garden. The best varieties in addition to the type, are, *Duc de Malakoff*, *insigne*, and *vanosum striatum*; these have the free habit of the species and flowers possessing distinctive features."

COVERING WALLS OF HOUSE.—*H. C. H.*—The quickest growing climber is the Virginian creeper, but it is coarse; there is a smaller species, *Ampelopsis tricuspidata* (*syn. Veitchi*), which is very rapid in growth and very neat. The following climbing roses are all good—namely, *Félicité*, *Perpetué*, *Rampante*, *Red Rover*, and *Prince Leopold*.

A Cottage Gardener.—Pears, apples, and strawberries would probably pay the best, but so much depends upon the neighbourhood. Plant at the end of the house a tree of jargonelle or Marie Louise pears.



VARIEGATED IVIES.

(Illustrated with a Coloured Plate.)

IN the FLORAL WORLD of December, 1869, our readers were invited to admire a few of the more distinctive varieties of ivies in our collection. At the same time, the paper on the classification and nomenclature of ivies read before the Linnæan Society was reproduced, in order to afford to those who were interested in the subject an opportunity of considering the nature of the reformation in botanical nomenclature, it was (and still is) our anxious desire to promote. Having transferred to Mr. C. Turner, of the Royal Nurseries, Slough, the whole of our large specimens and stock plants of fifty distinct varieties, which in 1869 constituted the Stoke Newington collection, the horticultural public have been enabled to obtain (by the simple process of purchase) any of the beautiful ivies that we have described and figured in this and in other works. But we had not done with ivies when Mr. Turner carried away some two hundred of our finest plants, and now our collection, though deficient in large specimen plants, which can only be produced by years of labour, is far more extensive than ever, and we might certainly count amongst them two hundred varieties at the very least. It is not our intention to trouble our readers with particulars of all these, for a large proportion of them will never receive garden names, much less be honoured with publicity. Our object is to promote the cultivation of a peculiarly useful class of ornamental plants, the beauties and uses of which are as yet comparatively unknown. The accompanying plate represents named ivies that may be purchased in the ordinary way, and are therefore available to all, irrespective of our own private collection, which will probably furnish to the nursery gardens many additional beauties as time speeds along. It will occur to some, perhaps, that the leaves represented in the plate are too highly coloured; but the truth is, the best drawing, however faithfully reproduced, must fall far short of the splendour of the original. The large leaf in the centre, for example, which represents the *Canescens* of the list published in the FLORAL WORLD of December, 1869, and the *Algeriensis fol. var.* of the nursery catalogues, is so exquisitely variegated that the living leaf appears to be bedewed with an infinitesimal film of hoar frost, and the smaller leaves of the *marginata* series, that are edged and flecked with a curious shade of red, are far more richly coloured than it is possible to indicate in a printed picture. The delicate shade of pink mixing with stripes and dots of brilliant carmine, which appear in the leaves of many of the smaller variegated ivies in the autumn, render them delightfully attractive as conservatory plants, although small and large alike, green and variegated alike, never attain to such perfection under pot culture as they do when planted out on walls facing north.

Now that the flower-beds are empty and the borders bare, some idea

of the importance of the ivies may be deduced from the consideration that those of the *marginata* series make edgings to beds equal all the winter to edgings formed of variegated geraniums during the summer, while nicely-grown pyramidal specimens of any of the varieties in pots may be plunged in the flower-beds for winter to afford a sumptuous furnishing. As the ivies thrive in shade, those who love ivies may furnish their shady borders in a most delightful manner, by planting all the more distinctive kinds, and training them over rough logs, or on poles, or over detached heaps of mere brick rubbish, to form rich knolls of glossy vegetation, which will be even more beautiful in summer than in winter.

In the former plate the varieties were numbered 1 to 7, and therefore, to prevent confusion, those in the present plate are numbered 8 to 15. Their names are as follows: 8. *Marginata rubra*, a small silver-edged variety, which acquires an edging of bright carmine-red in the autumn, retaining it all the winter. It is known as "tricolor" in many nurseries. 9. *Luteola*, a fine tree ivy, with leaves richly margined or mottled of a fine deep yellow colour. This is one of the best variegated ivies known. 10. *Marginata major*, the best of the *marginata* series, save *M. grandis*, which was figured in the plate published December, 1869. 11. *Argentea minor*, a fine tree ivy, with richly-margined leaves, the disk of a bluish tint, the margin rich cream colour. 12. *Striata*, the striped-leaved tree ivy, a variety of the large-leaved Irish ivy, the leaf heavily blotched and striped with yellow on a ground of rich deep green. 13. *Variegata*, the variegated large-leaved ivy, another noble variety of the Irish ivy, barred and blotched with gold upon a ground of rich glossy green. 14. *Discolor*, the small marble-leaved ivy, a very pretty little climbing variety, the young leaves of which are sometimes wholly white, but usually heavily blotched with white and slightly tinged with red. 15. The large centre leaf is *Canescens*, the hoary-leaved ivy, a delicate and pleasing variety of *Algeriensis*. In this the principal surface of the leaf is of a dull glaucous green, overspread with darker shades, and the margins are distinctly whitish. A large mass of this ivy has a most beautiful appearance.

S. H.

THE CULTIVATION OF THE ROSE.—No. VIII.

FORMING A ROSARIUM.



THE time has once more returned for planting roses, and we begin by saying that roses may be multiplied to an immense extent in any garden without causing satiety. But it does not follow that all the roses should be crowded into one compartment—my private opinion is that they should not. There is a great delusion current that a rosery is a very fine thing. A lover of roses passes half his time in dreaming of the mighty rosarium he will have "some day," and when some years have passed by, and he has nursed that notion until it has

rendered him half crazy, he begins to think fate very unkind not to grant him the fulfilment of his desire, and then, perhaps, gives up rose-growing, and breaks his heart. Whether it might be worth while to break one's heart about it would be worth debating if a rosery were the fine thing it is supposed to be. I do not wish to quarrel with any enthusiast who possesses a rosery, or intends to form one; indeed, I am ready to help, as far as I can, every one who purposes embarking in the undertaking, and I have already done my best that way in the "Rose Book," where there is a design for a rosarium on a large scale, so placed on paper that any one may work it out without difficulty, and at an expense pretty easily ascertained. But I shall avoid the discussion of the policy of heart-breaking on this subject by avowing my belief that a rosarium is not a fine thing, and that, in fact, it is not a kind use of the rose to repeat it *ad infinitum* on a large tract of ground. What is the rosery at the Crystal Palace, in bloom or out of bloom? It is a sight to avoid; there is no beauty in it: the queen of flowers should have better treatment at the hands of her votaries than to be abused in that way. Look at any rosarium *now*, and what is it? What will it be but a wilderness of leafless sticks from this time to March next? When the roses are in flower, will it be as beautiful a scene as might be otherwise created with a similar space and a similar expense? I think not: but I like roses intermixed with evergreens, set out in clumps on grass turf, dispersed, divided, scattered, made to show their splendid colours and graceful outlines by contrast with masses of green and deepening shadows, instead of being compelled to impress the spectator with a sense of the sameness that is possible by a misuse of the finest subjects.

I know a few gardeus where roses are grown well, and in considerable numbers, and where they have a tenfold chance when in bloom, and are not unsightly at other times, because they are intermixed with fine hollies, sometimes set out in broad masses, with rich backgrounds and belts of tree and shrub to give relief, and where the most fastidious would not complain of satiety, and the most rapacious rose-devourer would find enough. Give me well-planned walks that wind easily through smooth lawns and amongst bold blocks of trees and evergreens, and I will rejoice if I see roses at every turn, especially if they are grouped so as to bring out their several colours, though it is a fortunate fact that if a clump of roses consists of various kinds brought together with no nice fore-reckoning as to colours, they never mar each other, because there are no strong contrasts amongst them. The English style of gardening is admirable for the display of this most English flower, because the bold breadths of green required, and the easy transitions from light to shade, from unbroken turf to semi-wilderness, and from formal lines to graceful sweeps, suit the rose at every step. On the terrace standards are admissible; on the lawn they are still more appropriate; and in mixed planting they are the noblest of all the subjects we possess to light up the scene with colour, and delight old and young with their grace and perfume.

When an amateur is bent on forming a rosarium, it is a very easy

matter to waste money in producing a complication which shall at last prove unsatisfactory, for roses—even if we select the best for bedding purposes—do not comfortably fit into hearts and diamonds, and the rest of the Euclidian vagaries that are to be seen in these days in private gardens. During the month of June, groups of such a kind may be agreeable, but in August considerably less so, and the true bedding plants will certainly have stronger claims to patronage on artistic grounds, whatever may be the peculiar predilection of the amateur for roses. I cannot imagine a more simple and effective arrangement for a small collection than that which I adopted fifteen years ago at Stoke Newington. On either side of the walk was a broad piece of ground, with tall privet hedges beyond for background. Next the privet was a narrow walk, and on the line of the walk trellis wires strained to oak posts. Against the trellis were a few climbers, and thence across to the central walk a regular arrangement of standards in lines, with dwarfs next the walk; the whole scene forming two banks of roses with the walk between. One advantage of such a scheme is that those who like to see a mass of roses in bloom are sure to be gratified. Another advantage of the arrangement is that an inspection of any particular tree may be made without difficulty; in fact, the rose fancier is sure to take his walks amongst them frequently to criticise and compare, to indulge in occasional raptures, and sometimes—who knows?—to condemn some of them, and determine on exchanging them for better. Another, and not the least advantage is, that you can call it a rosery without having committed yourself to an arrangement attended with expense, and which cannot be easily altered. A rosery of this kind is, after all, only a couple of broad borders, say 16 feet wide, and as long as may be suitable to the place and the purse of the owner.

As at this season many amateurs are buying and planting roses, a few suggestions may not be out of place. Brier roses, or in other words, Standards, require a good deep moist loam, well manured and industriously broken up previous to planting. A good clay will suit them if there is no stint of labour in deep digging and breaking up, and manure it as you would for cauliflowers. Dwarfs, whether on own roots or Manettis, require a rather light rich loam, but robust habited roses, such as Jules Margottin, General Jacqueminot, and Anna Alexieff, are not particular, provided they can root deep, and are well fed. Nevertheless, the best way to prepare the ground, if it is a rather stiff loam, is to dress the front line where the dwarfs are to be planted with plenty of leaf-mould and rotten manure; and if rotted turf can be spared for it, the stuff will not be wasted. But let no one suppose that roses require elaborate preparations; any soil that will grow a good cabbage will grow a good rose, whether it is a cabbage rose or any other kind.

To obtain suitable trees is a matter involving no difficulty. A fastidious purchaser will manage to see and mark all the trees, and have the sorts according to a list made out beforehand. But there are very few people who have time to spare to buy roses in that way, and an order sent to any of the first-class trade growers, whose names are known well enough, specifying heights and numbers, and

leaving the dealer to select the sorts, will be sure to result satisfactorily, and the cost of the whole would be about half what would be charged if the sorts and the trees were selected by the purchaser. I made a plantation like my own for a friend, and I went about it in a most off-hand way. I wrote to Messrs. Lane and Son for so many dozen standards, ranging from three to seven feet, and I said nothing about the numbers required of particular heights or sorts. When they came in, I set the men to work in a systematic way. One pruned head and tail, and handed them over; the next placed them in lots as to heights; the next carried them to their places, and laid them in bundles for planting. To have a plantation of roses as true to heights as an architect would require the columns of a portico, is out of the question—it simply cannot be done; but there is no difficulty in arranging them to form a very regular bank, if a fair proportion of each height is supplied in the first instance.

The work of planting should be done with care. Fellows who blunder about, and hack and slash with spade and knife ought not to be admitted amongst roses. They must be handled as old Izaak Walton advises the angler to handle frogs—that is, tenderly, yet boldly. All the long roots must be cut back; all the wounded roots must be shortened, so as to remove the injured parts; there must be no tugging and tearing, and care must be taken not to bruise the bark. In cutting back the heads, it must be remembered that the final pruning is to be done after they are replanted; the cutting back before planting is to render them more convenient for handling, for the nurserymen send them in with all their huge whip-like shoots full length; it would not do for them to prune them; they would not look worth their money, to say nothing of the time it would consume.

In planting, the ground should be measured off in lines, and it is best to begin with the tallest. If these average 6 feet high, they must be 5 feet apart in the row, or not more than five-and-twenty in a run of 100 feet. The next row should be 5 feet removed from the first, and the trees in it should average $4\frac{1}{2}$ feet high, and be put 4 feet asunder. The next row should be 4 feet from the second, and the trees in it should average 3 feet high, and be 3 feet apart in the row. If they are strong-growing sorts, and the soil is good, and the trees have already fine heads, give them a distance of 4 feet apart, and they will then touch each other, and make a solid line of leaf and bloom. The front row should be 3 feet from the last, and the bushes in it 2 feet apart, and set back 2 feet from the edge of the walk. The quickest way to plant is to lay down the line, place the trees, carefully laying out the roots near the surface, throw a little earth over, and tread very lightly, just enough to keep them upright, and so on till the whole are in their places. Then go over them again, tread them firm, and stake them securely, and they may remain for months, if need be, without any further attention. The reason I always plant them loose in the first instance is this, that when the whole piece is planted, I am sure to want to move a few, and make a few exchanges. I can, therefore, take out any of them by a mere touch, rearrange as needful, and there is no waste

of labour. Besides, this sort of work should be done quickly, for we do not get much fine weather at the time for planting roses, and it does them much mischief to lay about: the sooner their roots are covered the better. By the system of merely placing them with a shovelful of stuff over the roots, the whole lot can be got into their places quickly, and come rain, frost, snow, or what else, they cannot suffer; they are safe, and if not finished for a week or two no harm can arise. But I do not counsel delay; the true rosarian will never shilly-shally when planting is the order of the day. The sooner the whole job is finished the better; but if every individual tree is finished right out at once, some may suffer through laying about with perhaps their roots not half covered; and at the best it is certain that a few will have to be lifted to get them all in such order as will satisfy an eye at all fastidious about arrangements.

Many years ago I advocated the use of iron stakes for rose-trees. Some growers contend that iron stakes do harm, and they go on using oak stakes instead. Now, I am certain, from long observation and experience, that iron stakes do no harm, and that oak stakes, and, in fact, any kind of timber supports, are really injurious, and many a rose-tree is killed by the spread of fungus over its roots, through contact with decaying wood. Once in three years we boil up a cauldron of tar and pitch, thrust the ends of the iron stakes into the fire that boils the pot, and when the ends are rather hot dip them into the mixture. Two coats of paint on the length of the rod finishes them; they can be placed close to the stems of the trees, care being taken in thrusting them down not to drive them through the thick roots near the collar, and when the trees are tied up the stakes are almost invisible.

The pruning can be finished any time before the 1st of March. It may be done as soon as the planting is finished, and before the trees are staked, for although winter pruning is not good for established roses, because it tends to make them grow too soon in spring, roses newly planted have enough check to prevent that, and autumn or winter pruning will not hurt them.

It is of the utmost importance for the full enjoyment of a plantation of roses to have them legibly and correctly labelled. If the calico labels the nurserymen put on are allowed to flutter in the wind all winter, the chances are that the writing will be washed out before spring. Therefore, to complete the labelling quickly is a matter of considerable importance. There are a thousand ways of forming and attaching labels to trees. I can find nothing better than wooden labels smeared with white lead, and written on with a pencil while the paint is soft. Attach these with a copper wire, and take care not to cut the bark of the tree, and leave the wire loose enough for the tree to swell. Once a year look at every label, and keep a list of all the sorts, in which you may make notes of their characters and behaviour.

A SELECTION OF FIRST-CLASS ROSES THAT FLOWER FREELY IN LATE SUMMER AND AUTUMN, AND IN MILD SEASONS UNTIL CHRISTMAS.

Hybrid Perpetuals.—Adolphe Brongniart, Baron Haussmann, Boule de Neige, Charles Turner, Comte Raimbaud, Duchesse d'Aoste, Duke of Edinburgh, Dupuy

Jamain, Edouard Morren, Elie Morel, François Fontaine, Henri Ledechaux, Impératrice Charlotte, Julia Touvais, Julie Treyve, La France, Leopold II., Madame Alice Dureau, Madame Creyton, Madame Noman, Monsieur Journeaux, Pitord, Prince Humbert, Princess Christian, Virgil, La Duchesse de Morny, Jules Margottin, Anna Alexieff, Madame de Cambacérès, Madame Knorr, Madame Charles Wood, Le Rhône, Charles Lefebvre, Vicomte Vigier, Alfred Colomb, Sénateur Vaisse, Marguerite de St. Amand, Général Jacqueminot, Comte de Nanteuil, Madame Moreau, Elizabeth Vignerot, Charles Verdier, Madame Alfred de Rougemont, Jean Lambert, and Louise Darzins.

Bourbons and Teas.—All noted for flowering late in the year ; so also are the pure Chinas, Gloire de Dijon, Malmaison, Mrs. Bosanquet, and Bourbon Queen.

GARDEN ROSES.—The following is a selection of genuine garden roses, of the section of *Hybrid Perpetuals*, that flower freely in the autumnal months : Anna Alexieff, Albion, Aristide, Dupuis, Baron Prevost, Beauty of Waltham, Coquette des Alpes, Curé de Charentaye, Camille Bernardin, Duchesse de Morny, Edouard Morren, Elie Morel, Eugène Appert, Général Jacqueminot, John Hopper, Jules Margottin, La France, La Brillante, Le Rhone, Louis Darzins, Madame Charles Wood, Madame Knorr, Marguerite de St. Amand, Madame Noman, Madame Moreau, Maréchal Vaillant, Marquise de Castellane, Paul de la Meillerez, Pavillon de Pregny, Princess Christian, Souvenir de Charles Montault, Thérèse Appert, Vicomte Vigier, Triomphe des Beaux Arts, Victor Verdier, Sophie de Villeboisnet, Souvenir de Caillat. There are a few pre-eminently free-flowering varieties amongst the new division, termed *Perpetual Bourbons*, such as Emotion, Baronne de Maynard, Comtesse de Brabantanne, Louise Odier, Catherine Guillot, B. Queen, Rev. II. Dombrain ; the new white *China* Ducher, and the *Teas* generally. These also form excellent bedding roses for pegging down.

S. H.

BERRY-BEARING PLANTS FOR TABLE DECORATION.

BY J. W. SILVER,

Head Gardener, The Laurels, Taunton.



THE plants remarkable for the beauty of their foliage, and those grown for their flowers, adapted for dinner-table decoration, have been already described, and now attention will be directed to berry-bearing plants suitable for the same purposes. All three classes possess many desirable qualities, and a fair proportion of each should be grown ; but it can be said with safety that the class now under consideration is not surpassed by either of the other two, and also that in small gardens they are not grown so extensively as they should be. They are generally at their best when plants in flower are scarce, and when a large proportion of the ornamental-leaved plants are either at rest or the old foliage has become dull and ineffective. They are all, moreover, easy to manage, hardier in constitution, and may be employed to decorate the dinner-table almost any number of times without being injured in the least.

With this brief preface, we will at once commence to enumerate the most suitable, and, for facility of reference, take them in alphabetical order.

AUCUBA JAPONICA.—We will not take up space so valuable as that of the pages of the *FLORAL WORLD* in recounting how this valuable plant was grown in the stove when first introduced to English gardens, or describe the many attempts that were made to

introduce the male plant, before it was successfully accomplished. The hardiness of the *Aucuba* is established beyond doubt, and the male plants are now plentiful, and all that we have to do is to deal with it in relation to its adaptability for the decoration of the dinner-table. To render the directions that will be given as plain as possible, it is necessary to say that the *Aucuba* is dioecious—that is to say, some plants bear male, and some female flowers; and to insure a crop of berries a fair proportion of plants of both sexes must be grown. The pollen from the flowers produced by one male plant will be sufficient to fertilize those of a large number of female plants, if made the most of; but for an amateur not well skilled in the manipulations necessary to make the most of the pollen, the males should be grown at the rate of about one to six of the females.

There are several ways of propagating a stock, but the most desirable way for an amateur to propagate them is by cuttings or layers. For those well skilled in grafting, that way of increasing the stock of any desirable kind is the best that could be adopted. As it is necessary to have stocky specimens, young plants of the common kind raised from cuttings should be selected for stocks, and the grafts put on near the surface of the soil. Cuttings strike best when put in early in the autumn, when the young growth has become firm. In layering, select healthy, vigorous side-shoots, make a slanting cut on the lower side of the stem, about six or nine inches below the point, and peg the shoot firmly into the border, and cover about three inches of the stem with soil. This should be done in the autumn, and the layers taken off when they are well furnished with roots, and put in pots. In all cases use well-drained pots and turfy loam, to which a small proportion of leaf-mould or thoroughly-decayed manure has been added. The pots also should be rather small in proportion to the size of the plants, and the soil be pressed firm.

The main point we have to consider is the production of good crops of berries, for unless they are well berried, they will not be of any use whatever for the purpose for which they are intended. The best means to secure this desirable end is to grow the plants of both sexes in the same temperature, to insure their both flowering at the same time. If the flowers of either appear likely to expand in advance of the other, the earliest may be retarded by being removed to a lower temperature; but, in the case of the male flowering first, the pollen may be preserved in a small tin box or tinsel paper until required for use. It may then be applied with a camel's-hair brush. When the flowers of both expand at the same time, insect agency will accomplish the necessary fertilization.

There are a large number of varieties now in cultivation, so that there will be no difficulty in selecting six that are really distinct and good. The following selection, without including the most expensive, cannot be surpassed: (Males), *A. japonica maculata mascula*, *A. j. viridis mascula*; (Females), *A. j. lati-maculata*, *A. j. maculata elegans*, *A. j. viridis nana*, *A. j. macrophylla*.

ARDISIA.—The beautiful and showy *A. crenulata* must also have

a place in this selection. It has one drawback, it requires a stove temperature; so that it can only be cultivated where the conveniences of a stove exist. It however is sufficiently hardy in constitution to admit of its being employed in indoor decoration without injury. The readiest way of increasing the stock is by seed. The berries should be gathered when full ripe, and laid in silver sand for some time previous to sowing. A brisk temperature and a mild bottom-heat will be of material service in assisting the seed to vegetate quickly; but bottom-heat is not essential to the germination of the seed. The plants should be grown in rather small and thoroughly-drained pots, and at all times be kept in a light position near the glass. A compost prepared by well incorporating together two parts fibry peat and one part turfy loam, and sufficient sand to make the soil feel gritty, will suit them admirably.

RIVINA.—The graceful and easily-grown *R. humilis* is probably one of the most useful of its class for the decoration of the dinner-table; its bright green leafage and pendant racemes of deep red coral-like berries combine to render it unusually attractive. Standard plants are very interesting, and are readily produced by training up a single stem, and pinching out the terminal point to cause the production of side-shoots, which soon make their appearance afterwards. Bushy specimens are also effective, and very readily produced. The system adopted here—which is certainly very simple—is to put seven or eight seedling plants, when about one inch in height, in a three-inch pot. When well-established, the points of the shoots are nipped out, and as soon as the laterals which push from the main stem have from four to six joints each, the points of these also must be nipped out, and the plants, without being divided, transferred to five-inch pots. They should then be placed in a light position in the stove or intermediate house. Equal parts loam, leaf-mould, peat, and well-decomposed cow manure form a compost most conducive to a healthy development of foliage and a plentiful crop of berries. This useful subject can be most readily raised from seed, which should be sown early in the spring, when fully matured.

SKIMMIA.—The pretty *S. Japonica* can be heartily recommended for table-decoration, as much for its great beauty as for its perfect hardiness. It is neat and compact in growth and effective in appearance. When covered—as the plants usually are in the early part of the summer—with their white flowers, they are very pretty, but when loaded with large clusters of brilliant vermilion berries during the winter, the effect produced by a well-developed specimen can be better imagined than described. *S. oblata* is readily distinguished from *S. Japonica* by the depression at the end of the berries, and it is far less desirable. They are propagated by seed, which should be sown in the early part of the summer, in pans, which can be placed either in a cold frame or in heat until the young plants appear, when they must be removed to a lower temperature, such as that of a cold frame. A moderately rich and open compost is necessary to the production of healthy plants, and the pots should be plunged during the summer months in the open border, and the plants not allowed to suffer for the want of moisture at the roots.

SOLANUM.—The showy *S. capsicastrum* is very beautiful when well grown, but it is decidedly inferior to the beautiful *S. hybridum compactum*, introduced by Mr. B. S. Williams, Victoria and Paradise Nursery, Upper Holloway. The latter requires no training, and is much more effective when upon the table; indeed, it is one of the finest subjects for conservatory decoration during the winter months we have. To secure good specimens, well furnished with berries, by the autumn, the seed must be sown very early in the spring, and the seed-pots placed in a brisk temperature, such as that of a cucumber or melon pit. Pot off singly into three-inch pots, and when these are well filled with roots, shift them into pots one or two sizes larger; gradually harden off, and early in June plunge them in an open border, with the rim of the pots just below the level. Plants so managed will not become infested with red-spider, green-fly, or any other of the many pests which prey upon them when they are kept under glass all the summer; indeed they will not require more than one-tenth the labour and attention to keep them in good health as would otherwise be necessary. Moreover, they will keep dwarf and bushy, and by the autumn will be loaded with their bright orange-red berries.

Standard specimens are produced by training up a single stem, and then stopping it when about fifteen inches in height. The laterals also require stopping when about three inches in length, to insure bushy heads. In the spring they will require pruning into shape, and as soon as the young growth is about half an inch in length they should be taken out of the pots, the ball of soil reduced slightly, and be repotted in the same-sized pots again. Dwarf specimens of an extra size for conservatory decoration may be had by pruning the plants which have done duty during the previous winter, and repotting them as here directed, and growing them on the second season in the same manner as advised for the first. Fully-developed standards require two years for their production, and the berries should therefore be removed as soon as set during the first season.

SOUCHET'S NEW GLADIOLI FOR 1871-2.

BY EUGENE VERDIER, FILS AINE,

3, Rue Dunois, Gare d'Ivry, Paris.



are happy to learn that the French industries are rapidly recovering from the effects of the late war, and that we shall this season receive our usual supplies of new roses, gladioli, etc., from France. From our correspondents in that country we learn that some of the new flowers are of great promise, and well worth the attention of growers on this side of the Channel. For the descriptive list of M. Souchet's new Gladioli we are indebted to M. Eugene Verdier, fils aîné, in whose hands we understand they are placed for distribution.

Aleyon, very beautiful spike of large flowers, ground white, heavily bordered and flamed with rose carmine; charming plant, very dwarf.

Antigone, long spike of very large flowers of a tender rose, heavily flamed with red carmine, of great effect; perfection.

Antiope, very long and fine spike of clear cerise orange flowers, stained with very dark carmine upon a pure white ground; plant of great effect.

Ariadne, very long spike of large perfect flowers, ground very clear white, tinted rose or lilac, bordered and flamed with tender carmine rose, the inferior divisions pure white ground; splendid and fine; perfection, of moderate height.

Arsinae, fine spike of large perfect flowers, very beautiful satin rose, flamed bright carmine, charming; very dwarf.

Béatrix, very long spike of large perfect flowers, ground pure white, very delicately flamed with crimson lilac; splendid and very fine variety, of moderate height.

Celimène, very long spikes of very large and very open perfect flowers, clear red orange, heavily flamed with bright red, very brilliant; splendid.

Didon, very long and ample spike of large perfect flowers, white, slightly tinted and flamed tender lilac, inferior divisions pure white, moderate height; perfection.

Jupiter, very long and fine spike of large perfect flowers, ground clear red, very beautifully flamed with crimson red, very dark; splendid variety, of great effect.

Minerve, very ample spike of large very open flowers, bright crimson, very brilliant, small red-carmine stains upon a clear white ground, very fine tint, of great effect; moderate height.

Ossian, very long and fine spikes of large perfect flowers, very beautiful bright rose, tinted with violet, and flamed carmine ground; very fine, and of moderate height.

Phœbus, fine spike of large fire-red flowers, very striking, very large pure white stains, of great effect; splendid late variety, much recommended for the striking brilliancy of its colour, unique, of moderate height.

Virginalis, long spike of large flowers, pure white, bordered and flamed with tender carmine rose, small growth; very fine and attractive.

THE MAKING AND THE MANAGEMENT OF THE LAWN.



TO insure the luxury of a "velvet lawn," is, to speak generally, a most easy matter, and though it may be comparatively costly in the first instance, it will prove in the end one of the best of investments of gold in gardening. The soft elastic turf of a chalky down will kindly inform the traveller that a lawn may be laid on chalk; and the closely bitten grassy herbage of a sandy common will in like manner suggest

that gravel and sand may be clothed for the production of a living carpet that will last for ever. It is, however, on a deep loam or a clay that has been well tilled, that the best example of grass turf is to be looked for, and on such land we should prefer to operate, were it required of us to present the best possible example of making and keeping a garden lawn.

In the formation of a lawn, all levels must be carefully determined, and the ground thoroughly well-prepared, that there may be no waste of labour in alterations afterwards. In the case of laying fresh turf on the site of an exhausted plot, from which bad turf has been removed, a heavy dressing of good manure should be dug in, for grass needs nourishment in common with all other plants. The last act of preparation consists in spreading over the level ground about an inch depth of fine earth, which is to be distributed evenly, and every stone removed by means of the rake. Then we approach an important question—which is best, turf or seeds? In any and every case, turf is to be preferred, for upon the instant of its being laid and rolled, the lawn is formed, and there is an end of the matter. Two considerations give interest to this question—the cost of turf is necessarily far in excess of the cost of seeds, and it may happen that turf is not to be obtained within reasonable carting distance. Supposing the amateur to have a choice of means and materials, our advice would be in favour of the purchase of the best turf possible, for any extent of ground under one acre; but when we get beyond an acre, with every increase of extent the argument in favour of seeds increases in force, for the cutting and carting of turf is a somewhat costly business. In selecting turf for a garden, give the preference to that which is of close texture, containing a fair sprinkling of clover intermixed with the finer grasses. We have formed many lawns from meadow turf, which in the first instance appeared far too coarse, and they have in the course of three years' acquired a beautiful texture fit for the foot of a princess in a fairy tale. Grass turf may be laid at any time during favourable weather, but the autumn is to be preferred, because of the long season of growth the newly-laid turf will have to aid in its establishment before being tried by the summer sun. If laid in the spring, grass usually passes through the first summer safely, but is of necessity exposed to the risk of being roasted; in the event of a hot, dry summer the risk is greater in the case of turf laid late, than of turf laid early. When the work is deferred until the season of spring showers is past, it will be advisable to spread over the turf a coat of good manure, and keep it regularly and liberally watered until showers occur.

In selecting seeds, the character of the soil must be taken into consideration, for a mixture that would suit a clay or loam would not equally well suit a gravel or chalk soil. The seedsmen who make a "speciality" of grass seeds will for any given case supply a better mixture than anyone unskilled in the matter could obtain, even if acting on the advice of a botanist or gardener. As, however, prescriptions are occasionally required by seedsmen who have not had extensive experience, we shall append to this chapter a few for

mixtures adapted to particular kinds of soil. The best time in the year to sow seeds is the month of August. If the work cannot then be completed, the sowing may be continued through September and October, but not later; but may be resumed in February and March. Grass seeds may be sown indeed on any day in the year, provided the weather is favourable to the operation, and the ground in a fit state; but the month of August is the best time to insure a good plant before winter, and a long period of growth before the summer heat returns.

There is yet a third mode of forming a lawn, now rarely practised, but in days when grass seeds were comparatively unknown, frequently resorted to. It is termed "inoculating" and consists in planting pieces of grass turf at regular distances over the plot. In districts where good turf is obtainable only in small quantities, this method may be recommended, for if the turves are torn into small pieces and planted at a foot apart in September or February, they will extend rapidly, and form a pretty good sward the first season.

In the after management, the principal operations consist of rolling, mowing, and weeding. Grass seeds must be constantly weeded, until the turf thickens sufficiently to kill out the weeds, and newly-laid turf must be kept clean of thistles, docks, and other rank weeds, by spudding them out, or by a simpler process which we have long practised with the most agreeable results, that of depositing in the heart of the plant a small quantity of phospho-guano, which kills it at once, and promotes the growth of clover in its stead. If this operation is carelessly performed, and the guano thrown about wastefully, the immediate result is a dotting of the lawn with unsightly brown patches, which however, soon disappear after the occurrence of rainy weather.

Many as are the kinds of mowing machines, they may all be classed under two heads—those that cut and carry, and those that cut and scatter. A carrying-machine may be made to scatter by removing the box, but not so well as the machine that is intended for scattering, as in each case the cutter is formed expressly for the work it is intended to perform. If the question be asked, which is the best form of machine, our reply is that they are of equal value, and the intending purchaser must be guided by a consideration of circumstances. In the excessively hot and dry summers of 1868 and 1870, we constantly employed the "Archimedean," which scatters the grass, and our lawns were as green through all the burning drought as in the cooler days of spring. In the moist summer of 1871, it would have been necessary to sweep up the grass, had the scattering machine been employed on our strong land, and therefore we kept our trusty "Shanks" at work, cutting and carrying, and had to mow twice a week through the whole of June and July, to keep the grass down. Nevertheless, in that same moist summer, we saw the "Archimedean" employed on a tract of chalk land, which is peculiarly exposed to the influence of the sun, and the result was a fresh green turf, where in the height of summer nothing better than a dusty door mat had ever been seen before. When the grass is

cut by cutters adapted for the scattering system, it falls on the ground in a form more resembling dust than fibres, and acts as a "mulch" both to nourish the growth and arrest evaporation from the soil; hence the importance of the scattering system on chalk and sand, and other hungry stuff, and on any soil in such a hot season as 1870.

In the keeping of an old lawn it is of the utmost importance to remember that grasses and clovers require for their well-doing a highly nourishing soil. Now it matters not how good the soil may be in the first instance, if we cut and carry we labour constantly to impoverish the soil. In every barrowful of grass removed there will be a certain quantity of alkalies, phosphates, and other constituents of vegetation abstracted from the soil. To be always taking off and putting nothing on must result in the starvation of the grass; and we shall find that as the grasses and clovers disappear through the exhaustion of the soil, daisies, plantains, knotgrass, self-heal, and other weeds, take their place. The simple remedy for this state of things is manuring, and the best mode of manuring is to scatter over the turf a succession of thin dressings of guano and fine mould mixed together. This should be done in autumn and spring, at times when there is not much traffic on the grass, and there is a likelihood of rain to follow. If appearances are of no consequence in the later autumn or early spring months, a good coat of half-rotten manure may be spread over the turf, but this proceeding cannot be recommended for general adoption. In place of guano, nitrate of soda or nitrate of potash may be employed, being first mixed with fine earth or sand, and then scattered at the rate of one pound of nitrate to every square yard. The employment of an alkali will promote the growth of grass, but not of clover, which requires the aid of phosphates. A cheap and most serviceable dressing for old lawns may be occasionally obtained in districts where building works are in progress. The rubbish should be screened, to separate from it the dust of old mortar, plaster, and broken brick to the size of walnuts at the utmost. This may be spread thinly two or three times in autumn and spring, and will greatly benefit the texture and density of the turf. It cannot be said that in British gardens grass is generally well managed and properly understood, for the lawn is the last place on which either manure or water is generously bestowed. We may oftentimes see the flower-beds deluged with water that they do not need, while the grass is fast parching into a hideous condition of sterility. If we could persuade the industrious folks to spread the water, by means of a hose, over the grass two or three times a week during summer, and give the geraniums none at all, the result would be a brighter blaze of flowers in a rich setting of delightfully fresh verdure, instead of, perhaps, geraniums growing like cabbages and scarcely flowering at all, and the grass becoming as thin and black as if a flame had passed over it. Two contingencies are to be especially guarded against in the management of grass turf—the machine must be set so as to cut fair, and it must be kept in the best order by constant cleaning and oiling. If set so as to cut very close, it

will occasionally pare off the surface soil, and with it the roots of the grasses ; many a good lawn has been ruined by the foolish practice of making the machine cut as close as possible, under the absurd impression that one cut is better than two. The more cuts the better, provided always that the machine is properly set and in the best working order. Another mode of making a present effect at the expense of the lawn consists in continually cutting a fresh edge with the edging iron. A gardener who cuts into the turf on the edge of the lawn to make a finish ought to be compelled to eat all that he removes. If the practice is persisted in, the grass is reduced in breadth, and the walk is widened, and in time there is formed a deep gutter and a sharp ugly ridge. If properly finished at the edge with the shears, the width of walk will not vary an inch in fifty years. One of the first things we look after in the work of a new man is his management of the edges of lawns, and we are always careful to explain our views upon the subject in good time to prevent a mischief which cannot be easily remedied. The man who persists after warning and explanation in chop, chop, chopping at the edge, as if it were necessary to construct a gutter of mud on each side of a walk, deserves to hear an opinion of his procedure that will make him tingle from head to foot with shame. The jobbing gardener is a master of this chop-down-gutter-forming business, and will always be ready to advise the employment of gravel to fill up the trench that should never have been made.

It may be well, perhaps, to add a word upon the employment of *spergula* for lawns. A *spergula* lawn in good condition is one of the loveliest embellishments of a garden that can be conceived. We have seen many so-called *spergula* lawns, but only three that were good enough for agreeable remembrance. The whole truth of the matter may be summed up in a sentence : A *spergula* lawn demands constant attention and is of necessity a troublesome thing to form in the first instance and to manage afterwards. Therefore for what may be termed "general usefulness" we cannot recommend the employment of *spergula*. However, any of our readers who are inclined to indulge in this unwonted luxury need not be deterred through supposing there is any mystery at the bottom of success ; it is a question of time and attention, and whenever these are withheld the *spergula* lawn will go to ruin. Prepare the ground well, and plant the tufts in September and October, or in March and April. Frequently roll the ground and never cease to pull out weeds, for these are the chief enemies of *spergula*. One season's neglect of weeding will ruin a *spergula* lawn, and one week's neglect at a time of year when weeds grow freely will result in considerable damage. As for worms, which also injure *spergula* turf by their casts, the roller will sufficiently repair the damage they do, but if any nostrum is required to reduce their number there can be nothing better than clear lime-water, for while this kills the worms, it benefits the *spergula*.

As the formation of a *spergula* lawn requires much patient attention, it may be recommended as a pastime to those who are of a temperament suited to the task and can afford the time that must

be devoted to it for a satisfactory result. Our advice to a beginner, fired with enthusiasm on the subject, would be to select a comparatively small piece of ground in the first instance, in order to obtain a perfect sample of spergula turf in the shortest possible time, and acquire thereby the experience needful for a greater effort. For those who practise "rough-and-ready gardening" spergula is of no use at all, except as a rock plant or to cover a knoll on which a tree is planted, and for such other odd purposes, where a close turf capable of enduring the wear and tear of turf constantly trodden on is not required.

For all GOOD LOAMY GARDEN SOILS, the best grasses to form a close, fine sward are the following:—*Cynosurus cristatus*, the crested dog's-tail; *Festuca ovina*, the sheep's fescue; *F. tenuifolia*, the fine-leaved fescue; *Lolium perenne tenue*, perennial rye grass; *Poa pratensis*, smooth-stalked meadow grass; *Poa sempervirens*, ever-green meadow grass; *Poa nemoralis*, woodside meadow grass; *Trifolium repens perenne*, perennial white clover; *Trifolium minus*, yellow suckling. Sow the mixture at the rate of 3 bushels (60 lbs.) to the English acre, or 1 gallon ($2\frac{1}{2}$ lbs.) to 6 rods or perches.

For a STIFF SOIL RESTING ON CLAY, a good mixture would consist of *Lolium perenne*, perennial rye grass; *Poa pratensis*, smooth-stalked meadow grass; *Poa trivialis*, rough-stalked meadow grass; *Lolium perenne tenue*, fine rye grass; *Festuca duriuscula*, hard fescue; *Trifolium repens*, white clover; *Trifolium minus*, yellow suckling.

For a LIGHT SANDY SOIL the mixture should consist of, or at least comprise, *Lolium perenne tenue*, *Poa pratensis*, *Festuca duriuscula*, *Avena flavescens*, the yellowish oat grass; *Trifolium repens*, *Lotus corniculatus*, the bird's-foot; *Achillea millefolia*, the common yarrow.

For a THIN SOIL RESTING ON CHALK OR LIMESTONE, the selection should comprise *Lolium perenne tenue*, *Festuca duriuscula*, *F. ovina*, *Poa trivialis*, *Cynosurus cristatus*, *Medicago lupulina*, the yellow medick; *Trifolium repens*, *T. minus*, *Lotus corniculatus*.

For a collective prescription we cannot do better than adopt that recommended by Messrs. Lawson and Son, the eminent seedsmen of London and Edinburgh. The several quantities of the several sorts named constitute a mixture for one English acre.

	Light Soil.	Medium Soil.	Heavy Soil.
	lbs.	lbs.	lbs.
<i>Avena flavescens</i> ...	1	0	0
<i>Cynosurus cristatus</i> ...	5	6	7
<i>Festuca duriuscula</i> ...	3	3	4
<i>Festuca tenuifolia</i> ...	2	2	1
<i>Lolium perenne tenue</i> ...	20	20	20
<i>Poa nemoralis</i> ...	$1\frac{1}{2}$	$1\frac{3}{4}$	2
<i>Poa nemoralis sempervirens</i> ...	$1\frac{1}{2}$	$1\frac{3}{4}$	2
<i>Poa trivialis</i> ...	$1\frac{1}{2}$	$1\frac{3}{4}$	2
<i>Trifolium repens</i> ...	7	7	7
<i>Trifolium minus</i> ...	2	2	1

Under trees a little variation of the mixture must be adopted. Leave out the two species of Fescus, and substitute similar quantities

of *Poa nemoralis*. Indeed, *P. nemoralis angustifolium* is the best of all grasses to produce a beautiful sward under trees, its growth being so close that it displaces weeds, and it is green in spring earlier than most other grasses; and, as it also does well in exposed places, it may be made "a note of," for any one, at this season, in a state of distress at the shabbiness of a lawn. Another most useful lawn grass is *Lolium perenne tenue*, but as it is twin brother of that very worst of lawn grasses, *Lolium perenne*, or common rye grass, care must be taken to obtain the right sort. It thrives on almost any soil that is not wet, and is delightfully fresh all the winter.

S. H.

THE LADY'S SLIPPER.

BY THOMAS NOTT,

Head Gardener, Foelardt House, Lee, Kent.



AS common with many other readers of the FLORAL WORLD, I was very much interested in the paper on Orchids, at page 161, contributed by Mr. Gordon, because of its practical and useful character, and I am desirous of supplementing that paper with a few remarks

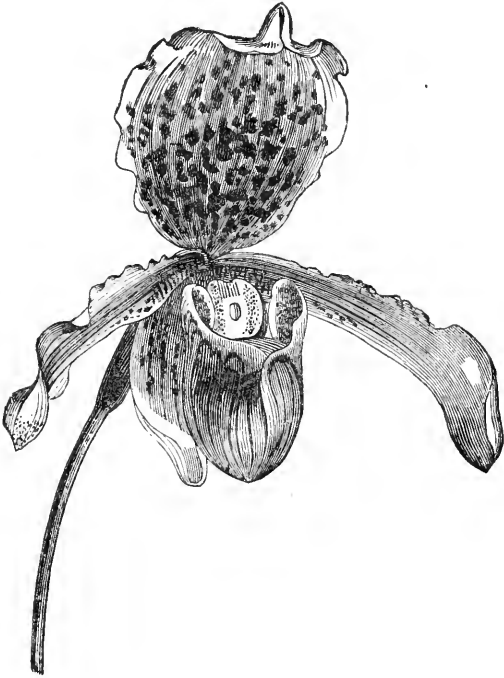
on the old but useful *Cypripedium insigne*, or Lady's Slipper. It is not perhaps so showy as a few other members of the genus, but it is remarkably beautiful, and can be grown in a greenhouse most successfully with the least possible amount of attention and skill. It is, however, very accommodating, for it will be equally at home in the stove; indeed, until within the last few years it was grown exclusively in the stove, and even now many people who grow it are unaware that its constitution is sufficiently hardy to bear the exposure to the temperature of the ordinary greenhouse during the winter months without injury. The



CYPRIPEDIUM INSIGNE.

figures of the plant and flower which accompany these remarks will convey a fair idea of its general character, and it only remains to be said that the prevailing

colours of the flowers are brown, green, and white, and that it produces its singularly-shaped blooms during the winter months, when flowers are, as the readers of this are well aware, comparatively scarce. When in flower it may be employed in the decoration of indoor apartments most advantageously, as the flowers remain fresh and bright for a considerable period if care is taken to screen the plants from cold draughts, and to protect from frost. I am inclined to think that it may be grown entirely in the drawing-room window, but I have not had an opportunity for conclusively settling that point.



CYPRIPEDIUM INSIGNE.

It would, perhaps, be a more difficult task to kill it than to grow it well, but certainly it can be grown to the highest perfection with the most simple means. The pots should be filled about half full with large pieces of crocks; over these should be placed a layer of tufts of fibrous loam, to keep the compost—which should consist of equal parts mellow turfy loam and small crocks, and a sprinkling of nodules of charcoal—in its place. In repotting specimens, whether large or small, loosen the roots carefully round the outside of the ball; remove a portion of the old worn-out soil, and put sufficient compost on the crocks employed for drainage, to elevate the base of the plants two or three inches above the rim. The soil should be

packed moderately firm between the old ball and the sides of the pot, and a layer should also be packed carefully over the surface to give a finish to the work. Some growers employ peat, or peat and sphagnum moss mixed; but I prefer the compost advised above, because loam is more easily obtained in most localities than either peat or moss, and the plants thrive in it quite as well, even if they do not better.

Moderate supplies of water are necessary during the growing season, and when the flowers are pushing up; but during the winter, when the plants are at rest, the soil must be kept rather dry; but at no time must it be allowed to become dust dry. Free exposure to the light and air is essential during the summer season, and during the winter they should be fully exposed to the light, but be protected from currents of air passing through the house. It may possibly be of interest to many to know that nice little plants can be purchased at many nurseries for a few shillings.

LITERARY NOTICES.



SINCE our last notices a number of interesting books have accumulated on our table, which we shall dispose of briefly, but with a view to indicate our estimation of them in the interests of our readers. Messrs. Warne and Co. present "Hardy Garden Flowers," by Mr. William Robinson, and our thanks are due to both author and publisher for an invaluable contribution to garden literature in a most convenient and elegant form. Very few, indeed, amongst writers on gardening are so well fitted to produce a book on hardy flowers as Mr. Robinson, and we feel that he has done justice to himself in the preparation of this compact volume. It comprises a series of essays on the claims and uses of hardy plants, and the disposal of them in the parterre, the border, the rockery, etc., etc and an alphabetical arrangement of all the genera that are entitled to rank as ornamental plants, with short but clear descriptions of the most attractive species. It is at once a treatise and a dictionary, and so densely packed with information, that it may be regarded as a model of a *multum in parvo*. Mr. Goodwin sends "The Plain Path to Good Gardening," by Mr. Samuel Wood, into which we have dipped and have been gratified by the author's store of horticultural knowledge and happy capability of advising his readers for their benefit. The several chapters range through all the departments of what may be termed a middle class garden, from the potato ground to the orchard, and thence through the flower garden. We may employ the hacknied phrase "plain and practical" in reference to its contents with propriety, and it is but just to add that it is also original and suggestive. Should another edition be called for, the author would do well to add an alphabetical index. Messrs. Blackwood present a seventh edition of Mr. William Thomson's "Treatise

on the Grape Vine," to which the author has added a chapter on his new method of preparing vines for planting out—a method he has practised with singular success in his new nursery, wherein vines and pines are grown extensively. Messrs. Low and Marston present "My Summer in a Garden," by Mr. Charles Dudley Warner, a curious example of the most refined form of American wit and humour, and one of the cheerfullest books we have read for many a day. It is quiet, almost sedate, and characterized by a gentlemanly elegance. But its undercurrent of sarcasm, its quaint ebullitions of fun, its serious propounding of original things, and its scintillations of pure humour, will insure it everywhere a joyful reception, and all who read the first page will be pleasantly spell-bound to the last. Messrs. Groombridge and Sons send a set of "Cuthill's Garden Manuals," and "Market Gardening," the fame of which has gone abroad long since, and established them as standard books of their class. Mr. Cuthill was a successful practitioner, and had a happy knack of writing small books in which, as one might say, "at a stroke," he initiates his reader into the art of productive gardening with the least imaginable fear of being misunderstood. Those who look for profit from a garden may find it the quicker for taking counsel of Mr. Cuthill. From the same publishers we are favoured with two little books by Mr. Piper, one on "The Management of Poultry," the other on "The Management of Pigeons." They are admirable so far as they go, and they go far enough for the thousands who keep poultry and pigeons for recreation chiefly, but not without the hope of obtaining from their pets some more substantial rewards for the care bestowed upon them. Mr. Piper has the advantage of a thorough practical acquaintance with his subjects, and the rare tact of keeping to himself things that few need to know, in order to do justice to those matters which have universal interest. We advise those who are at all interested in poultry and pigeons to make acquaintance at once with these pretty brochures, either of which may be read in an hour, and will then be read again, and frequently referred to for the advantage of their wise counsels. "The Amateur's Flower Garden," by Shirley Hibberd, can only be announced as ready for those who want it. If the appreciation of the public is at all commensurate with the care the author has taken to adapt his teachings to the range of amateur practice, the book will be in demand for many a year to come; but on that point, and on every point of its merits and demerits (if it has either), other pens may deal as it may please them; it is enough that we inform our readers that we have sought in this work to fill an evident gap in the eclectic garden library. Messrs. Groombridge's "Coloured Prints" are showy and good, in many instances remarkably good, and they comprise a capital series of subjects, flowers, birds, figures, insects, shells, scenes, and museum curiosities. Those who make up scrap books and screens, and embellish school-rooms and hospital wards, would do well to become acquainted with them, for they are cheap enough and good enough for any purpose for which pictures of small size may be required.

BEDDING SUCCULENTS.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.



VERY considerable number of succulent plants may be employed in the embellishment of the flower garden during the summer months, but it is only of the most useful kinds such as *Echeveria secunda glauca*, *Sempervivum Californicum*, and *Sedum glaucum*, that I purpose speaking. The value of those best adapted, from the character of their growth, for bedding purposes, is now too well known to require a word being said in their praise, and all that it is necessary to do now is to point out the purposes for which they are best adapted, and the quickest mode of raising a stock. We will commence with the *Echeveria*. The beautiful *E. secunda glauca* is, as the majority of readers of this are well aware, one of if not the best plant for edging purposes we have. It is not only effective in appearance, but it is so neat in growth that from the time it is planted in the early part of the summer until the autumn, it requires no attention whatever, which, to both large and small growers, is a matter of considerable importance. The green-leaved *E. secunda* is also very valuable for many purposes, although not so generally useful as its glaucous-leaved variety. It forms a nice marginal line to beds edged with light terra cotta tiles, and it may also be frequently employed with advantage in forming divisional lines in panel beds. The pretty *E. pumila* has glaucous foliage, and is useful for marginal lines to small beds. It forms a very considerable number of offsets, which somewhat mar the symmetry of the plant, and for that reason is not so desirable as *E. secunda glauca*. The noble *E. glauca metallica* is a most decided acquisition to the list of bedding succulents. In growth it somewhat resembles *E. metallica*, but it is more compact and has glaucous foliage. For edging large beds, or for divisional lines in panel beds, it is most valuable, and it would be difficult to over-praise it. *E. metallica* is best adapted for planting in the centre of medium-sized beds, or in small beds by itself. It has a very striking appearance when planted, at moderate distances apart, in a bed carpeted with some dwarf-growing succulent, such as *Sedum glaucum*. Last summer we planted some very large and well-developed specimens, at a distance of about two feet apart, in a bed filled with *Pyrethrum Golden Feather*, and the effect was remarkably striking. Medium-sized plants are also useful for first and second rows in beds planted with tall-growing subjects.

The simplest way of increasing the stock of *E. secunda*, and others of a similar habit of growth, is by means of offsets, taken off just before or when the plants are removed from their summer quarters. It is essential to slip them off carefully to prevent injury to the parent stem. It is a matter of little consequence whether they are put in singly in small pots, or whether they are planted rather close together in shallow boxes. The boxes are preferable,

for one of a medium size will hold a large number of plants, and several hundred can be wintered in a very small space. The distance at which they must be put apart in the boxes must, of necessity, be regulated by their size; but as a rule a distance of two inches each way will be ample. The soil used for filling the pots and boxes should be rather light and sandy, and no more water should be applied than is sufficient to keep it just moist, for it will be safer to allow it to become dust dry than for it to be kept too wet. Towards the end of February, they can be potted off singly, and a rather richer compost employed.

As the two last-mentioned sorts do not produce offsets in the same manner as the others, they must be propagated either by means of leaf-cuttings or seed. The others may also be propagated in the same way when it is considered desirable to raise a stock by a quicker method than that afforded by the offsets. The leaves produced on the flower-stems of *E. metallica* are the most desirable, although the others strike freely. The autumn is the most suitable season of the year for striking the leaves, as they are then firm and matured, and are not so liable to damp off as when taken earlier in the season in a partially developed state. They should be slipped off carefully with the hand and then inserted rather close together in cutting pots or pans filled with a light sandy compost. It is essential in inserting them to make them firm, and if the leaves are large and likely to become loosened in moving the cutting pot about, thrust a small piece of stick through the leaf and into the soil to keep it steady. The leaves of the smaller growers, such as *E. secunda glauca*, if inserted moderately deep in the soil, will not require the aid of pegs to hold them firm. The warmest end of a light airy greenhouse is the most suitable place for the cutting pots; the cuttings will not strike so quickly as they would do in a warmer temperature, but there will not, if the soil is not kept too moist, be so much danger of their perishing. All decaying leaves should be removed as soon as symptoms of decay are perceptible, to prevent their injuring the others. They should be potted off singly as soon as the young plants, which push from the base of the leaf, are well above the surface.

Echeveria seed is very minute, and a considerable amount of care is necessary in sowing it. The compost with which the seed pots are filled should consist of mellow loam, with which a liberal quantity of leaf-mould and silver sand has been mixed, and to be made perfectly level on the surface. Sow the seed regularly and then cover with a layer of moss, and over that put a sheet of glass. The moss will materially aid in preventing the soil drying up quickly, and when water is required it can be applied by sprinkling the moss without displacing the seed. A sharp look-out must be kept for the appearance of the young plants, and the moss must be removed immediately they can be seen. The glass should be left on for a week or so afterwards, and two or three days previous to its removal it should be tilted on one side to gradually inure the young plants to the air. They should be allowed to become strong before they are pricked off, but of course they must not remain until they

injure each other. Seed sown in the spring and the seed pots placed in a temperature of 70° will germinate in about three days, and the plants ready to prick off in less than three weeks. They can then be potted off when of a moderate size, or they can be planted out in the flower garden from the boxes.

SEDUMS.—The best of the stonecrops for bedding are *S. Anglicum*, bright green; *S. glaucum*, greyish white; and *S. pulchellum*, green. These are all of dwarf spreading growth, hardy, and can be increased by dividing the tufts.

SEMPERVIVUMS.—The best of all for bedding is *S. Californicum*; it is of a very deep, rich tint of green, and the points of the leaves are tipped with reddish brown. Full-grown plants form a charming edging. *S. montanum*, bright green, is very neat, and useful for edging small beds. *S. umbilicus*, or *chrysanthus*, deep green, is also useful, although less useful than either of the preceding. All the above are propagated by means of the offsets, and are quite hardy.

Distinct from the above are *S. arboreum atropurpureum*, deep bronzy green; *S. tortuosum*, green; *S. Donckelaari*, deep green; all of which are useful for centres of beds, and require the protection of a greenhouse during the winter season. The variegated variety of the Tree Houseleek, *S. arboreum variegatum*, is remarkably distinct and beautiful, but as yet it has not had a full trial in the flower garden.

THE GARDEN GUIDE FOR NOVEMBER.

FLOWER GARDEN.—The weather has been so mild and open during the past month that the spring-flowering plants with which beds were filled in the middle of the month, in accordance with the advice given in our last number, are now nicely established, and growing freely. There is yet time to plant a greater part of the subjects named, if done quickly. Also plant Hyacinths and other bulbs as soon as possible, for although moderately good flowers may be had from bulbs planted at Christmas, they will be inferior to those produced by bulbs of a corresponding quality planted two or three months earlier. This is also a good season of the year for taking up, dividing, and replanting Lilies of all kinds. They are now beginning to make fresh roots, and will not feel the shift so much as when disturbed in the spring. The soil should be trenched up, and a liberal dressing of manure applied. Like all other plants, these exhaust the soil of the elements required for their growth, and unless renewed, it is impossible for them to make a vigorous growth. Push on the planting of evergreen and deciduous trees and shrubs as fast as possible, so as to get them in their places before the rains cool the earth too much. When the weather renders it necessary to take up the Dahlia tubers, cut the stem down to within six or nine inches of the ground, and, after taking them up carefully, place them in a cool dry place, where they will be secure from frost. All tender or half-hardy plants must now be got under cover, but admit a free circulation of air about them in

favourable weather. Take up and divide herbaceous plants, keep them out of the ground as short a space of time as possible, and take advantage of the opportunity for digging the ground up deeply, and applying a dressing of manure, or fresh soil, or a mixture of both. Frequently sweep and roll the lawns and paths to give them a fresh and bright appearance, and carefully preserve the fallen leaves for rotting down to leaf-mould.

KITCHEN GARDEN.—Lift full-grown Lettuce and Endive, with a good ball of soil, and place them rather close together in a cold frame or orchard-house, where they will be secure from frost. Dampness is the greatest enemy these subjects have to contend with at this season, and provided they can be kept dry by any means, a few degrees of frost will do them no harm. Look sharp after Cauliflower and Lettuce plants in frames, and remove every trace of mildew and decay directly it makes its appearance. Give full admission to the air, but keep the foliage dry, and protect from frost.

FRUIT GARDEN.—Fruit-trees growing too luxuriantly must be root-pruned, and this is the best season of the whole year for performing that operation. Trees that have been undisturbed for many years past must be cautiously dealt with, and have only half the roots pruned now, reserving the other for next season. More recently planted trees may have the whole of the roots cut in at once. Open out a trench at a distance of two or three feet from the stem, according to the age of the tree, and after going deep enough to reach all the horizontal roots, work the spade underneath the ball to sever the tap-roots, which materially assist the production of gross, badly-matured wood.

GREENHOUSE.—Guard against a damp stagnant atmosphere in this structure. Water the plants carefully, and without throwing much water upon the floor. When the atmosphere appears damp and stagnant, light a fire in the morning of a fine day, and open the ventilators at the same time, to enable the impure air to escape, and admit a fresh supply to take its place. Remove all decayed leaves, and train into shape Azaleas and other plants that need that attention. Keep Ericas, Epacris, and other plants of a like nature, at the coolest end of the house, and such things as Chinese Primulas and Cyclamens at the warmest end. The conservatory should now be gay with Chrysanthemums. Maintain a dry atmosphere. Gold and Silver Zonal and Show and Fancy Pelargoniums must be kept in a temperature of about 40° or 45° near the glass, and sheltered from cold currents of air.

STOVE.—Reduce the temperature of this structure to an average of 60°, with fire-heat alone, and a rise of five degrees with the aid of sun-heat. Keep the atmosphere much drier than hitherto, and water early in the morning, to enable the dampness therefrom to dry up before evening. Ferns must be carefully handled just now, a thorough rest is nearly as essential to their well-being as it is to flowering plants; but whilst guarding against giving them too much water, carefully avoid their suffering for the want of that element. Orchids with fleshy pseudo-bulbs, like the Cattleyas, require just sufficient to keep them fresh and plump, but the Vandas, and others

of like habit, will require rather more. Encourage winter-flowering plants by placing them in the warmest corner of the house.

FORCING.—House strawberry-plants, or if the room cannot be spared indoors, form a stack out of doors, which can be easily accomplished by laying the pots on their sides in layers one above the other. Prune Vines, Peaches, and Nectarines at once, thoroughly wash every particle of wood with warm water and soft soap, and then dress with Fowler's Insecticide or Gishurst's Compound. Pines must be kept quiet, and the atmosphere of all departments rather dry. The most suitable temperature for this and the next month is 60° for suckers and succession plants, and 70° for fruiting plants. Winter Cucumbers must have a genial growing temperature, and means should be adopted for covering the lights in very sharp weather, to render less fire-heat necessary for maintaining the proper temperature; both as a matter of economy, and for the sake of the health of the plants, maintain a steady temperature of about 50°, and keep the beds in a moderately moist condition.

PITS AND FRAMES.—Auriculas must have air night and day in fine mild weather, and only have sufficient water to prevent the foliage becoming flaccid. The foliage must not be wetted on any consideration. Carnations, Pansies, and Picotees only require protecting from wet and frost, therefore the lights can be drawn off entirely in fine weather, and tilted at the back in mild wet weather. The stock of bedding plants must be frequently examined, and every attention paid to keep them clean and healthy. Mildew commits terrible havoc among the Verbenas at this season of the year, if allowed to get ahead; but if taken in time, and the foliage dusted with sulphur, it is comparatively harmless. Bedding Geraniums of all kinds need very little water just now, and if the leaves do flag a little now and then, it is of no consequence. It is far better to let them flag than to keep the soil too moist, or to give water in damp or dull weather.

HORTICULTURAL NOTES.



THE only horticultural exhibition of note held during the month of October was the International Fruit Show held at South Kensington on the 4th, which was one of the largest exhibitions of fruit ever held in this country, and the largest which has occurred since 1862. In a few particulars it was not so satisfactory as it might have been, for, with but few exceptions, unlimited collections alone were invited by the schedule, and the result was the exhibition of a considerable bulk of fruit of second and third-rate quality. Some of the collections of apples and pears were exceedingly large, and consisted of between two and three hundred dishes of reputed varieties. Some of the collections of grapes were also very fine, and comprised examples of all the best varieties in cultivation. Pines, peaches, and miscellaneous fruits were not invited by the schedule, but several

interesting exhibits were staged, including amongst others a collection of filberts and cob-nuts, from Mr. Richard Webb, Calcot Gardens, Reading, who devotes much time and attention to these fruits; fruit-bearing branches of raspberry, Belle de Fontenay, which is undoubtedly the best of all the autumn varieties, from Mr. Charles Turner, Slough; a fine collection of peaches from Mr. Jack, Battle Abbey Gardens; three pines, all large in size and handsome in appearance, from Mr. Miles, Wycombe Abbey; and a superb collection of miscellaneous fruits from Mr. Pragnall, Sherborne Castle.

The gold medal offered for a collection of grapes was taken by Messrs. Lane and Son, Great Berkhamstead, with one of the finest collections ever exhibited. The bunches were large and well-shouldered, and the berries in size, colour, and finish, left nothing to be desired. The most conspicuous examples in the collection were those of Trebbiano, Bowood Muscat, Buckhardt's Prince, Black Prince, West's St. Peter's, Black Hamburg, Frankenthal, Barbarossa, Muscat Hamburg, Mill Hill Hamburg, Lady Downes' Seedling, Alicante, Muscat of Alexandria, Buckland Sweetwater, Golden Champion, and Pope's Hamburg, all of which are good in their several seasons of attaining maturity, and the style of culture to which they are best adapted. The largest bunch of grapes in the exhibition was that of the Black Barbarossa, exhibited by Mr. Bannerman, Blithsfield, and the best flavoured bunch was that of the luscious Muscat of Alexandria, exhibited by Messrs. Lane.

The most complete collection of pears was exhibited by MM. Baltet Frères, of Troyes, France, who also had the best collection of dessert varieties; and amongst others, exhibited examples of the following dessert varieties:—Knight's Monarch, Thompson's Winter Nelis, Passe Colmar, Beurré de Capiaumont, Louise Bonne of Jersey, Beurré Diel, Williams's Bon Chrétien, Calebasse, Beurré Easter, Althorpe Crassane, Beurré Brown, Gansel's Winter Bergamot, Glou Morceau, Ne Plus Meuris, Marie Louise, Duchesse d'Angoulême, Jersey Gratioli, Beurré Clairgeau, Beurré d'Ananlis, Eyewood, Fondante d'Automne, Hacon's Incomparable, Suffolk Thorn, Seckle, Colmar d'Aremberg, Alexander Lambre, Huyshe's Bergamot, Bishop's Thumb, Prince Albert, Flemish Beauty, Bergamot d'Esperen, Napoleon, Swan's Egg, Duc de Morny, Prince Imperial, Souvenir de Léopold I., British Queen, Maréchal Vaillant, General Todleben, Van Mons, Crassane d'Hardenpont, Beurré Sterckmans, Bon Chrétien d'Espagne, Beurré Bruxelles, Beurré Bachelier, Bezi Mai, Doyenné Goubalt, Doyenné du Comice, Général Laurent, Hélène Grégoire, Henri Grégoire, Louise de Prusse, Belle de Septembre, Colmar d'Été, Madame Millet, Beurré Lamy, Jalousie de Fontenay, Beurré Dubort, Conseiller de la Cour.

MM. Baltet Frères also exhibited a fine lot of apples in the class for the most complete collection, but the gold medal was most deservedly awarded to Mr. William Paul, of Waltham Cross, whose collection, although not quite so large, comprised examples of the finest quality of the leading sorts in cultivation in this country. In the class for dessert varieties the first prize was awarded to Mr.

Chaffe, Carshalton; and in the class for culinary varieties, the post of honour was worthily occupied by Mr. G. Ford, Leonardslee.

The best of the dessert varieties staged were Court of Wick, Early Nonpareil, Court Pendu Plat, Petworth Nonpareil, Gravenstein, Cox's Orange Pippin, Golden Harvey, Cornish Gilliflower, Lemon Pippin, Sam Young, Blenheim Orange, Golden Drop, Golden Pippin, Margil, Duke of Devonshire, King of the Pippins, Reinette Van Mons, Adams's Pearmain, Golden Harvey, Syke House Russet, Remington's Seedling, Golden Russet, Sturmer Pippin, and Boston Russet.

And of culinary apples the best were Reinette du Canada, Forge Pippin, Cockpit, Keswick Codlin, Mère de Ménage, Cox's Pomona, Winter Greening, Gloria Mundi, Spanish Pippin, Flower of Kent, Allman's Russet, Winter Pearmain, Nonesuch, Warner's King, Hawthornden, Ashridge Pine-apple Pippin, White Devonshire, Norfolk Beefing, Brabant Bellefleur, French Crab, Newtown Pippin, Emperor Alexander, Lord Suffield, Red Streak, Golden Noble, Waltham Abbey, Lamb Abbey Pearmain, Herefordshire Pearmain, King of the Pippins, Nelson's Codlin, Summer Scarlet Pearmain, Lord Grosvenor, Kentish Fillbasket, Graveston, Calville Blanche, and Alfreston.

At the same meeting the Messrs. Veitch and Sons exhibited fine collections of Garden Beet and Endive. Amongst the former were well-grown specimens of the undermentioned useful kinds, namely, Dell's Crimson, Clayton's Red, Dewar's Dwarf Red, Pine-apple Short-top, Cattell's Crimson, and Spanish Beet. The collection of Endive comprises examples of Fraser's Broad-leaved and White Batavian, Digswell Prize, Moss Curled, and White and Green Curled, all of which are good useful sorts; the first and third on the list being especially valuable for winter use.

I have recently had an opportunity of seeing Cannell's new boiler, or "hot-water circulator" at work in the nursery of the inventor at Woolwich, and a more thoroughly efficient boiler cannot be imagined; for it is so constructed that the largest amount of heat possible is extracted from the fire, and as it is wholly confined within the boiler or water spaces, all waste is prevented, and it may be safely pronounced the most economical boiler made; those who are interested in the matter will do well to see it at work.

G. G.

VERONICA INCANA.—*J. B., Glamorganshire.*—This useful edging plant is now rather plentiful in the trade, but it may not be possible to procure it of all local nurserymen. If you experience any difficulty in the matter, try Cannell, of the Station Road Nursery, Woolwich, or Henderson's, of St. John's Wood. Seed is not procurable, so far as we are aware, in the ordinary course of trade. We cannot answer correspondents through the post.

CLIMBING ROSES.—*C. A. P.—Coupe de Hebe, Glory of Waltham, Prince Leopold, Red Rover, and Climbing Devoniensis,* are all suitable for covering the arch. *Princess Louise Victoria*, now in course of distribution by Mr. Knight, of Hailsham, Sussex, is also a fine climber, and suitable for the most select positions. It is vigorous in growth, and produces its flowers in large clusters throughout the season.



INGER-POST FOR PURCHASERS OF PLANTS, SEEDS, ETC.

SELECT FRUITS FOR THE GARDEN AND
ORCHARD.

APPLES FOR ORCHARD PLANTING.

Alfreton, Bedfordshire Foundling, Bess Pool, Blenheim Orange, Court of Wick, Dumelow's Seedling, Devonshire Quarrenden, Dutch Codling, Fearn's Pippin, Forge, French Crab, Golden Noble, Golden Reinette, Gooseberry Pippin, Hawthornden, Hanwell Souring, Kerry Pippin, London Pippin, Nonpareil, Norfolk

Bearer, Northern Greening, Pott's Seedling, Sturmer Pippin, Sykehouse Russet, Ward's Pippin, Winter Pearmain, Yorkshire Greening.

APPLES (DESSERT) FOR GROWING AS PYRAMIDS AND BUSHES.

Ashmead's Kernel, Beauty of Kent, Braddick's Nonpareil, Cellini, Cornish Gilliflower, Cox's Orange Pippin, Court Penduplat, Early Harvest, Early Nonpareil, Knight's Downton Pippin, Golden Harvey, Juneating, Hubbard's Pearmain, Newtown Pippin, Lord Burleigh, Lord Suffie'd, Nonsuch, Northern Spy, Reinette du Canada, Ribston Pippin, Scarlet Nonpareil, Waterloo, Wyken Pippin.

APPLES FOR VERY EXPOSED SITUATIONS.

Carlisle Codling, K; Devonshire Quarrenden, D; Early Julien, D; Franklin's Golden Pippin; French Crab, K; Hawthornden, K; Kerry Pippin, D; Keswick Codling, K; London Pippin, K; Maux Codling, K; Margil, D; Nonsuch, D; Summer Strawberry, D; Sykehouse Russet, D; Tower of Glammis, Yorkshire Greening, K.

CHERRIES FOR GARDENS, BEST TWELVE.

Early Purple Gean, D; Belle d'Orléans, D; Black Tartarian, D; May Duke, D; Black Eagle; Bigarreau Napoléon, D; Florence, D; Coe's Late Carnation, D; Kentish, K; Belle Magnifique, K; Morello, K; Frogmore Early Bigarreau, D.

CHERRIES FOR ORCHARDS.

Early Prolific, Black Tartarian, May Duke, Elton, Buttner's Black, Kentish Bigarreau, Mammoth, Late Duke, Tecumsch.

CURRENTS.

White—White Dutch. *Red*—La Fertile, Raby Castle, Red Dutch. *Black*—Kentish Hero, Lee's Prolific.

FIGS FOR WALLS.

Black Genoa, Black Ischia, Brown Turkey, Marseilles, Castle Kennedy. *For Forcing*—Black Ischia, Brown Ischia, Brown Turkey, White Ischia, White Marseilles.

GOOSEBERRIES FOR DESSERT.

Red—Keen's Seedling, Red Globe, Rough Red, Turkey Red, Companion, *Yellow*—Glory of Ratcliff, Rumbullion, Leader, Yellow Champagne. *Green*—Green Gage, Green Gascoigne, Turn-out, Hebburn's Prolific. *White*—White Eagle, Queen of Trumps, Bright Venus, Hedgehog, Whitesmith, White Champagne.

GRAPES FOR WALLS.

July Muscat, Muscat St. Laurent, Esperione, Miller's Burgundy, Pitmaston Cluster, Royal Muscadine, Black Hamburgh, Chaselas Mu-qué. The last two require dry borders and good positions, or they will not ripen their fruit.

GRAPES FOR COOL VINERIES.

Chasselas Musqué, Foster's White Seedling, Madeira Muscat, Golden Champion, Black Hamburgh, Buckland Sweetwater.

GRAPES FOR HEATED VINERIES.

Muscat of Alexandria, Bowood Muscat, Canon Hall Muscat, Muscat Ham-
burgh.

GRAPES FOR A LATE VINERY.

Kempsey Alicante, Madresfield Court, Black Muscat, Black Lady Downes, White Lady Downes, Mrs. Pince's Muscat.

NECTARINES FOR WALLS.

Balgowan, Early Newington, Elruge, Hardwicke, Oldernberg, Violette Hative, Pitmaston Orange.

PEACHES FOR WALLS.

Bellegarde, Early York, Grosse Mignonne, Crawford's Early, Royal Charlotte, Royal George, Noblesse, Barrington, Walburton Admirable, Salway.

PEARS, THIRTY FOR GROWING AS BUSHES AND PYRAMIDS.

Alex. Lambre, Bergamotte de Esperen, Beurré Clairgeau, Beurré d'Arenberg, Beurré d'Amanlis, Beurré de Rance, Eastern Beurré, Beurré Goubalt, Bon Chrétien, Broom Park, British Queen, Conseiller de la Cour, Délices de Jodoigne, Doyenné Boussoch, Doyenné Defais, Doyenné d'Été, Duchesse d'Angoulême, Eyewood, Foudante d'Automne, Forelle Glou Morceau, Huyshe's Victoria, Jargonelle, Louis Bonne of Jersey, Monarch, Prince Albert, Suffolk Thorn, Winter Nelis, Yat, Zéphirin, Grégoire.

PEARS, TWENTY FOUR, VERY CHOICE FOR A WALL.

Bergamotte d'Esperen, Bezi Mai, Beurré Diel, Beurré Bosc, Beurré Goubalt, Brockworth Park, Chaumontel, Marie Louise, Knight's Monarch, Ne Plus Meuris, Hacon's Incomparable, W. Thompson's, Graham's Autumn Nelis, Glou Morceau, Jargonelle, Winter Nelis, Josephine de Malines, Easter Beurré, Doyenné d'Été, Bon Chrétien, Louis Bonne of Jersey, Beurré Rance, Alexandre Bivort, Pitmaston, Duchesse d'Angoulême.

PLUMS FOR DESSERT.

July Green Gage (*wall*), Bonne Bouche, Denniston's Superb, Perdrigon Violet Hatif, Green Gage (*wall*), Transparent Gage, Jefferson, Coe's Golden Drop (*wall*), Reine Claude de Bavay, Coe's Late Red, Blue Impératrice (*wall*).

PLUMS FOR CULINARY PURPOSES.

Early Prolific, Early Orleans, Mitchelson's Victoria, Diamond, Washington, Belle de Septembre.

RASPBERRIES.

Yellow—Yellow Antwerp, Magnum Bonum, October Yellow. *Red*—Fastolf, Beehive, Carter's Prolific, Red Antwerp, Maclaren's Prolific.

STRAWBERRIES, TWELVE BEST FOR SUCCESSION.

Amateur, Vicomtesse Hericart de Thury, Dr. Hogg, Crimson Queen, Keen's Seedling, Marguerite, President, Royalty, Frogmore Late Pine, Princess of Wales.

TO CORRESPONDENTS.

ROSE TREES DYING.—In the early part of last summer I planted heliotropes on the same border where standard rose trees grew, and every tree has died where the heliotrope was close to the root of the rose. One tree appeared to be going the same way as the rest, so I removed the heliotrope, and that tree is fast regaining its former freshness. Can there really be anything in this, or is it a singular circumstance?—*J. G. Sproston*. [We cannot explain the cause of the rose trees dying off in the manner mentioned; but we do not believe that the heliotropium has killed them. It is certainly a most "singular circumstance."—*Ed. F. W.*]

LILIUM BED.—*An Amateur.*—The subject shall have attention in our next number. *Lilium auratum* is perfectly hardy, but it should be planted rather deep.

CYCLAMENS.—*J. H., Ireland.*—The young plants should be potted off singly at once. Put them in three-inch pots, and use a compost consisting of turfy loam three parts, leaf-mould one part, manure decayed to a powder half a part, and silver sand about a third of a part. When shifted into larger pots use a rather smaller proportion of sand. After they are potted off place them in a genial growing temperature of about 60° for a few weeks if available, otherwise place them in the warmest part of the greenhouse.

MANDEVILLEA SUAVEOLENS.—*A. B. S., Torquay.*—The portion of the plant exposed will very probably survive the winter without suffering material injury, if the winter is not severe. It is worth a trial, unless you require the branches outside for covering any portion of the wall space inside.

PRICES OF PITCHER PLANTS.—*H. J.* will be much obliged if the Editor of the **FLORAL WORLD** will give him the prices of a few of the best *Nepenthes*, or Pitcher Plants; also what the price of a packet of seed would be. [The prices at which *Nepenthes* are offered by Messrs. Veitch and Sons, Royal Exotic Nursery, Chelsea, who have the finest trade collection in this country, are as follows: *N. distillatoria*, 10s. 6d.; *N. Dominiana*, 42s.; *N. gracilis major*, 10s. 6d.; *N. Hookeri*, 105s.; *N. hybrida maculata*, 31s. 6d.; *N. lavis*, 5s.; *N. Rafflesiana*, 10s. 6d.; *N. rubra*, 21s.; *N. Sedeni*, 21s. The last was figured in the **FLORAL WORLD** for October 1870, and is the most beautiful of all the small growing kinds. All the above are remarkably good; *Rafflesiana* being the most showy, but it is a rather strong grower, and requires a considerable amount of space for its development, in comparison with the others, but it can be grown in a house of a moderate size. Seed cannot, so far as we are aware, be obtained in the ordinary course of trade.

NAMES OF FERNS.—*S. J., Clifton Park.*—*Athyrium filix-fœmina*, var. *corymbiferum*.—*A New Subscriber, Prestwich.*—*N. 1. Scolopendrium vulgare*; 2, *Polypodium vulgare*.

CLIMBING ROSES.—*Dorchester.*—To produce an immediate effect, you should plant eight roses and put them at an equal distance apart. As you prefer yellow and dark flowers you cannot do better than to plant the following, all of which are free-growing and free-flowering—*Red Rover, Glory of Waltham, Prince Leopold, Gloire de Ducher, Maalle, Annie Wood, Gloire de Dijon, Maréchal Neil, and Jane Hardy.* There are several roses the names of which begin with "Souvenir." The cause of the leaves falling prematurely is due to some local cause.

SEA BUCKTHORN.—*Rev. T. B. T., Launceston.*—The Sea Buckthorn, *Hippophaë rhamnoides*, is grown in all good nurseries, and could certainly be obtained by applying to Messrs. Veitch and Sons, Royal Exotic Nursery, Chelsea.

ZONAL PELARGONIUMS.—*A. J. Wilmot, Rose Cottage, Devon.*—The flowers of Zonal Pelargoniums are never fit for criticism after passing through the post; and we never give an opinion upon them. It is impossible to form a just estimate of the merits of a variety without seeing the growing plant.

RATS AND MOLES IN GARDEN.—*S. Y. W.*—Carbonate of baryta mixed with oatmeal is the best poison for rats and mice. There is no remedy for moles but trapping. To catch moles is a question of skill only.

TAUNTON DEANE SHOW.—The ferns exhibited by Mr. Silver at the Taunton Horticultural Exhibition, to which allusion was made in the September number, were shown in the great class confined to exhibitors resident in the district; the first prize in the open class being taken by Mr. Taylor, whose sumptuous specimens will not soon be forgotten by those who had the opportunity of seeing them.

FUMIGATING GREENHOUSE.—*Subscriber.*—The tobacco smoke will cause the flowers to fall much earlier than they otherwise would do, but if the house is fumigated with care, it will not injure the leaves of the most delicate plants. The main points in fumigating a greenhouse are to have the foliage of the plants perfectly dry, and the fumigating material just moist enough to insure its burning steadily, but not wet enough to generate steam instead of smoke. When the material is dry, it burns too rapidly, and the smoke given off is so hot that it scorches the leaves. When, on the other hand, it is too moist, steam is generated, and is ineffectual. It is also important to prevent a flame bursting out, for if allowed to burst out, and continue for any length of time, every plant in the house will be more or less injured. To prevent the material flaring it is necessary to stir it occasionally, and

when it becomes dry sprinkle it with water. The Begonia mentioned is now plentiful, and we observe that it is entered in the catalogue of Mr. B. S. Williams, Upper Holloway, at a low rate. It is also known as *Begonia Martinzi*; hence the difficulty you have experienced in procuring it of your regular nurseryman.

BEDDING PLANTS.—Amateur.—The undermentioned are the best of the summer bedders grown for their flowers, exclusive of geraniums and verbenas, of which you say you have already a sufficiency. *Ageratum Imperial Dwarf*, light blue, nine inches, effective in second rows; *A. Mexicanum*, lavender, in growth useful for back rows; *A. Prince Alfred*, light blue, fine habit, best adapted for second and third rows. *Calceolaria Gaines's Yellow*, compact, yet vigorous in growth, very free flowering; *C. Golden Gem*, deep golden yellow, habit vigorous and compact, very rich and showy; *C. Brown Prince*, brownish buff, fine habit, and very free-flowering. *Dahlia Rising Sun*, rich scarlet, very free-flowering, and most effective for back rows; *D. Pluton*, pure yellow, dwarf, compact, and free-flowering, second and third rows; *D. White Bedder*, pure white, very dwarf and free-flowering, valuable for second or third rows. *Gazania splendens*, orange yellow, dwarf and spreading, best adapted for small beds. *Heliotropium Etoile de Marseilles*, deep purplish blue, neat and compact, very free blooming; *H. Miss Nightingale*, clear purplish lilac, dwarf, compact, and free-flowering; *H. Jersey Beauty*, deep purplish blue, neat compact habit, and very free flowering. *Lantana Jean Bart*, yellow and pink, dwarf and profuse blooming, useful for marginal lines; *L. Impératrice Eugénie*, pink, yellow centre, extra dwarf, and therefore invaluable for edgings; *L. Adolphe Hwas*, canary yellow, very showy and distinct. *Lobelia erinus Blue Boy*, clear bright blue, very dwarf, compact, and free-flowering; *L. e. Indigo Blue*, very deep blue, very rich and effective for marginal or second lines; *L. e. Pearl*, white, tinged with blue, very compact and free-flowering, and invaluable for edging purposes; *L. pumila grandiflora*, clear bright blue, very compact in habit, the best for divisional lines. *Nierembergia gracilis*, pale lilac, trailing habit, useful for small beds and edging purposes. *Pansy Sandbeck Gem*, deep golden yellow, fine habit, and continuous flowering. *Petunia Countess of Ellesmere*, rose pink, white throat, good habit and showy; *P. Spitfire*, blackish purple, very showy and effective, stands the weather well; *P. Single Beauty*, rosy lavender, overlaid with purple maroon lines, free habit, and very distinct. *Salvia patens*, deep blue, upright growth, effective in back rows or centres of beds. *Tropæolum luteum Improved*, orange yellow, dense, compact, invaluable for edgings; *T. Advancer*, brilliant orange scarlet, habit dense and free, fine for edgings or small beds; *T. Star of Fire*, orange scarlet, dwarf, compact, and free flowering, most useful for small beds. *Veronica Blue Gem*, light blue, very neat, dwarf and free-flowering, useful for marginal lines or panel beds. *Viola Perfection*, bluish mauve, flowers continuously in suitable soils, and is very effective. *V. lutea major*, clear golden yellow, blooms continuously, grand for beds or edgings. *V. l. pallida*, sulphur yellow, pleasing and effective, either in beds or marginal lines. There is no dearth of plants with ornamental leafage which are useful for summer bedding. The following selection comprises the best at present in cultivation, suitable for panel and embroidered beds, and for carpeting the surface of beds filled with the tall-growing subtropical plants:—*Alyssum variegatum*, creamy variegation, compact and useful. *Alternanthera amana*, bright carmine, brilliant in colour, but slow in growth. *A. amabilis*, orange and carmine, rich and effective; *A. magnifica*, rosy carmine, free in growth, and very rich; *A. paronychioides*, bronzy red and orange, free and effective. *Amaranthus melancholicus ruber*, sanguineous red, best adapted for centres or back rows. *Antennaria tomentosum*, silvery foliage, dwarf and spreading. *Artemisia stelleriana*, silvery foliage, strong in growth, and suitable for centres of large beds. *Coleus aurea marginata*, bronzy crimson, yellow margin second rows or centres of beds; *C. Emperor Napoleon*, deep chocolate crimson, centres of large beds; *C. Verschaffelti*, chocolate crimson, second rows or centres of beds. *Dactylis glomerata elegantissima*, strong growth, centres of large beds. *Fuchsia Golden Treasure*, golden yellow, best for medium-sized beds. *Gnaphalium lanatum*, silvery foliage, strong growing, suitable for large beds only. *Iresine acuminata*, deep bronzy red, spreading, suitable for large beds only; *I. Lindeni*, sanguineous red, upright in growth, grand for second rows or centres. *Klenia repens*, bluish green fleshy leaves, useful in small beds. *Lysimachia nummularia aurea*, golden yellow, trailing, adapted for small beds only. *Mesembryanthemum cordifolium*, creamy yellow variegation, compact and trailing, first rate. *Oxplis corniculata rubra*,

velvety brown, dwarf, spreading, and free growing. *Perilla Nankinensis*, bronzy black; vigorous in growth, suitable for large beds only. *Saxifraga densa*, deep green, compact and spreading; *S. hypnoides*, rich green, very useful for small beds; *S. pedata*, deep green, free-growing, yet compact. *Sedum anglicum*, green, dense, compact and free-growing, useful for small beds; *S. corsicum*, light green, spreading, quick in growth; *S. glaucum*, grey, spreading rapidly, invaluable for small or medium-sized beds; *S. hispanicum*, light glaucous green; free-growing and effective. *Thymus lanuginosus*, green and yellow, very compact, and only suitable for very small beds; *T. citriodorus aurea*, golden yellow, dwarf and spreading, very effective; *T. citriodorus aureus marginatus*, leaves margined yellow; compact, erect growth, useful. *Trifolium repens aureum*, greenish yellow, for carpeting only. *Vinca elegantissima*, pale yellow, suitable for beds filled with subtrropical plants.

NAME OF FERN.—*Lastrea filix-mas*, Romford.—You are right in your conjectures with respect to the name of the fern of which a complete frond was sent. The scrap is from a frond of one of the Aspleniums, probably *A. viviparum*. The specimen is too small to permit of our speaking definitely. Several species of Asplenium form young plants in the manner mentioned.

AMATEUR'S SANCTUM.—*J. T. B.*—If due care is taken to avoid throwing the water about on the pathway, there will not be much possibility of the damp injuring the indoor apartments, especially if all watering is done early in the day, and air admitted to permit of the superfluous moisture drying up before the house is closed for the night. The plants will require very little moisture during the winter months, and they should not be watered when the weather is not sufficiently favourable to permit of the ventilators being opened.

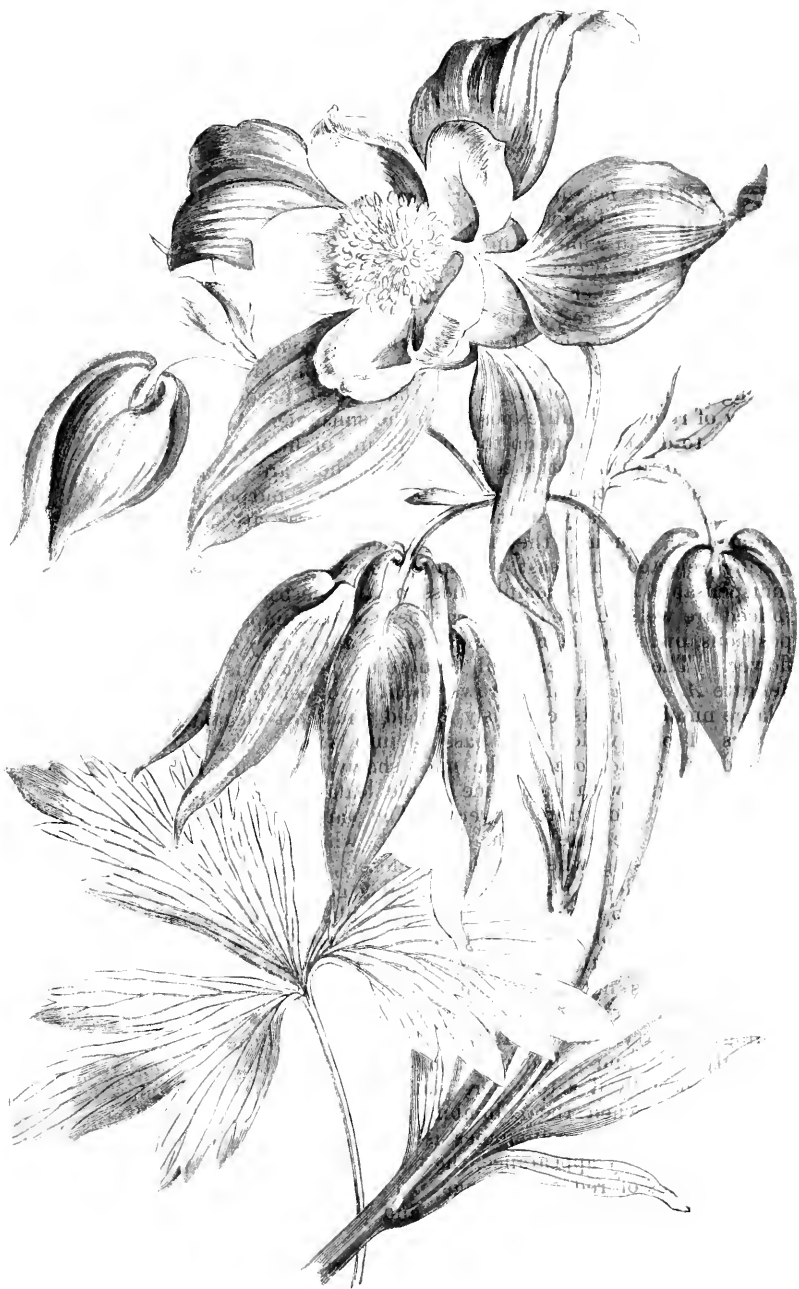
C. Hippersley.—The rose mentioned will most likely flower more satisfactorily next season, if not pruned too hard. The magnolia should not be pruned unless under exceptional circumstances.

PRUNING ZONAL PELARGONIUMS.—*Amateur*.—The plants taken up from the beds and potted with a view to their being used in the flower-garden should not be pruned. If the shoots are cut back now some will decay, and a few of the plants may perish. Leave them their full length, and prune about the end of February, and the plants will commence to make new growth at once. It is a serious mistake to prune zonal pelargoniums in the autumn which have done duty in the flower-garden during the previous summer.

SPERGULA AND THE CARPET CHAMOMILE.—*An Old Subscriber*.—Spergula would certainly not grow on the floor of a bee shed, but with careful management it might do very well on the banks alluded to. The grass may, however, be wonderfully improved by dressing it with phospho-guano at the rate of one pound to five square yards. The "Carpet Chamomile," *Pyrethrum Tchihatchewi*, which is now procurable at most good nurseries at a moderate price, would probably grow well in the bee shed, if supplied with water when necessary. It will flourish in dry places, where grass and many other plants would perish; but of course it will not live without some degree of moisture. It is of great value for planting under the shade of trees on dry banks and other places where grass will not live, and the only attention required to keep it in order is to remove the large daisy-like flowers which make their appearance in the early part of the summer. It would soon form a dense carpet of green on the two dry banks you speak of, but it is not desirable in places where grass with proper management succeeds.

H. H.—River-sand is not useless for propagating bedding plants, but is not so good for propagating hard-wooded plants as silver-sand. For striking geraniums, calceolarias, verbenas, and other plants of this description, we would quite as soon have it as the best of silver-sand.

CLEMATIS.—*A New Subscriber, Prestwick*.—The plant mentioned is probably growing in soil which has become impoverished. To insure continuity of bloom there must be continuous growth, and to maintain a vigorous growth the soil must be of a generous character. The rose mentioned may be grown in pots, but Marechal Neil is far superior in every respect. The seedling peach-tree will bear fruit without budding or grafting, but it will in a l probably exhaust your patience before it becomes fruitful, and then the chances are very small against the fruit being fit to eat. If you have room for a peach-tree, grow a good variety like the Royal George or Noblesse, and not waste it by occupying it with a seedling which will be years before it bears fruit, and then in all probability prove worthless.



HARDY COLUMBINES.

(With Coloured Plate of *Aquilegia glandulosa*.)

THIS magnificent herbaceous plant represents a group of half-forgotten garden worthies, that we may search far and wide for in the flower gardens of the present day. We were reminded of its existence during the past summer by receiving from Messrs. Grigor and Co., of the Nurseries, Forres, a glorious bunch of its flowers, from which a drawing was made for the plate which accompanies this notice. This plant is one of the hardiest of the fine family to which it belongs, requiring nothing more than good border culture, with plenty of room and full exposure to the sunshine. As we are always anxious to direct attention to hardy plants of high decorative value, it is needful in this notice to remark that there are several species of *Aquilegia* in cultivation, that, for ordinary purposes of garden decoration, are really worthless, and of course are not to be recommended, although they have a place in trade catalogues. But having rejected the least desirable, there remain several that are indispensable to the completeness of the herbaceous border, and indeed are well adapted for large beds and clumps in conspicuous positions, owing to their noble characters and showy colours when in flower. The most beautiful columbine perhaps is the rare and delicate *A. cœrulea*, which grows about two feet high, and produces a large number of its curiously formed and most elegantly coloured flowers of pale violet blue passing into white. The species here figured, *A. glandulosa*, is the most showy, the plant rising about two feet high, with handsome ample leafage, and a profusion of dashing blue and white flowers. The variety grown by Messrs. Grigor has a delicate shade of violet, which renders the flower extremely pleasing when examined closely, though when seen at a distance the violet is not apparent, and a good head of flowers has somewhat the appearance of a cloud of blue and white butterflies. The commonest of the columbines is *A. vulgaris*, a British plant, and a favourite of the cottage garden. This, however, in its commonest form, is not good enough for the select herbaceous border, although it must be confessed that, in its worst state, it is an exceedingly pretty plant. The double-flowering varieties, however, are truly fine, and a bed of them would be no bad ornament to a garden, especially if asters were planted amongst the columbines to afford flowers when the columbines were over. The last in the select list of border columbines is *A. Skinneri*, a good clump of which has a showy appearance, the flowers being produced in plenty in good shades of red and orange. For the rockery, *A. alpina* is a rare gem, growing only a foot high, and producing a number of fine purplish blue flowers.

It may not be wrong to enumerate those we consider unworthy of a place in a first-class border. They are *A. bicolor*, *A. caryophylloides*, *A. canadense*, *A. fragrans*, *A. Siberica*, the single-flowering

A. vulgaris, and the *variegated leaved* variety of the last. Now that we have touched on bad plants it may be well to refer to them occasionally, especially to point out in lists of herbaceous plants such as are unworthy the attention, and therefore the money, of those who prefer flowers to weeds, and object to grow second-class plants until they have exhausted the lists of first-class kinds.

S. H.

HERBACEOUS PLANTS FOR LAWN CLUMPS.



WHILE penning the foregoing notice of Messrs. Grigor's columbine, it has occurred to me to suggest that a few very distinct and handsome herbaceous plants are admirably adapted for planting in clumps on the lawn, not as bedding plants, but to afford grace of form as well as a display of colour, and to make a change thereby from the customary mode of procedure. And the suggestion may appear the more proper, because of the inherent demerits of many of the methods adopted for the enrichment of the lawn. A tasteful display of coniferous trees is usually the best possible furniture for breaking the flatness, and giving dignity to a fine breadth of grass; but coniferous trees do not thrive everywhere alike, they are not in favour with all amateurs alike, and they are somewhat expensive if good sorts are selected and properly planted. The "popular" style of enriching the lawn consists in forming a number of small round beds ("pincushion beds" they are called) and planting standard roses in them, with bedding plants during the spring and summer. Having expressed my opinion on this style pretty freely, I shall not now weary the reader by pronouncing an elaborate condemnation of pincushion beds and standard roses. It is sufficient to say that standard roses are hideously ugly during at least nine months out of the twelve, and that they are usually so badly treated when in pincushion beds that they never present large, handsome heads to make amends for their ugliness of contour. We shall probably never succeed in "writing down" pincushion beds and standard roses, and, indeed, feel rather inclined to conceal than to express our views on that subject, because of the evident pleasure tens of thousands of people derive from standard roses that starve on grass plots within view of all the windows. Let us enlarge the area of selection of subjects for lawns by proposing that a few first-class herbaceous plants should be adopted. They must be peculiarly distinct and handsome, the least weediness of character will be fatal to them. They must be such as will arrest attention, and justify by their beauty the important place assigned them. Strange to say, suitable plants, according to our view of the requirements of the case, are extremely few in number. We have carefully looked through Ware's catalogue of herbaceous plants and selected the following. When we commenced the search we expected to find full twice as many as in the end we marked for the purpose.

Agapanthus umbellatus, which is generally grown in pots, and

kept under glass all the winter, is quite hardy on our cold clay soil at Stoke Newington, and we may, therefore, select it with safety as one of the finest things discoverable for a lawn clump in any place enjoying a climate as good as that of London. The severe winter of 1870-71 did not hurt any of our agapanthus that were planted out, and we intend henceforth to employ these noble plants as bedders, leaving them out with tritomas and lilies to take their share of winter discomforts.

Anemone vitifolia *Honorine Jobert*, which produces a number of lovely white flowers resting on an ample vine-like leafage during the late summer months. It is a grand plant for a clump, or to form a front line to a clump of lilies.

Aquilegia glandulosa would make a telling clump, say about six plants standing apart from everything else.

Arundinaria falcata is already much employed as an isolated adornment of the grass, and needs only to be mentioned.

Astilbe rivularis is a fine lawn plant for the neighbourhood of water, and any part of the lawn not highly dressed.

Bocconia cordata and *B. frutescens* are extremely handsome when in a thriving state, producing large spreading masses of the most handsome leafage.

Gynerium argenteum, the well-known "Pampas grass," is so thoroughly appreciated and universally grown that it is sufficient to name it in its proper place in the list.

Hydrangea hortensis and *H. japonica* are both hardy and magnificent plants. To do justice to them as lawn plants, the beds in which they are planted should be deeply dug and enriched with an abundance of fat manure, and during the summer copious and frequent supplies of water should be given. It is scarcely a misuse of terms to say they will take "any quantity" of water.

Lilium giganteum is quite hardy on the heavy damp soils of Stoke Newington and Tottenham, and attains to perfect development without any special preparation of the soil or protection in winter. A nobler lawn plant cannot be found in the world. Lilliums, generally speaking, are not so well adapted for clumps and beds as some enthusiastic writers represent, owing to their tendency to die down early in the season, and the comparatively brief duration of their flowers.

Paeonia arborea and *P. officinalis* may be planted freely, and there is an almost endless variety in both sections. They are extravagantly showy when in flower, but are scarcely first-class lawn plants, because they become coarse and shabby soon after their flowering is over. Probably *P. officinalis tenuifolia*, which has finely-divided fennel-like leaves, would make an interesting and beautiful lawn clump.

Polygonum cuspidatum is the perfection of a lawn plant, but it has one very bad habit, that of travelling fast and far. We have been compelled lately to move a magnificent plant from a lawn, because of its persistency in sending up shoots far away from its proper centre. To keep it in its place it would be well to form some kind of wall around its roots. To give an idea of the sort of wall

required, we will suppose an old tub three feet across to be sawn down to a depth of two feet, so as to provide a two feet depth of wooden wall three feet in diameter. This would require to be well pitched inside and out, and be placed wholly underground to enclose the roots of the plant, which it would do effectually until its decay enabled them to push through it.

Spirœa venusta and *S. palmata* are superb plants, requiring a deep, damp, rich soil.

Statice latifolia will suit for a small clump raised above the level. There should be half-a-dozen plants at least in the clump to produce an effect.

Thalictrum aquilegiæfolium is stately and handsome, though by no means showy.

Tritoma uvaria, and all other tritomas, are first-rate lawn plants, not only for their dashing flowers in the summer, but their handsome dark green leaves all winter, which the frost rarely injures.

Tupa feuillei is a stiff-growing plant, five feet high, producing in summer grand spikes of scarlet flowers. It is probably too coarse for a conspicuous position, but is so distinct and showy that it needs an open spot of grass to display it effectually.

Veratrum nigrum is undoubtedly a fine thing for our purpose, and to make a nice clump half-a-dozen plants would be required.

Yucca gloriosa is well known for its solemn nobility. *Y. recurva* is more elegant. *Y. plicata* is a pretty little thing that flowers freely. The variegated Yuccas are sumptuous lawn plants, but they are not quite hardy, and we are endeavouring to confine this list to plants that may be left out all the winter. When Yuccas are planted out, precautions must be taken to secure them against the injurious effects of stagnant moisture. To accomplish this, it is not always necessary to raise them above the general level, though they usually appear to better advantage when raised. A good loamy soil with about a fourth part of broken bricks added will suit them better than the poor sandy stuff they are usually planted in.

S. H.

CULTIVATION OF THE BOUGAINVILLEA IN POTS.

BY J. W. SILVER,

Head Gardener, The Laurels, Taunton.



THE cultivation of this magnificent stove plant has already been described in these pages, and it may appear almost unnecessary to again advert to it; but its adaptability for exhibition, and its usefulness in establishments where plants of large size are required for decoration purposes, has induced me to make a few remarks relative to its management in pots.

It is simply impossible to convey an adequate idea of the splendour of the Bougainvillea when well grown and properly trained. The principal condition necessary for the production of large well-

flowered specimens in pots is to have the wood of the previous season thoroughly matured; and to insure this being done, keep the pots plunged in a bottom-heat varying from 70° to 85°. This is of very great importance during the growing season; and indeed it is hardly possible to secure a well finished plant without the aid of bottom-heat. In the absence of bottom-heat being provided with the aid of hot water, tan or leaves may be substituted, as both will produce a nice warmth, and probably be more congenial to the plants than that from the hot-water pipes. It is important to remember that the greater the body of tan or leaves, the more powerful and continuous will the heat be. As soon as the heat from the tan or leaves is exhausted, take out the bed to the depth of the pots, and renew it, by which means a constant supply of heat may be obtained throughout the season.

The best of all the Bougainvilleas for exclusively growing in pots is *B. glabra*. *B. speciosa* will do well, and flower freely in pots; but to grow it to perfection, it should be planted out in a bed of soil, and trained to the roof, so as to enable its lovely breadths of mauve-pink bracts to hang gracefully down. But as these remarks are only intended to refer to pot-culture, I will not here advert to their management when planted out in borders. Allow me to recommend *glabra* for summer, and if flowering specimens are required in midwinter, or in early spring and summer, *speciosa* may be employed, but it may be well to mention here that in purchasing the last mentioned variety, it is necessary to apply to a firm that may be depended upon—Messrs. Veitch and Sons for instance—as it not unfrequently happens that *spectabilis*—a very shy blooming species—is substituted for it.

Many young beginners fail to produce good specimens, through growing in a position where they have an insufficiency of light. Shade is the cause of thin, immature wood, from which it is impossible to obtain flowers in any quantity. Therefore, for this reason, the plants during the growing season must have full exposure to both light and sun, and only be shaded to preserve the flowers. Even this is injurious if carried to any extreme, as it materially assists in the deterioration of the flowers. Liquid manure may be administered copiously during the season of active growth, but as the flowers commence to expand, it must be sparingly given, and eventually withheld altogether. Frequent shifts are not by any means necessary, although the plants under consideration are gross feeders. The plan I invariably adopt, with very successful results is, after the plants attain specimen size, to give an annual shift only into as large a sized pot as convenient. I find this, with the assistance of liquid manure, quite sufficient to produce large, well-flowered plants. As an example of this, allow me to mention that a plant of *glabra* here, trained on a balloon-shaped trellis, that has received this treatment, has presented the appearance of a globe of lovely mauve bracts since the first week in June, and is now, November 11, covered with them.

A thorough season of rest is most important, and from October until March no more water should be given than is necessary to keep the soil from becoming dust dry.

In pruning *glabra* the wood of the previous season should be cut back to two eyes, and the young shoots thinned out to one to each spur. This operation should be performed when the plants are quite at rest, which, as a rule, occurs early in January. This is also the best time to repot, as the cultivator has more spare time, generally speaking, at that season than, perhaps, at any other; therefore everything that refers to pruning and training should be done when the time can be afforded for doing it properly. The trellis to my mind most suitable for training the *Bougainvillea* is one either in the shape of a barrel or balloon. Both these display the lovely colour of the flowers to great advantage, as well as to permit of the growth being trained more easily. The compost I have found best suited to their requirements is prepared by well incorporating together two parts good turfy loam, and one part each of fibry peat and leaf-mould, with a proportionate quantity of silver-sand. A few nodules of charcoal may also be added to this compost.

The pots into which the plants are intended to be put should be perfectly clean and well drained. A few pieces of charcoal may also be advantageously mixed with the drainage.

RENDLE'S PORTABLE PLANT PROTECTORS.



AT the exhibition of the Royal Horticultural Society, held at Nottingham last July, Mr. W. E. Rendle, the inventor of the "Portable Plant Protectors," figured in the *FLORAL WORLD* for January, 1870, exhibited several new and improved forms of these invaluable inventions, to which we have

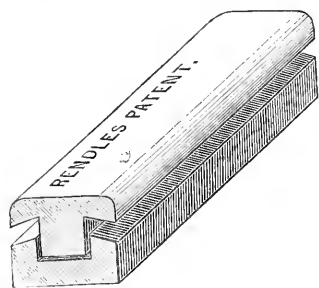


FIG. 1.—GROOVED BRICK FOR APEX ROOF.

for some time past been anxious to direct attention. The principles upon which these Protectors are constructed were briefly described in the communication referred to, and beyond saying that they have, in their usefulness for protective purposes, more than justified all that we said in their praise when introducing them to the notice of our readers, we need not further allude to the old form. The old forms are retained, but very material improvements have been effected in the details of construction, and by the introduction of a movable coping as here shown (Fig. 1), increased facilities are provided for the removal of the glass, and the invention is now as perfect as it possibly can be. The span roof protectors now come almost within the category of houses, for they can be had of any width, ranging from three to eight feet wide. Fig. 2 represents one of the last-mentioned width, with galvanized middle grooves to hold the glass; but those not exceeding four feet in width do not require the grooves, as one sheet of glass on each

side is sufficient. Fig. 3 illustrates a valuable invention for the protection of cordon trees when in bloom, and also for accelerating the

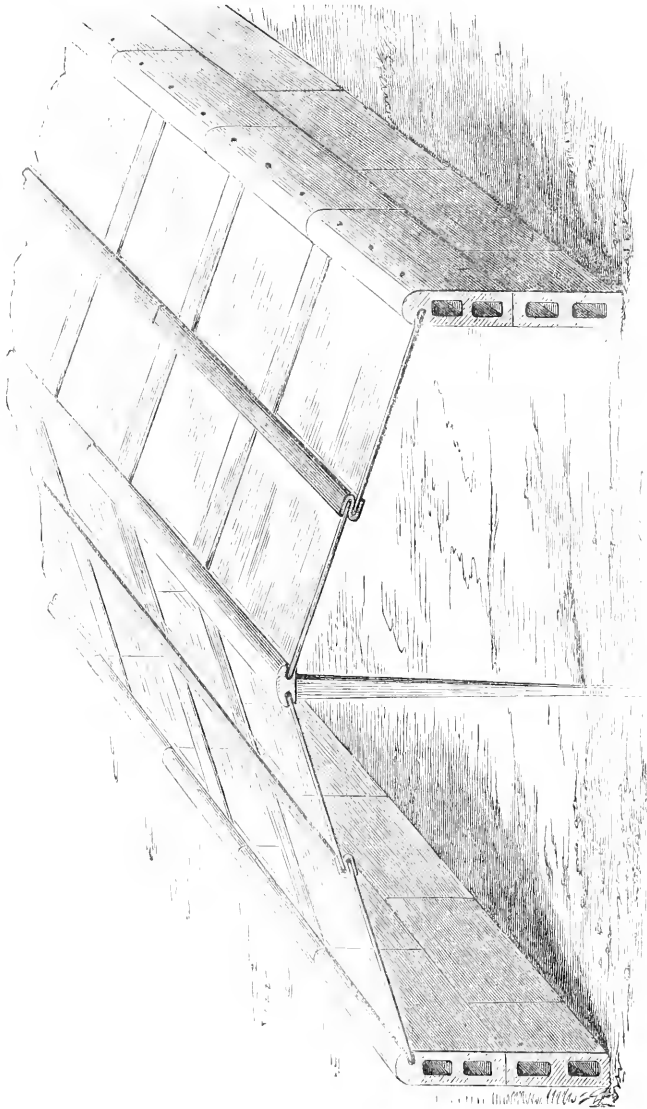


FIG. 2.—PATENT SPAN-ROOF PLANT PROTECTOR (6 and 8 feet wide).

ripening of their crops, and it is as ingenious in construction as it is useful in character. The inventor, the Rev. Th. C. Bréhaut, Richmond

House, Jersey, one of the most skilful amateur horticulturists of the present day, thus describes it :—

“The Cordon Case illustrates a portion of a twelve-foot length, with legs of ten inches above the soil, and three inches buried to steady the case. The front glass is eighteen inches long, and there is a half lip of wood at the back, removable to ventilate and prune

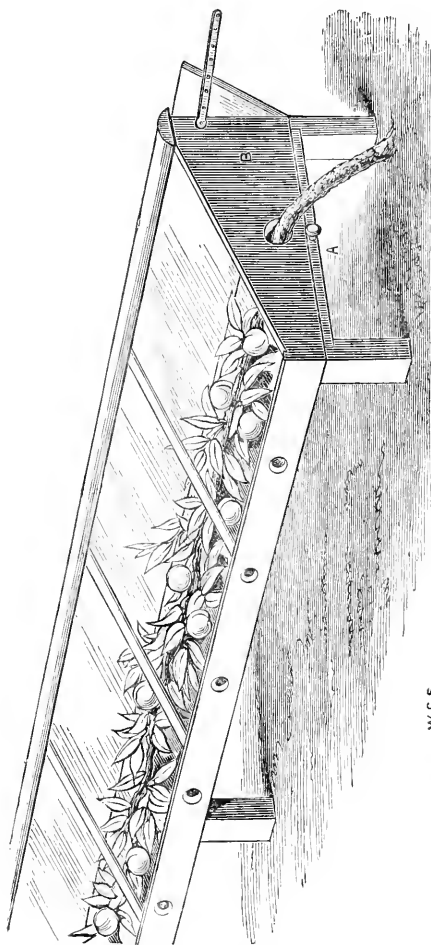


FIG. 3.—BREHAULT'S PORTABLE CORDON CASE.
(RENDLE'S PATENT).

in bad weather. In fine weather the floor, on which the peach or apricot cordon lies, is lowered to the earth to ventilate, prune, or syringe, and expose the cordon to the air at pleasure. The leading idea is, that the whole work is to be done by raising this floor to the level of the front portion (which closes up the case) in bad weather, and by lowering the floor in fine weather. The cordon is inserted at the side of the case, and may be planted in the earth, or from a pot. Vines are well suited for this case, which is also approved of by Mr. Rivers; and, being very portable and cheap, might be used for many other purposes, such as strawberries or bedding plants.”

Bréhaut's Portable Lawn Conservatory, another of Mr. Rendle's recent introductions, is also a most novel and useful invention, and is of equal value for the cultivation of choice plants during the summer, the acceleration of the growth of strawberries in pots in the early spring months, and for the protection of such things as pansies, auriculas, and the choicest

kinds of alpine plants during the winter.

The Patent Glass Copings and the Reversible Fruit Walls, two of the most important of Mr. Rendle's introductions, are of the

utmost value in garden economy, and demand the instant attention of both amateur and professional horticulturists. The glass coping is intended for the protection of peach, nectarine, and other fruit-trees trained to walls when in bloom, and is fixed to the walls by means of zinc grooves, so that the glass can be removed instantly when not required; and by the suspension of netting or canvas, so as to reach nearly to the ground, the trees are most effectually protected from frost. The value of wide copings in the protection of fruit trees in the spring has long been recognized by practical horticulturists, but, up to the present time, nothing of a satisfactory character has been done to supply this long-felt want. These copings, without depriving the trees of a ray of light, effectually protect the flowers from frost and wet, and, apart from their low price, can be heartily recommended to the notice of all who are the fortunate possessors of a fruit wall. The Reversible Fruit Walls are so designed that trees trained to a common wire espalier can, with the aid of a specially made thick textile fabric, be either protected from ex-

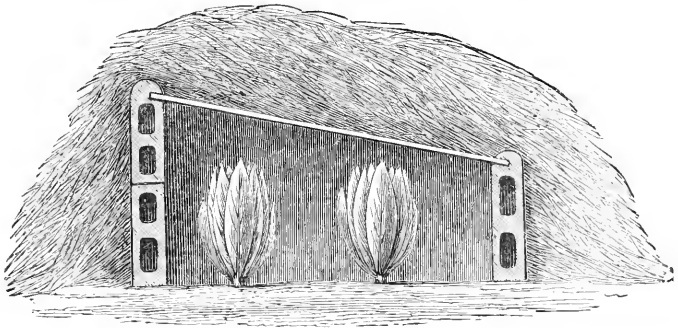


FIG. 4.—MANNER OF COVERING THE PROTECTORS IN FROSTY WEATHER.

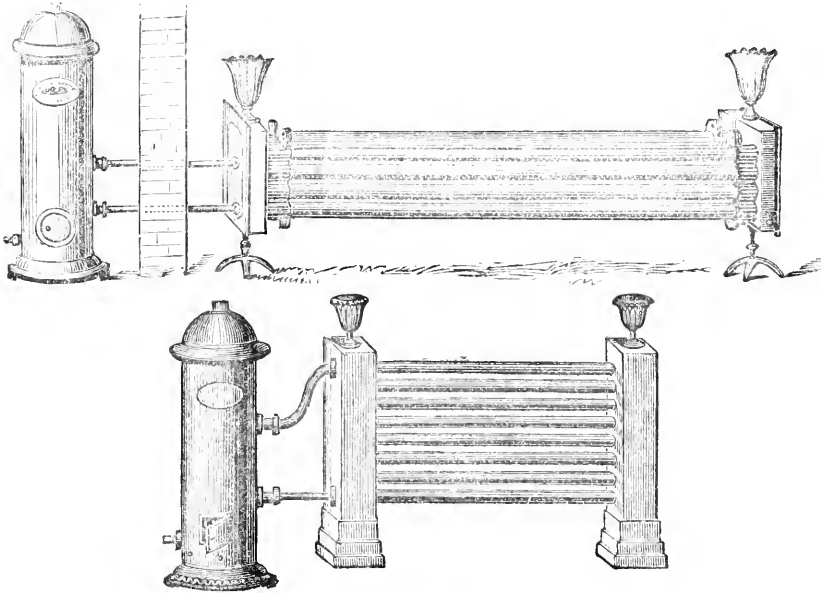
cessive heat or excessive cold, as may be considered the most desirable. The trees can be protected from the effects of outbursts of brilliant sunshine during the winter months, and their flowering season delayed considerably, a most important point when we take into consideration the unfavourable character of the weather when peach and other fruit-trees usually bloom, and they can be safely sheltered from northerly blasts when in bloom. The trees can also be sheltered during the various stages of growth prior to the fruit attaining maturity, and it can be removed altogether after the crop is gathered, and the wood placed under the conditions most favourable to its becoming thoroughly ripened. By elevating the patent grooved bricks upon ordinary kiln bricks, and leaving a few openings on each side, the most efficient means of ventilation is secured during the summer season; and by covering the glass with mats, or straw, or long litter, as shown in Fig. 4, frost can be excluded.

For further information we must refer our readers to the inventor, Mr. W. E. Rendle, of Westminster Chambers, Victoria Street, London, S.W., where we understand samples of all the forms of protectors to which reference is here made, as well as information with respect to the prices, can be obtained.

HEATING PLANT-HOUSES WITH GAS.



HE proper use of gas in the heating of plant-houses has been sufficiently explained and enforced in the pages of the *FLORAL WORLD*, and we have from time to time recommended gas-heating apparatus to the notice of our readers. We cannot now afford space to treat of the elementary principles of this subject, but we must repeat, as



WRIGHT'S GAS-HEATING APPARATUS.

proper to the occasion, that wherever it is possible, the furnace and boiler should be provided for in a chamber apart from the plant-house, and that the heating of the plant-house should be accomplished by means of a system of hot-water pipes. Our present object is to inform our readers of the most perfect system of gas-heating apparatus we have hitherto become acquainted with, the inventors and manufacturers of which are Messrs. Wright and Co., 30, Broad Street, Islington, Birmingham. As will be seen by the annexed figures, which really do not require explanation, Messrs. Wright take the very safe course of following the general scheme of what may be termed the orthodox hot-water system, and the only difference between their method and that of the ordinary upright conical boiler is that the heat is derived from a gas flame instead of from a coke fire. One special advantage this system certainly has, and that is the large extent of radiating surface of the hot-water pipes, which does away with the necessity of "driving" on frosty

nights, for a quite moderate flame, diffusing its heat slowly over a comparatively great extent of piping, exerts a more powerful and constant effect on the atmosphere of the house than it would do if the piping were restricted, and the effect converted from spreading into jumping, for we want no jumping of artificial heat in plant-houses.

S. H.

THE MANAGEMENT OF PLANT-HOUSES IN WINTER.

BY A KENTISH GARDENER.



IN the following remarks my object is to assist the amateur readers of these pages, believing as I do they will appreciate any effort that we can make to assist them in the proper management of their plant-houses. Amongst those for whom we write, many grave errors are committed in the management of plants under glass at this time of the year, through want of knowledge of the conditions essential to success. This is especially the case with fire-heat and air-giving during the winter months. To these I might add the subject of watering. All these are points upon which much has been said and written; but for all that, there is at the present moment as much need of this being repeated again as ever there was.

Doubtless many have improved through what has been done for them, but unfortunately those who are accustomed to look about them, and to note what they see, can tell us that there are some who have yet to learn the principles upon which to act when attending to these operations. Did this only extend to the case of the amateur, we might be less pointed in our remarks; but we see it sometimes with those who wish to be thought good gardeners. And to such what ought I to say? If I were to tell them point-blank that they were wrong in their notions about excluding frost, and keeping plants healthy, they would be offended, so I must be content to tell them to ascertain the whereabouts of some enthusiastic amateur, and get a leaf out of his book about the proper management of a greenhouse; for there are many such from whom they might learn some useful lessons. He will tell them that he does not get the house up by fire-heat to 60° at seven o'clock in the evening, and then leave his fire and the internal air of the house to go down to freezing point by the morning. He will tell them, too, that such extremes of temperature in the space of twelve hours are positively killing the plants by inches; because they are as it were roasted at night and frozen in the morning. Such unthinking individuals should place themselves in a similar position; perhaps then they would be better able to judge if it was conducive to health. If it proves not so, why then they have only to draw a comparison between themselves and the plants in their houses, which are perhaps as sensitive as themselves to these sudden variations in temperature. Surely they would then understand why the

verbenas in their cutting-pots die off, and the cinerarias are infested with fly, and the camellia buds fall from their stems, and many other equally perplexing losses, all which I could easily name, but it would be occupying valuable space, and serve no particular purpose.

Indispensable as is the use of fire-heat for the exclusion of frost, and to dry up damp, it is nevertheless equally injurious if applied when it is not wanted; and for such subjects as usually occupy the majority of greenhouses, they are better without it than with it, except in the case of frost, or a prolonged interval of cold damp weather. Even in these cases there ought to be some discrimination about applying it in an ordinary greenhouse if closed at three o'clock in the afternoon. It should be remembered that from six to ten degrees of frost *outside* will do little harm to the occupants of the greenhouse; in fact they would endure the thermometer going down to freezing point in the house better than they would a sudden rise in the heat, as the latter calls into speedy action many important organs of the plants, and which are as suddenly arrested in their progress by the fire being left to go out early; and so they get a chill, which if frequently repeated must tend to weaken them, and may sometimes kill them outright. I have heard our Editor say that he has seen his geraniums covered with hoar frost, and the thermometer down to 26° in the house, yet no harm was done because of the care taken never to allow rapid changes or great extremes of temperature.

With all good gardeners it is now an acknowledged fact that greenhouse plants, except for special purposes, do better without fire-heat than with it, when frost can be kept at bay without its aid, and damp expelled by the genial winds of heaven. But from this it must not be inferred that I am advocating the discontinuance of fire-heat, and to leave our plant-houses to the mercy of the elements. Such a course would be madness on my part; but what I want to impress upon the reader's mind is that he should be less liberal in his artificial heat, and that he should study the well-doing of his plants, and not quite so much his own comfort, at every slight appearance of frost. I grant it is very comfortable to make up a fire every afternoon when the wind blows from the east, because then you can go to your own fire, and feel yourself safe if there should come a frost. But what if no frost should come? Would not the plants in your house have been better without the fire, and ought there not to be a regret in the morning that you did not wait till eight or nine o'clock in the evening to see how it was likely to be; and that the firing had been uselessly consumed, and the plants positively injured? The reader must not think that I am drawing upon my imagination to make out a case to illustrate what I want to say, because unhappily there is no need of that. Such instances as I have just tried to relate are of too frequent occurrence, and while they are continued as they are in the present day amongst our villa gardeners I shall continue to crave a short space every year in these pages to remind them of it, with a view to making them brighter ornaments to our profession.

As a rule, fire to exclude frost should not be started till it is actually freezing. The object should be just to keep pace with the frost, and not to drive the thermometer up to 55° and 60° . The highest point at which the thermometer should be kept when the fire is banked up for the night is 42° or 40° , or even 38° is a better standard, and which the practical reader will be sure to adopt; but at 42° no positive injury can be done, and will perhaps be safer for the amateur gardener.

Fire-heat for the expulsion of damp is also worthy of a remark here, because when it is judiciously applied it adds much to keep the occupants of the house in a healthy condition. As a general rule, once a week will be enough for the purpose, and then there are many fine dry weeks through the winter that would not require it, if only an ordinary amount of care is used in watering. When the fire is lighted for this purpose, the day should be fine, that all ventilators may be opened, so as to admit of a free circulation of air amongst all the plants.

This now leads me to say something on the subject of air-giving. The subject of air-giving is a point in the management of plant-houses on which definite rules cannot be given for the winter season, so much depends upon the outward elements. It cannot be done in a mechanical sort of a manner, at stated hours in the day, because we must be guided by the state of the weather, and the condition of the plants. But taking the generality of small houses, they do not get air enough; this is owing to a prevailing notion that the plants do not require it, unless the sun is shining brightly; but this is a false notion, and fully accounts for what we see in the shape of weak and sickly plants, drawn up to a state approaching to wretchedness, and all for the want of a sufficient quantity of fresh and pure air. To the uninitiated, this will be a sufficient explanation of the cause of the flower-stems of primulas being twice the length they ought to be, and why those flowers which should be pink are no colour at all. This will explain, too, the reason of the flowers of early cinerarias and tulips being small and almost colourless. In a word, it will explain the true cause of many losses and disappointments which we in our capacity are obliged to hear of. Sometimes we are asked to condemn a quite different agency for these mishaps, but this we always decline to do, because unintentionally the inquirer lets us into the secret of his management by the inquiries he makes. Therefore, before we take up complaints against seedsmen, we always wish to know how the plants were treated. Air-giving ought to be attended to the first thing in the morning, by putting on a little at the top of the house at all times when it is not actually freezing. If it is a mild morning, the same may be done with the bottom ventilators, gradually increasing it till the weather will enable you to judge how much can be given for the day. Endeavour as much as possible to create a circulation through the house early in the day, that the leaves may perform their proper functions in a fresh atmosphere, and that those impurities which they give out during the night may be dispersed. It is essential that, with the stimulus of daylight they should breathe a fresh air, for on it they depend for a certain amount

of sustenance to keep them in health. In conjunction with air-giving, I may say a few words on early closing, for this is highly desirable, as the solar heat so enclosed is more congenial not only to the health but to the wants of the plants, as the fact of its being naturally supplied must convince every one. From the time these notes come to the hands of the reader, until the end of next March, all plant-houses should be closed at three o'clock in the afternoon. This will shut in a great deal of natural warmth, which is liberally generated in the house during the day, and will tend materially to reduce the necessity of fire-heat should frost set in.

On the subject of watering of greenhouse plants during winter, a young friend has recently written to me in the following strain: "I have a small house, chiefly of pelargoniums. I read that during frosty weather greenhouse plants should not be watered. Is this correct?" Now as the reply I gave to that note will explain all that I think it needful to say on the subject of watering here, I shall give it at full length: "Never mind about what you have somewhere read that greenhouse plants should not be watered in frosty weather, or you will have to regret doing so, because as such weather is often attended with a good deal of sunshine, as well as the extra fire-heat which is necessary, and which tends greatly to dry up the soil in the pots, they actually require more water than in dull cloudy weather; but do not give more than is just necessary to keep them from flagging, as you must not encourage them to make any growth under such conditions. Look over the plants every other day, but never give water to a plant at this season unless it wants it; what watering you do, do it before 10 A.M., and if there is a nice mild air, give plenty of it, to dry up any water that may be spilt upon the shelves or floor of the house. But if the air should be too keen and sharp, light a little fire, and open the top ventilators, that there may be no damp hanging about the house at the approach of night."

HINTS ON CHRISTMAS DECORATIONS.



HAVING been many times concerned in the direction and preparation of floral displays at Christmas, it has occurred to me that a few practical observations may be useful to our readers. The materials available at the present time are few, if we keep strictly to the use of natural objects, but we may augment them by means of suitable additions of an artificial character. I once had the assistance of some ladies who were expert and tasteful in the making of paper flowers, and by their kind help, a brilliant display of paper Chrysanthemums set in the midst of evergreens was the result. But I leave this part of the subject to others, and shall make remarks only upon such materials as the garden and greenhouse will supply.

Christmas decorations should be prepared with a view to their being effective by gaslight. Hence, elaborate colouring is less

needful than broad and bold effects. Half-tints, as a rule, are quite washy by gaslight, though some neutrals, such as lilac, dove colour, and fawn, are valuable, as they afford by gaslight various chaste shades of grey, and are more pleasing than white. These colours will generally be preferable to red, or any of the primary colours, for ribbons to tie garlands, and in artificial flowers to brighten the effects of the stronger colours. The two predominating colours in Christmas decorations should be RED and GREEN. Any and every shade of the two colours can be used to advantage, but depth and richness are needed to be consistent with the season. As it is well to be appropriate, those who prepare artificial flowers should select subjects that are in bloom at this time of year. Thus Chrysanthemums and Camellias are at once easy to make, admit of great variety of colour, and belong properly to the season. The Tree Carnations are also in flower, and therefore the brilliant Clove may be imitated. The mention of these things reminds me to say that plants may now be purchased in bloom of the following kinds, all adapted for embellishment: Camellias, Chrysanthemums, Tree Carnations, Chinese Primulas, Mignonette, Persian Cyclamen, snowy Deutzia, Early Tulips, Poinsettia pulcherrima (a gorgeous thing with large vivid scarlet floral bracts), a few Heaths, and Azaleas. The garden should supply many kinds of evergreen shrubs, and an abundance of berries. To name the Holly is of course proper, it is the tree of greatest renown at Christmastide, but we may also make use of the berries of several kinds of Thorn, Cotoneaster, and common Euonymus. From the greenhouse we may obtain a gem of priceless value, the neat little *Solanum capsicastrum*, or its companion plant, *Solanum pseudo-capsicum*. From the same source too we may even hope for pot plants of the *Aucuba Japonica* with red berries on them, and the stove should supply *Ardisia crenulata*, *Rivinia humilis*, and the Tangerine orange. I had almost forgotten to name *Skimmia Japonica* and *Skimmia oblata*, two neat dwarf rhododendron-like shrubs that are smothered with scarlet berries now; they are quite hardy, and may be grown in pots expressly for Christmas decoration.

In cutting evergreens, it is important to bear in mind that every separate kind is adapted for a separate use. Thus the common Laurel, *Aucuba*, and Portugal Laurel are well adapted for large work, such as festooning the pillars in churches, or for the embellishment of entrance-halls; but in dining-rooms and refectories they have a coarse appearance. Hollies are never coarse, and never inappropriate. The neatest way to make wreaths of leaves and flowers is to cut a lot of Irish ivy, and tie every leaf separately on lengths of rope, and pin the flowers on after the wreaths are suspended. It is astonishing how quickly a few score yards of wreaths may be made by people who set about the work in earnest. In gardens near town, evergreens are generally so sooty that it is not a very delicate business to handle them; but as walls require to be kept clean, a little purification of the leaves should be attempted, especially of such as are to be much handled, and are ultimately to touch walls or curtains. Let all the stuff be carried to a dry clean shed or spare room, and there set a person to work with

a heap of dry cloths of any kind, his or her duty being to wipe the surfaces of the leaves and throw them into clean baskets ready for use. Washing is bad practice—in fact, worse than letting the dirt remain. Our country readers know nothing of the smoke-plague. To them a twig of holly or mistletoe is as good an emblem of purity as of Christmas fun and Christmas cheer.

It is the custom to introduce plants and flowers on the dinner-table, and in apartments appropriated to festivities. Very pretty groups may be made at a very small cost of time and trouble for the centres of tables, for side-boards, and especially for entrance-halls, by means of pot plants and small twigs of variegated ivy clothed with scarlet berries. The plants most suitable are Poinsettias, Solanums, Skimmias, Primulas, and perhaps the Christmas Rose. Branches of the glorious Pyracantha, or evergreen thorn, with its huge bunches of fiery or orange-red berries, may also be obtainable. Now how are we to make our groups? We want, first, some kind of frame-work to enclose it. The lattice flower-pot covers sold by Carter and Co., Barr and Sugden, and other dealers in such things, answer admirably, if cut through, for one cover will then draw out and make two or three yards of pretty lattice-work. Moss is not nice stuff to bring into a house, and therefore it is not advised to use it for the substance of the bed, otherwise it would be the very thing we want to fill in between the pots, and make a sort of back to the lattice-work. Where there's a will there's a way. The ladies of a household will soon find something clean and dry to serve for moss to bed the pots in, but if they want a hint to give them a start, I will suggest that Berlin wool of a bright deep grass-green colour, clipped into inch or half-inch lengths, will make splendid artificial moss, and may be put away when done with so as to come in again and again for a series of years. When such a group is made, a finish may be given by means of wreaths of holly arching over. These of course should be made of wire let into blocks of wood at each end, and bent to the required curve. The wire should first be bound with common hempen yarn, and then the little twigs of variegated holly, variegated ivy, and other variegated shrubs may be tied on. Neatness must be aimed at in making such wreaths, as these and a circular group will look best if arched over with two wreaths crossing each other at right angles. A little sprig of something pretty should be hung in the centre where the two wreaths cross each other. There are two evils incident to the introduction of a decoration of this kind to the dinner-table: first, it is likely to interrupt the view, and so prevent people seeing each other; and, secondly, it is likely to occupy more room than can be spared. I mention these matters that they may be thought of in time, for I should be sorry to be the agent in any case of marring the sociality of a Christmas board.

Plateaux and epergnes should always be richly furnished, and everything artificial should be rigorously excluded from them. To devise systematic colourings in the filling of these things is I conceive unnecessary and inadvisable at Christmas. In the summer we see them dressed with masses of white, blue, rose, etc., etc., in a most systematic way, though if grace is secured by mixtures it is far

preferable. But now we want no geometric or chromatic rules, Delicate touches of colour are of no consequence, but our ideas of WARMTH and PLENTY should be kept in view at every step. Nothing suits so well as a display of good fruits with twigs of holly and pyracantha, and a few good flowers sprinkled over them. Apples and pears afford splendid masses of colour; camellias, tulips, and carnations will keep fresh and beautiful many hours if their stems are tucked in between cool fruits, for of course there must be no water; and it is advisable there should be nothing poisonous—so I say nothing of the Christmas rose or of the Solanums for admixture with fruits.

The following are most valuable shrubs to cut from for Christmas decorations: Minorca box, round-leaved box, Lauristinus, generally in flower at this time, Arbutus with ripe fruit, Berberis Darwinii, lovely for delicate wreaths and fillets, though very thorny, Cotonæaster rotundifolia, Cratægus pyracantha, Daphne laureola, Euonymus Europæus, the leaves are off now, but there are plenty of coral berries; in cutting branches, handle them tenderly, for the berries fall if roughly used. Of hollies, the silvery-leaved kinds are undoubtedly the best, for they glitter splendidly in gaslight. Phillyrea, several sorts; the holly oak (*Quercus ilex*) is first-rate. Skimmias of all kinds.

Lastly, it must not be forgotten that vases and other such receptacles can be dressed very effectually by means of dried grasses and artificial flowers. But for information on growing, preparing, and arranging these, reference must be made to the FLORAL WORLD for March 1869, in which occurs an illustration of a wreath of artificial flowers and grasses.

S. H.

WINTER WORK IN THE KITCHEN GARDEN.

BY GEORGE GRAY.



ALTHOUGH the kitchen garden presents fewer attractions at this season of the year than at any other period, it must on no account be neglected, and those who pay much attention to the cultivation of vegetables have an abundance of work to occupy their heads and hands during the next two months.

In the first place, it is necessary to determine at once what each quarter is to be cropped with next season, so as to be able to prepare the ground according to the requirement of the several crops. Also, to prevent confusion in the spring, when the sowing and planting is going on; when these arrangements are left until the spring, it is no unusual occurrence to find at the last moment that there is insufficient or no room for some of the important crops. In gardens of a considerable size, the vegetables to be grown, and the extent of the crop of each, must of necessity be regulated by the taste of the owner; but in small gardens, such as are allotted to the majority of suburban villas, it is necessary to act with caution, and only grow the most profitable. As a rule, preference should be given to vege-

tables of a similar character to cabbage and broccoli, because of their being so much better when cooked soon after they are gathered. Such things as potatoes and onions, which can be transported long distances without undergoing any deterioration whatever, should only be grown in quantity in gardens where there is plenty of room for everything. In fact, only the early potatoes, which can be cleared off the ground early enough in the summer for it to be planted again with broccoli, or winter greens of some kind, should be planted. Peas also are not profitable, and the finest marrow varieties only should be grown; for peas can be frequently purchased early in the season for less than the cost of the sticks. The better class of peas, on the other hand, which are not only fine in quality, but very productive, cannot often be purchased, and must therefore be grown at home. Onions and carrots should only be grown in limited quantities for use during the summer in a young state; and turnips and parsnips should not be grown at all, as the ground can be more profitably employed. Cauliflowers do not, perhaps, yield such a large supply of food as cabbages and other greens, but they well repay the cost of cultivating, and should be planted liberally. The extent to which cabbage is grown must be determined by the esteem in which it is held, and in any case they should be planted rather close to each other, and cut and sent to table before they are full grown. Broccolis will well repay the cost of cultivation, but they cannot be depended on, for such winters as 1870-71 cuts them up in a wholesale manner. Scarlet runners are one of the most profitable of garden crops, for in ordinary good soils they yield a very large supply throughout the season. Two sowings should be made of these, one as early in the season as the state of the weather will permit, and the other early in June, to keep up the supply after the crop has become exhausted. Dwarf French beans are hardly so profitable as the scarlet runners, but they take up very little room, require no sticks, and they can be highly recommended. Lettuce and other salading should, as a matter of course, be grown in proportion to the space at disposal.

In determining the manner in which each quarter is to be cropped next year, so as to keep it at work without intermission, it must not be forgotten that, as far as possible, no quarter should be occupied two consecutive years with the same kind of crop. A proper system of rotation is one of the grand secrets in kitchen gardening, but as there is not sufficient room in small gardens for carrying on a systematic rotation of cropping, it is not of much use to enlarge upon this part of the question. It will also be well to bear in mind that some things do better in ground manured the previous year than they do in that which has received a liberal dressing of fertilizing matter a short time previously.

Peas, potatoes, and all the members of the great Brassica family, on the other hand, require an abundance of manure, and there is no fear of the ground being too rich for them.

One of the most important points in kitchen garden practice is to stir the soil to a considerable depth, early enough in the winter to admit of its thorough pulverization by the frost and rain. To say that trenching the ground early in the winter, and leaving the sur-

face until the following spring in the roughest state possible, is equal to a dressing of manure would be overstating the case, but it may be said that the produce of the garden may be materially augmented by trenching a part every season. It is not necessary to trench the ground every year, even were it practicable to do so, but it should be turned over every second or third year, and to make the work as little felt as possible, a portion should be done every season. Supposing the work of trenching the ground is spread over three years, divide the garden into three imaginary divisions, and trench No. 1 this winter, No. 2 in the winter of '72, and No. 3 in the winter of '73, and in the following winter commence with No. 1, and proceed as before. It is not desirable to bring subsoils utterly unfit for the growth of plants, such as tenacious clay or gravel, to the surface, and the depth to which the ground must be turned up must be regulated by the depth of good soil. In trenching shallow soils it is a very good plan to trench the soil to a depth of fifteen or twenty inches, and then simply break up the subsoil with a fork without bringing it to the surface. In dressing the quarters with manure at this, or any other season of the year, the manure should be regularly mixed with the soil throughout its entire depth, and not thrown into the bottom of the trench as is so frequently done.

All vacant quarters should, as a matter of course, be turned up at once, and those only partly occupied examined, and the remaining crops, if practicable, taken up and planted in one corner, and the vacant space dug or otherwise prepared for the next crop. Turnips of sufficient size for table may be taken up and put in clumps, in the same manner as potatoes. They will then be safe from frost and leave the ground at liberty, without suffering any deterioration in quality whatever. The potato clumps should also be examined to see whether the potatoes are sufficiently protected in case of severe frost. Last winter a very considerable quantity was rendered unfit for use through being exposed to the effects of frost. The soil should not be less than fifteen inches in thickness, but an additional three or six inches will be preferable. The stores of roots should shortly undergo a thorough examination, and any roots that are decayed in any way removed from those which are perfectly sound.

THE GARDEN GUIDE FOR DECEMBER.

FLOWER GARDEN.—All ground work should be pushed on as fast as circumstances will permit, to enable it to get thoroughly settled before spring. This is a very good time to form fresh lawns, and lay down turf. Work of this kind is frequently left until spring, and generally entails an immense amount of labour in watering, to keep the grass alive; whereas, if laid down at this season of the year, it would be thoroughly established before the weather is hot enough to affect it. Deciduous trees and shrubs may be planted during the early part of the month with reasonable chance of success, but unless the planting can be finished quickly, it will be well to

leave it until the spring. All unoccupied beds and borders should be dug up, and the surface left rough to enable the weather to act upon it. Now that the trees have all shed their leaves, clear the shrubby borders, to prevent their being blown about with every gust of wind, and littering the walks and grass-plots. Protect tea and other tender roses with dry litter or fern; but where they are growing in a prominent position, this system of protection will be objectionable, and, instead of adopting it, take the plants up carefully, and lay them in by their heels in a sheltered corner, and cover with litter or fern. These can be planted again early in March, and will, if handled carefully, scarcely feel the shift.

KITCHEN GARDEN.—Draw a little earth to the Beans and Peas now peeping through the ground, and keep a sharp look-out for mice, which are very busy just now, and trap them directly they make an appearance. In very sharp weather, cover Celery with long litter, for it soon rots in the centre after it has been frozen. Take up a supply of Jerusalem Artichokes and Parsnips for immediate use, and place in the root-house, and cover with dry sand or soil; but the principal bulk should remain in the ground for the present, as they are firmer, and eat more mellow than when taken up at the beginning of the winter, and stored in the root-house. Frosty mornings must be taken advantage of for getting manure on vacant quarters; and when the weather is unfavourable for out-door work, overhaul the root-stores, and remove all that exhibit the least signs of decay from contact with that which is sound.

GREENHOUSE.—Many amateurs lose large numbers of plants, simply because they crowd the house as full as it will hold, and then water in the same careless manner as in summer, and fancy, because the weather happens to be cold, that the ventilators must be kept close. To keep the usual stock of greenhouse plants in health during the winter, maintain a comparatively dry atmosphere, which must be regularly changed by opening the ventilators on all favourable opportunities; and if there is any danger of the temperature falling too low, apply a little fire-heat during the time the ventilators are open. To economize fuel as well as for the sake of the health of the plants, cover the glass with thick canvas, mats, or frigidomo, during very sharp frosts, to prevent the escape of the heat. Water early and choose a clear, bright day for that purpose. It will be better to let the plants be dry for a day or two than water them in damp weather. At the same time, the soil in which heaths and other plants of like character are potted must not be allowed to get dust dry. Cyclamens, and single and double Primulas, now coming into flower, must have the warmest corner the house affords. Look sharp after green-fly, and fumigate immediately it makes its appearance. Remove every decayed leaf, and keep everything as clean and sweet as circumstances will permit.

FRUIT GARDEN.—Pruning of all fruit-trees, excepting the Peach and Nectarine, must be commenced in earnest. Lay in no more wood than is really required, for nothing is gained by over-crowding, but much lost. Give Apple-trees infested with American blight a thorough washing with strong brine, but avoid damaging either

fruit-buds or wood-buds. See that trees planted last month are properly staked, and cover the soil immediately over the roots with six inches of half-rotten stable manure, to prevent the frost loosening it.

STOVE.—The temperature advised for last month will be suitable for this. Nothing must be done to excite any of the occupants unnecessarily, just now, or the summer growth will be poor and weak in consequence. Attend carefully to Ferns, especially the delicate kinds, like the *Gymnogrammas*, *Nothochlœnas*, and *Cheilanthes*, the fronds of which soon decay, if wetted frequently, or exposed to a damp atmosphere. All kinds should be kept as quiet as possible. Sometimes the close-growing *Selaginellas* will rot at this season, and the best way to stop its progress is to clear away the decayed portion, and then sprinkle the plants with dry sand, and place them in a dry position near the glass for a short time. The necessary precautions must, however, be taken to prevent the tender growth flagging.

FORCING.—See directions for last month. Rhubarb, Seakale, and *Asparagus* may now be lifted, and introduced into heat; the first must be taken up without the roots being broken about, and with as much soil adhering to them as possible. The roots can be placed in any out-of-the-way corner of the stove or forcing-house. Seakale must be forced in the dark, but *Asparagus* should be forced in a frame, close to the glass, and receive abundance of air to develop the flavour. Sow French Beans in small pots, and shift into larger ones as soon as they are well rooted. Place near the glass to keep them dwarf and stocky.

PITS AND FRAMES.—Violets must be protected in cold and frosty weather, but draw the lights off entirely whenever the weather will admit of its being done with advantage. Auriculas, Carnations, Pansies, Pinks, and Picotees, must have a free circulation of air about them at all times, excepting when the weather is very damp or frosty. A few degrees of frost will not do so much injury as a stagnant atmosphere. The early-potted Hyacinths and other Dutch bulbs must be uncovered at once, and exposed to the light. Remove successive batches to the forcing-pit, the temperature of which should now average 60°. Syringe flowering shrubs overhead slightly once a day, to enable the buds to push strong.

HORTICULTURAL NOTES.



ON all sides the Chrysanthemum season of 1871 is justly pronounced to have been considerably below the average of previous years. This in a measure was owing to the cold and uncongenial weather experienced during the early part of the summer, which prevented the plants making much progress until the summer was too far advanced to admit of a thorough maturation of the wood. None of the exhibitions have been quite up to the mark, but at the majority a few fair specimens and some grand blooms were staged. The best cut

blooms were those shown at Stoke Newington by Mr. James, Mr. Rowe, and others. The best specimen plants of both large flowering and pompone varieties were staged at the exhibition of the South Essex Society, held at Stratford. The exhibitions of this society have long been celebrated for the magnificence of the specimens of the large-flowering varieties, but this year it also excelled in the specimen pompones, and the specimens exhibited by Mr. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, have not been surpassed for many years past. The plants were not only large and well flowered, but the blooms were extra fine and remarkably fresh. Usually the finest specimens of the latter class are met with at the exhibitions of the Brixton Hill Society, but this year they were smaller than usual. The exhibition at Brixton Hill, on the whole, was, however, very good, and the specimens presented in the class for six large-flowered varieties by Mr. Weston, gardener to D. Martineau, Esq., Clapham Park, were the best plants of a medium size exhibited during the present season. Ornamental-leaved plants, Chinese Primulas, Ferns, and other plants, as well as fruit were shown, and the result was a most interesting and attractive exhibition. The Liverpool Chrysanthemum and Fruit Show was, with respect to the Chrysanthemums, decidedly below the average, but the grand display of fruit and miscellaneous plants was more than sufficient to satisfy the visitors, and make it a great success. One of the most important features of the show was the collections of Poinsettias exhibited by Mr. Biggs and others, and it may be said that this brilliant subject was never exhibited in better condition. The Woolwich Society consists almost exclusively of amateur growers, yet it has had a very fine exhibition, considering that Chrysanthemums only were exhibited. The speciality of the show was the standard specimens, the specimens of the large-flowering varieties being the finest ever exhibited. Mr. Adam Forsyth, of the Brunswick Nursery, Stoke Newington, who is now the only trade representative of this noble autumnal flower, has had, according to annual custom, a very fine display in the large show-house adjoining the road. The plants are grown without any stopping or training whatever, excepting the support afforded to the main stem by a single stake. Only one flower is allowed to each shoot, all but the terminal bud being removed as soon as they were advanced sufficiently to admit of its being done without injuring the one to be left. The results are plants bearing flowers of the finest possible quality, and of a form most convenient for the decoration of the conservatory. What is done by Mr. Forsyth may be done in a private establishment, provided the time can be spared during the summer for attending to the plants. The specimens of which the exhibition consists in Mr. Forsyth's nursery are grouped on the floor in the centre of the house, and on the side stages, and the immense number of blooms present a most brilliant effect. Owing to the lateness of the season, the majority of the plants will remain in good condition for a short time after the appearance of these notes, and as the exhibition is open to the public, those who are interested in the matter will do well to pay it a visit without any undue loss of time.

Instead of giving the names of the varieties in the winning stands of cut blooms at the various exhibitions, I will enumerate a few of the most striking met with in a critical examination of Mr. Forsyth's unrivalled collection a few days since. In making the selection, preference was given to such varieties as succeed well with ordinary management, and are best adapted for the embellishment of the conservatory.

Amongst the large-flowered varieties *Duchess of Roxburgh*, a fine flower of large size and fine finish; *Mr. W. H. Morgan*, a variety in the way of *Jardin des Plantes*; *Miss Mary Morgan*, clear delicate pink and fine form; *Mr. George Haskin*, warm peach, a bold handsome flower; *Plenipo*, rosy purple, large and good; *Rotundifolia*, pearly white, changing to blush as the flowers acquire age; *Alfred Salter*, delicate pink, pleasing and effective; *Antonelli*, bronzy orange; *Aurea multiflora*, pure yellow; *Bella Donna*, lilac, large, and showy; *Beverley*, white; *Golden Beverley*, yellow, both first-rate; *Bronze Jardin des Plantes*, deep reddish-bronze hue; *Dr. Sharpe*, a very distinct and beautiful variety, with reflexed flowers of a deep crimson hue; *Empress Eugénie*, delicate rosy lilac; *General Slade*, bronzy red tipped with orange; *General Bainbrigge*, buff shading to amber; *General Hurlinge*, deep reddish purple; *Gloria Mundi*, golden yellow, very fine; *Golden Trilby*, clear yellow; *Guernsey Nugget*, primrose-yellow; *Isabella Bott*, delicate white tinted rose-lilac; *Jardin des Plantes*, orange-yellow, fine and constant; *Lady Hardinge*, delicate rose; *Le Grand*, rosy peach, a pleasing shade of colour; *Mr. Brunlees*, deep red tipped with orange-yellow, bold and constant; *Mr. Cullenford*, deep purple, a fine variety, not grown so extensively as it should be; *Mr. Gladstone*, reddish chesnut, valuable, although there are several others of a similar hue; *Mrs. George Rundle*, pure white, flowers of medium size, but of the finest possible form; *Prince of Wales*, deep purple; *Prince Alfred*, rosy crimson; *Princess Beatrice*, delicate rosy pink; *Princess of Teck*, pure white; *Princess of Wales*, white, tinted with delicate rose; *Queen of England*, blush-white; *Rev. J. Dix*, orange-red; *Sir G. Bowyer*, a distinct shade of purple; *Venus*, pink-shaded lilac; *Virgin Queen*, white, and *White Globe*, white.

The Japanese varieties are now steadily gaining ground in public favour, as they well deserve, for they are all of the highest value for conservatory decoration; for with a good selection a plentiful supply of *Chrysanthemums* may be had from the beginning of November until the end of December.

The dwarf pompone varieties are most valuable for conservatory decoration. They are neat in growth, and very easily managed. The following selection represents all the different shades of colour, and includes none but which are distinct and effective:—*Andromeda*, *Bob*, *Cedo Nulli*, *General Canrobert*, *James Forsyth*, *Golden Cedo Nulli*, *White Trevenna*, *Salamon*, *Mrs. Dix*, *Lizzie Holmes*, *Rose Trevenna*, *Adonis*, *Lilac Cedo Nulli*, *Atala*, *Brown Cedo Nulli*, *Sainte Thais*, *Surprise*, *Calliope*, *Mrs. Hutt*, *Aurora Borealis*, *St. Michael*, *Daruflet*, *Brilliant*, *Madame Marthe*.

G. G.

TO CORRESPONDENTS.

EDGING PLANTS.—*A. G. B.*—The following are the most desirable of the plants suitable for forming divisional or marginal lines in the flower-garden during the summer months:—*Achillea umbellata*, grey, dwarf, and bushy, marginal or divisional lines. *Achyrocline Saundersoni*, silvery, dwarf, and dense marginal lines. *Arabis alpina variegata*, pale yellow variegation, dwarf and compact, marginal lines; *A. lucida variegata*, yellow variegation, dwarf and slow-growing, edgings to very small beds only. *Centaurea argentea plumosa*, silvery, neat, marginal or divisional lines; *C. gymnocarpa*, grey foliage, tall centres or edgings to large beds; *C. ragusina*, white foliage, centres and second or third rows; *C. ragusina compacta*, dwarfer than the preceding, and the best for marginal lines. *Cerastium Biebersteini*, silvery, dwarf and spreading, edgings; *C. tomentosum*, dwarfer than the preceding, and the most useful for edgings. *Chrysanthemum Sensation*, yellow variegation, second rows or marginal lines. *Cineraria acanthifolia*, white, upright, but compact in growth, edgings or divisional lines; *C. asplenifolia*, silvery grey, compact, useful for first, second, or third rows; *C. maritima*, grey, robust, best adapted for back rows and centres of beds. *Coprosma Baueriana variegata*, creamy variegation, very effective edgings. *Dactylis elegantissima*, white, tall and straggling, edgings for large beds only. *Echeveria glauca metallica*, glaucous green, best adapted for forming edgings to large beds; *E. metallica*, reddish brown, centres or edgings to large beds; *E. secunda*, green, red margins, edgings for large or small beds; *E. secunda glauca*, glaucous white, invaluable for edging purposes. *Euonymus flavescens*, chrome yellow foliage, rich and effective, first, second, or third rows; *E. japonicus aureo variegatus*, yellow variegation, first or second rows; *E. radicans variegatus*, white variegation, very dwarf edgings. *Fuchsia Golden Fleece*, yellow leafage, dwarf and compact marginal lines; *F. Golden Treasure*, similar, but stronger in growth than the preceding. *Gnaphalium tomentosum*, white, neat and compact, suitable for first or second rows. *Lonicera aurea variegata*, yellow variegation, edgings to large beds. *Mesembryanthemum cordifolium variegatum*, pale yellow, dwarf, spreading; invaluable. *Polemonium caeruleum variegatum*, creamy white variegation, edgings to large beds. *Pyrethrum Golden Feather*, greenish yellow, compact, useful for all purposes. *Salvia officinalis aurea*, variegated sage, dwarf, compact, and effective. *Santolina incana*, silvery, dwarf, and close growing, marginal lines. *Sempervivum Californicum*, deep green, red tips, marginal or divisional lines; *S. montanum*, green, small, suitable for edging small beds only. *Senecio argentea*, white, dwarf, and compact, suitable for small beds; *S. incana*, similar to the preceding, forms neat edgings. *Stachys lanata*, greyish, suitable for edgings, long borders. *Teucrium polium*, greyish green, neat and useful for edgings. *Veronica Andersoni variegata*, creamy white variegation, compact, marginal lines. *Veronica candida (incana)*, greyish dwarf, marginal or divisional lines; *Vinca elegantissima*, yellow variegation, suitable for edgings to large beds only; *V. minor*, fol. var., dwarfer than the preceding, and very effective.

MANAGEMENT OF GOLDEN BALM.—*S.*—This beautiful plant is at its best during April and May. In the course of June it becomes dull in colour and too strong in growth, and is sometimes eaten up by red spider. A pretty sure way of making a second display is to cut it down close about the 15th of June, and give it a heavy soaking of water a week afterwards.

B. H.—The flowering of the plant referred to at such an early date is rather unusual. There are good and bad varieties, as in every other class of plants.

BUILDING VINERY AND GREENHOUSE.—*J. R. Crewe.*—An angle of 30° from the base of the rafter will be quite sufficient slope for the roof of the vinery. A semi-span would materially diminish the height of the back wall, and the vinery would match better with the greenhouse. The short lights should be about three feet, and the vines can be trained down them.

In houses of the dimensions mentioned it will be difficult to set apart any part for propagating purposes; numbers of cuttings may however be struck in the spring in the vinery with the aid of hand-glasses. We have had no experience with the houses mentioned. You must not have a very high front wall.

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