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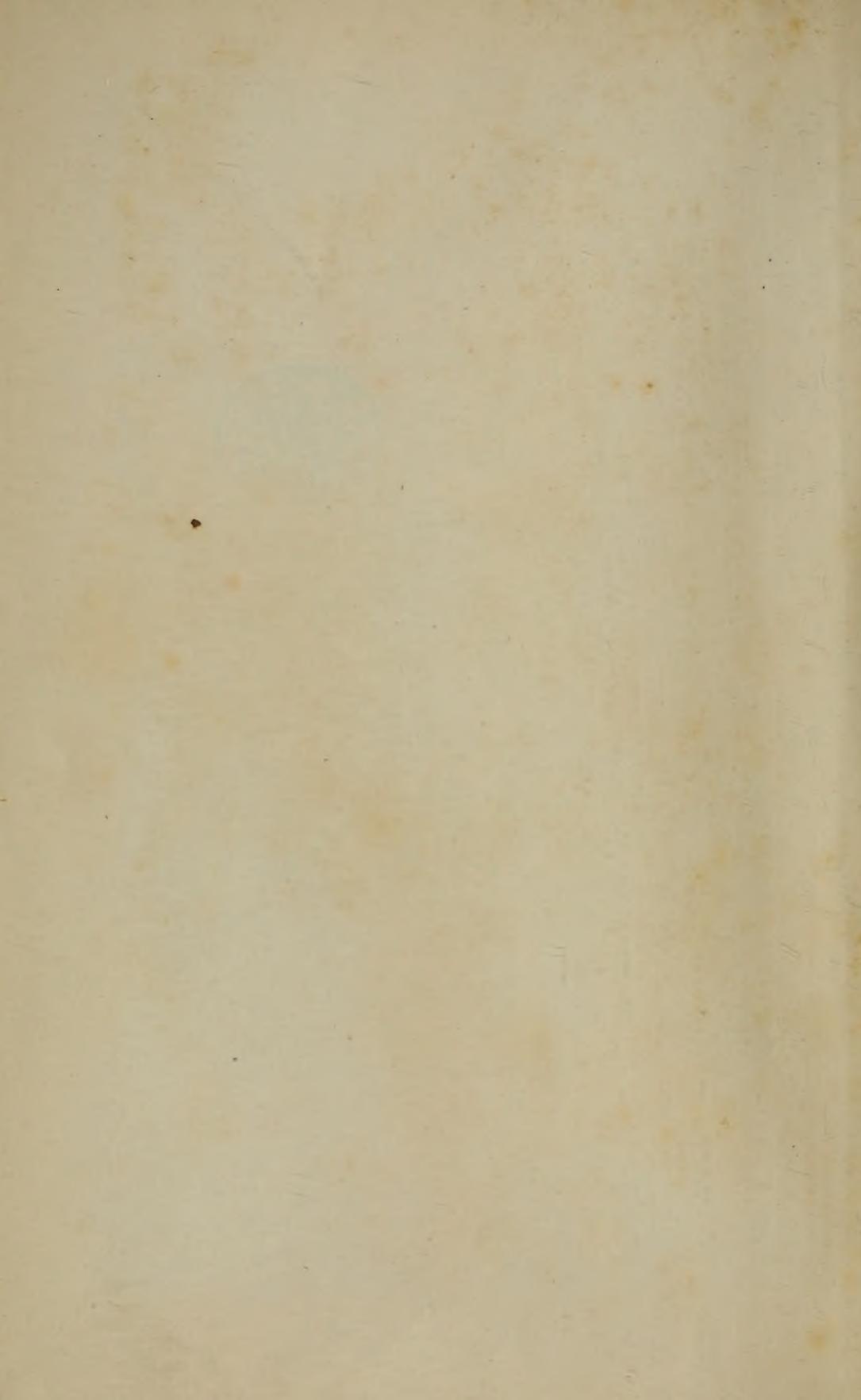
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ECHINOPSIS PENTLANDI.

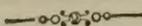
THE
FLORAL WORLD
AND
GARDEN GUIDE.

Illustrated with Coloured Plates and Wood Engravings.

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

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1875.  
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LONDON:
GROOMBRIDGE AND SONS,
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ERNEST HUNTER, F.R.S.

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LONDON:

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Shoe Lane, E.C.



THE FLORAL WORLD

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GARDEN GUIDE.

GLOBULAR CACTI.

(With Coloured Illustration of *Echinopsis Pentlandi*.)

BY GEORGE GORDON.



THE beautiful *Echinopsis Pentlandi* represents a class of succulent plants well adapted to the requirements of amateurs who have very little convenience for plant-growing. Some few of the species of the several genera thrive remarkably well in a sunny window, whilst all which do not positively require the temperature of the plant-stove may be grown in a sunny greenhouse, and a rather large collection may be kept in a very small structure. They are exceedingly well adapted to the requirements of amateurs resident in suburban districts, and who have one of the miniature glass houses which are dignified by the builders with the title of conservatories. When these houses have a south aspect, it is better by far to furnish them with plants of the character of the one here figured, and kindred subjects, than with soft-wooded plants like geraniums, fuchsias, and petunias, which require constant attention to keep them in health, and free from red spider, green-fly, and other insect pests, which are not slow in establishing themselves upon plants in an unhealthy state, whether brought on by neglect or mismanagement. The globular cacti, and other succulents suitable for associating with them, will not remain long in a healthy condition, if subjected to mismanagement or neglect, but they do not suffer in anything like the same manner as the soft-wooded plants if the amateur forgets to water them when necessary, or to ventilate the house on a bright day. Frequent repetitions of neglect would, of course, tell upon them, but forgetting to open the ventilators once in the course of the summer would not result in roasting them up, as would be the case were the house filled with soft-wooded things.

To cultivate a collection is easy enough, provided the practices which prevail in many gardens of potting them in a mixture consisting almost exclusively of brick rubbish, and other starving stuff, and keeping them dust dry at the roots during the winter, are not adopted. Although they inhabit the driest parts of the tropics, and are found in a thriving state in the most sterile soils, they

succeed when under cultivation more satisfactorily if potted in a generous compost. It is, no doubt, wise to follow nature to a certain extent, but in the case of the cacti it must not be forgotten that they are at times deluged by the heavy rains, and that they have a chance of sending their roots down to a considerable depth below the surface; and, in all probability, do not suffer so severely from drought as in a small pot. Whether this is the case or not, it matters but little to us, for it concerns the cultivator more to know that they succeed best in a generous compost, and with rather liberal supplies of water, even during the winter season. One of the principal points in their culture is to place them in a dry airy house, quite free from drip, and in a sunny situation. They should also be placed near the glass, for when deprived of the full share of light, by reason of their occupying a position a considerable distance from the glass, or being overshadowed by tall-growing subjects, their condition will not be quite satisfactory. They cannot be exposed to too much light or sunshine, and their culture should not be attempted in houses having a thick canopy of foliage formed by climbing plants covering the roof.

To keep them in health, they require repotting annually, and this should be done towards the end of March or beginning of April, as they then have the summer season before them in which to make their growth. The best results are obtained by turning them out of their pots, carefully removing the greater portion of the old soil, and then repotting them in a fresh compost. A mixture of equal parts fibrous peat and turfy loam, and a liberal sprinkling of sand, forms a most excellent compost. The pots must be well drained, the new soil worked nicely amongst the roots, and the base of the plant be nearly on a level with the rim of the pot. Those who are unaccustomed to handle them should not reduce the old ball of soil to more than one half, because of the risk of injury to the roots when all the soil has been removed. When the repotting is completed, remove them to a pit facing the south, in which a mild hotbed has been made up. In this they will, provided they are kept rather close, and supplied moderately with water, push out new roots, and commence to grow away freely. They may remain in the frame for a period of two or three months, as may be the most convenient to the cultivator, but the longer period is the most preferable, as affording them a better opportunity for becoming thoroughly established, and completing the season's growth. Those who have been accustomed to the starving system will be quite surprised at their rapid progress and healthy appearance, when grown as here directed. Those who have not the convenience of a frame may insure very good results by placing them in the greenhouse immediately they are potted, and keeping them close and warm until they have begun to make new roots. There will be no difficulty in affording them sufficient warmth, as the sun will be fast acquiring power at the period advised for potting, and by keeping the house rather close, it will be possible to utilize the sun-heat to the fullest extent possible.

With reference to watering the globular cacti, it must be said

that they require liberal supplies from the time they are nicely established after the annual shift, until the end of August, when more moderate supplies will be found the most conducive to health. Indeed, from the early part of September until after they are repotted, it will suffice to keep the soil in a moderately moist state. It will, however, be well to state that whenever a fresh application of water is required, sufficient should be applied to thoroughly moisten the soil.

The globular and other cacti are grown by very few nurserymen, and there will most probably be some difficulty in purchasing any desired kind. Several of the most popular and free-growing species are to be met with at the dealers in Covent Garden, who are mostly supplied by M. Pfersdorf, of South Row, Kensal New Town, who is undoubtedly the largest trade grower in this country. There is a splendid collection in the botanic gardens at Kew, which readers interested in this class of plants should, if they have the opportunity, leisurely inspect before purchasing.

The undermentioned species comprise some of the best in cultivation:—*Echinopsis formosa*, *E. Schelhasi*, *E. Forbesi*, *E. Eyriasi*, *E. Pentlandi*, *E. Bridgesi*, *E. ornatus*, *E. texana*, *E. pectiniferus*, *E. Zuccariniana*, *E. Decaisneana*, *E. Linki*, *Echinocactus electracanthus*, *E. Pfeifferi*, *E. Stainesi*, *E. platycerus*, *E. Echidne*, *E. tetraziphus*, *E. helcophorus*, *E. ingens*, *E. Pfersdorfi*, *E. hystriacanthus*, *E. cornigerus*, *E. Scopa*, *Mammillaria minima*, *M. phymatothele*, *M. bicolor*, *M. acanthophlegma*, *M. stella aurata*, *M. clava*, *M. crucigera*, *M. rhodantha*, *M. Parkinsoni*, *M. Scheidiana*, *M. spinosissima*, *M. Wildiana*, *M. longimamma*, *Melocactus Grengeli*, *M. macranthus*, *M. polyanthus*, *M. pyramidalis*, and *M. Sellowi*.

PROPAGATION OF ROSE-TREES BY ROOT-CUTTINGS.



THE following method is recommended in the *Bulletin* of the Horticultural Society of Montdidier:—

Some time in December take up your free-footed rose-trees, or, without taking up, lay bare the roots of the most vigorous subjects amongst them, so as to take off a few of the larger roots. These pieces of root, divided into segments each two inches long, should be set in pots, in peat-earth, somewhat moist, but not damp.

Placed in a temperate-house or under a glass frame, the roots will keep sound, and most of them will put out small whitish rootlets. In spring, the root-cuttings already furnished with fibres should be set, singly or several together, in 7 or 8 Cent. (2 or 3-inch) pots, and close to the surface of the soil.

Bottom-heat of 12° or 15° Cent. (54° to 59° Fahr.) will greatly assist them in striking and throwing up one or more shoots from their upper surfaces.

Free-footed or own-root rose-trees may thus be raised from root-cuttings. This method was discovered by chance not long since: it might have been adopted long ago.

THE AMATEUR'S VINERY.—No. I.

BY THOMAS TRUSSLER,

Nurseryman, etc., Edmonton, N.



GRAPE-CULTURE has now become so general in the gardens of amateurs, that a few practical remarks, adapted especially to the requirements of this class of cultivators, will perhaps be useful in putting them on their guard against practices which lead to failures. To build and plant a vinery is easy enough, when you know the way, so also is the pruning and general management of the vines, but if the intending cultivator is unacquainted with the proper steps to take, it is just possible that he will take the wrong ones, and in the end experience a failure more or less complete. I am not unmindful of what has been already done by Mr. W. Cole, and other first-class grape-growers, in extending a knowledge of grape-growing through the pages of the *FLORAL WORLD*, and upon this occasion I shall confine my remarks to those matters with which the amateur should be thoroughly acquainted. I shall be as brief as possible, and hope in the course of my observations to show that good crops of grapes may be had with a very small amount of labour and skill. We will first speak of the

CONSTRUCTION OF THE VINERY.

The form of the vinery is not of so much importance as some grape-growers would have us believe. But it must be erected in a position that will admit of the vines enjoying a maximum amount of light, for if the sun can only shine upon the roof for an hour or so in the middle of the day, it will be useless to expect good crops. The lean-to form, as represented by diagrams Figs. 1 and 2, is undoubtedly the most simple. It is the most useful for the earliest crops, as the protection afforded by the wall is of immense service in maintaining the proper temperature when the wind is blowing hard from the north. It is also the best when the crops are required to hang until February or March, as it is possible to maintain a more equable temperature than in a span roof exposed to the winds from all quarters. Lean-to's are also suitable for late summer and autumn crops, and wherever a wall exists against which a vinery can be erected, they should have the preference to the span-roof. Span-roof vineries have certain advantages which must not be overlooked. They afford double the accommodation of a lean-to for about one-third of the expense, when the back wall of the latter has to be built, and owing to the light entering the house on all sides, there is not much difficulty in producing highly-coloured samples.

As a matter of strict economy, the roof of the vinery should be not less than fourteen feet in depth, because a less length of rafter is insufficient for the free development of the vines, and there is no material difference in the cost of building houses with ten and

fourteen feet roofs respectively. Sixteen feet is better than fourteen, although the latter will do very well. As a rule, the height of the houses should be equal to the width, as shown in the accompanying diagrams. Front lights are quite unnecessary; and as they add very materially to the cost of the house, they may be well dispensed

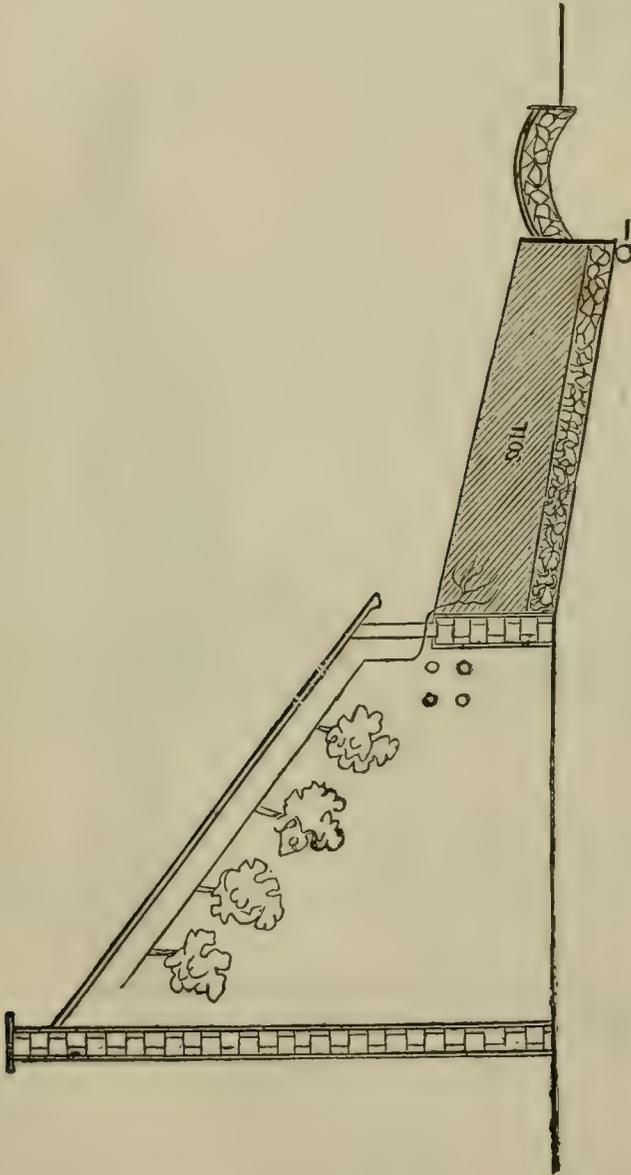


FIG. 1.—LEAN-TO VINERY WITH OUTSIDE BORDER.

with. The bottom of the rafters may rest on a plate supported by strong wooden uprights, as shown in Figs. 1 and 3, or on a plate fixed on the front, as in Fig. 2. When wooden uprights are employed, for the space between the wall and the plate upon which the rafters rest, shutters of wood should be provided. These can be hung on

hinges, and be opened and shut from the inside or outside, but, as a rule, it will be found the most convenient to open them from the outside. When the rafters rest upon the wall, openings provided

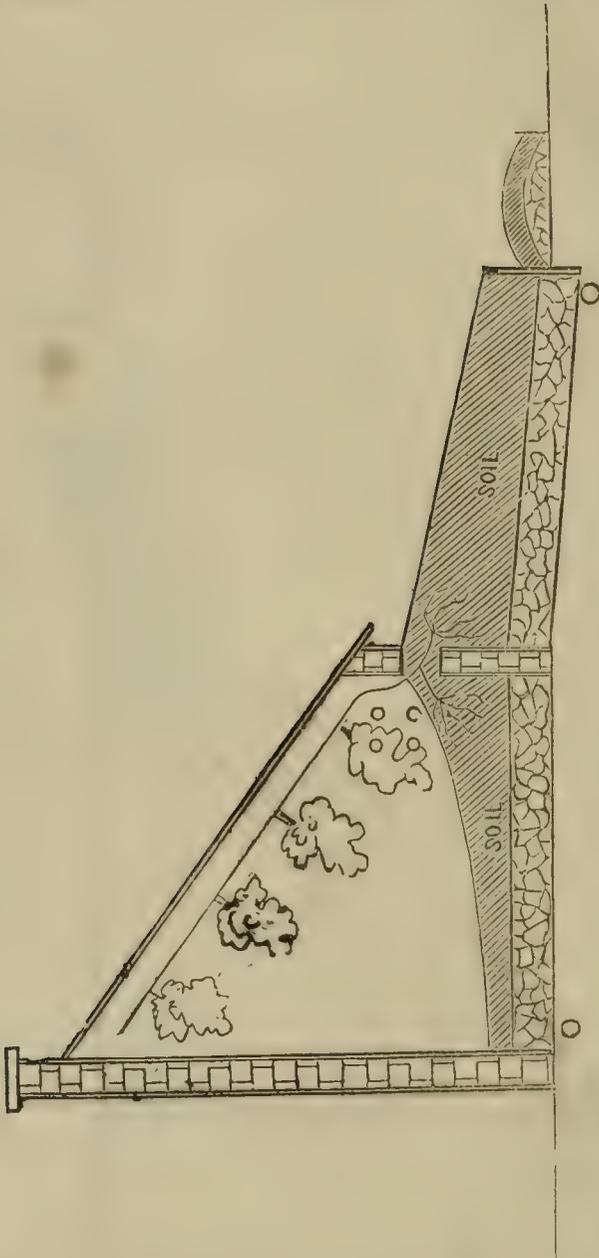


FIG. 2.—LEAN-TO VINEY, WITH BORDER INSIDE AND OUT.

with shutters will be required for ventilating purposes. The roof may be constructed with stout rafters and moveable lights, but fixed sash-bars, with moveable lights at the top of the roof, do quite as

well, both as regards cheapness and utility. They can, therefore, be the most strongly recommended. For the purpose of affording additional strength to the roof when sash-bars are employed, a rafter four inches deep by three inches wide must be fixed at every six feet, and they and the bars should be connected together with an iron tie-bar running along the middle of the roof. This is simply an iron bar an inch and a-half in width and a quarter of an inch in thickness, and has screw holes at the same distance apart as the rafters and bars. The latter, it may be useful to add, should be two inches in depth and one in width, and be secured at the top to a plate of wood fixed to the wall. In cases where the border is made

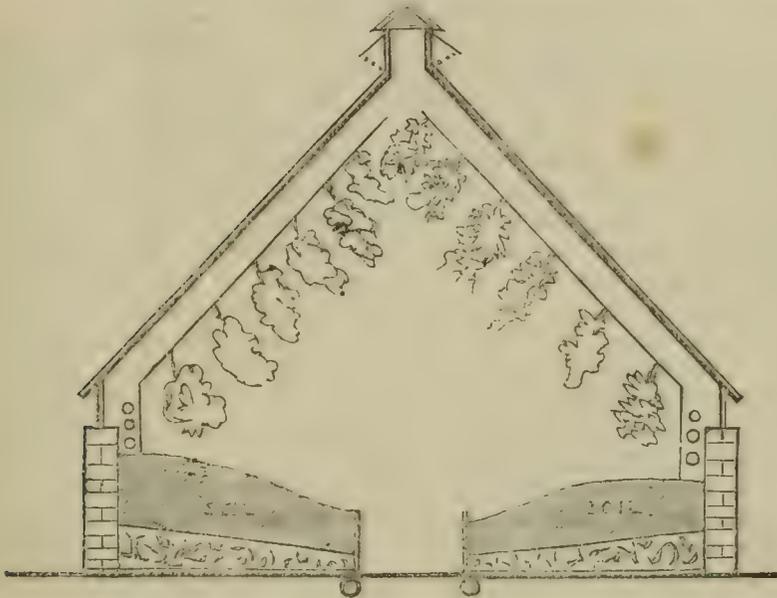


FIG. 3.—SPAN-ROOF VINERY, WITH INSIDE BORDERS.

partly within, and partly without, as represented in Fig. 2, the front wall should be built upon arches to allow the roots to extend freely in both directions. In all other cases it should, of course, be quite solid.

PREPARATION OF THE BORDER.

As vines frequently become unhealthy, and the grapes "shank," or refuse to colour, when the roots run down into a cold and uncongenial subsoil, the proper steps must be taken to prevent their extending below the border. The latter may be partly below and partly above the surface, as in the diagrams, or it may be altogether below the surface. This point must be determined at the commencement, so as to have the foundations at the proper depth, without at the same time wasting money in having them deeper than is really necessary. It will serve as a guide if it is at once said that the depth of the soil should be three feet, the drainage

nine inches, and the concrete three inches, making altogether four feet.

When the soil is taken out, the bottom of the excavation should be made quite level and firm, and then a layer of concrete of the thickness mentioned above, spread over it, and made quite level on the top. The concrete is prepared by incorporating together newly slaked lime and rough gravel, and working it up into the consistency of mortar. After this is spread over the surface, allow it to become dry and hard, and then proceed to fill in with rough pieces of stone or broken bricks to a depth of nine inches, to form a drainage for carrying off the superfluous moisture quickly. As an additional precaution against the border becoming waterlogged, a pipe drain may be laid down, as shown in the diagrams.

Over the rubble lay thin strips of turf, or some loose material such as partly decayed manure, to keep the soil in its place until it has become consolidated somewhat. The compost most suitable for grape vines may be prepared by incorporating together six parts good turfy loam taken from an old pasture or common, to a depth of nine inches, two parts of lime rubbish, and one part of partly-decayed horse-droppings. The addition of one part, or even less, of crushed bones to seven parts of the mixture will be an advantage, but they may well be dispensed with, as good grapes can be grown without them. It must also be borne in mind that if good turfy loam cannot be obtained without difficulty, good garden soil may be used instead, and one-third more lime rubbish, and double the quantity of horse-droppings employed. It will also be well to add, that if the soil is comparatively light, the concrete and drainage may also be dispensed with.

The width of the border may range from eight to fourteen feet, but the proper width of the border is shown in the figures of the houses which accompany these remarks. It remains to be said that the soil should be allowed a fortnight or so to settle before the vines are planted.

PLANTING VINES.

We now come to the question of planting the vines. Amateurs who have to purchase vines should plant when they are at rest. Summer planting has its advantages, and may be adopted with success where the vines are ready to hand. But when the vines are at rest they can be sent home from the nursery without any risk of their being injured, and planted when most convenient. In cases where the border is outside, as in Fig. 1, the vines must be planted outside, and the canes brought through the wall in the manner indicated. In other cases they should be planted inside, between the front wall and the hot-water pipes. Medium-sized vines cost from three shillings and sixpence to five shillings each. As soon as the border is ready for planting, turn them out of the pots, remove the crocks, and then loosen the roots round the outside of the ball, and in filling in the soil about them, take care to spread them out carefully, and to press the soil firm. Three inches or so of the cane should be buried, to encourage the production of new roots from it. After the planting is completed, prune them

back to within two joints of the ground level, or the point of their entering the house, according as the case may be. They should be planted three feet apart, and for a house thirty feet in length, which would be a serviceable size, ten vines will be required.

SELECT GRAPES FOR THE AMATEUR'S VINERY.

Where there is only one house, and it is desired to have a supply of grapes extending over as long a season as possible, the following sorts, in the proportions here given for a house of the length above-mentioned, will be found the most suitable; namely, five *Black Hamburg*, two *Buckland Sweetwater*, and three *Black Prince*. Houses forty or fifty feet in length may have a division in the centre, and one end be planted with *Black Hamburg* and *Buckland Sweetwater*, for use early in the autumn, and *Alicante* and *Lady Downes* for winter use. The *Buckland Sweetwaters* should be planted at the rate of two to every five *Black Hamburgs*, and the other two sorts in about equal numbers. By having one house divided into two compartments, or two separate structures, a supply of the finest grapes may be had from the beginning of August until the following March without forcing the vines. *Lady Downes* keeps so well that it may be had in excellent condition until April, if it is so desired.

THE SNOW PLANT OF THE SIERRAS.



ONE of the grandest objects, says the *San Francisco Bulletin*, which meets the eye of the traveller in our mountains is the exquisite plant, the Snow Plant of the Sierras — the *Sarcodes sanguinea* of John Torrey, the botanist. It is an inhabitant only of the higher Sierras, being rarely found below an altitude of 4000 feet, and its glorious crimson spike of flowers may be seen early in May forcing itself through the snow, which, at that period, clings about the sides of our Pine forests. The portion of the plant which is visible above the soil is a bright rosy crimson in colour, and presents the very strongest contrast to the dark green of the Pines and the shimmer of the snow. Its root is succulent, thick, and abundantly free of moisture, attaching itself to the roots of other plants, principally to the species of the Pine family. Hence it is among those curious members of the vegetable world which are known to botanists as parasites, and is consequently entirely incapable of cultivation. The deer are extremely fond of it, and it is not an uncommon circumstance to find a number of the plants uprooted and robbed of the fleshy part of their underground growth by these animals. It belongs to the natural order *Orobanchaceæ*, and is met with through the whole of the Sierra region, becoming rarer as we approach the south.

ZONAL PELARGONIUMS FOR POT CULTURE.

BY JOHN WALSH.



NOW that Zonal Pelargoniums are so extensively grown for the decoration of the conservatory, I feel assured that a few remarks on the varieties best adapted for that purpose will be of considerable value to those who do not enjoy the same facilities for observation as myself. To grow the commoner kinds in pots for decorations is a waste of force, and the selection of varieties for bedding and for pot culture must be conducted on different principles. In the former case a profusion of bloom is of first importance, but in the latter, quality is of more importance than quantity; and those having flowers of good form are alone suitable. There is no difficulty in obtaining varieties of the highest degree of excellence, for they are now abundant and cheap. In remote districts there is, of course, considerable difficulty in ascertaining which are the best in the several shades of colour, for specimens at exhibitions seldom afford the desired information, as a period of several years is taken up in the production of a specimen, and the variety consequently becomes old, and in many instances superseded, by the time it is exhibited. It may also be said that the best varieties are not always taken in hand at the commencement, and that they are frequently exhibited for five or six years consecutively. The varieties which I shall recommend have been selected from a collection comprising between five and six hundred sorts, and they may in every case be considered the finest in the respective shades of colour. There are many others exceedingly beautiful, and, when well grown, present a most attractive appearance; but they are all inferior in some way or other to those which will be enumerated.

Let us first of all take the varieties representing the various shades of red, scarlet, and crimson. *Richard Cour de Lion* is grand; the flowers are of fine shape, the truss large, and the colour brilliant scarlet. *Rienzi* has fine circular flowers, nearly three inches in diameter, a good truss, and the colour is a most brilliant scarlet. *Corsair* is, perhaps, the best of the scarlets, as it is wonderfully bright, very neat in growth, and the large well-formed flowers are produced in great profusion. This *must* be had. *Mr. Stanley* is of a dull orange red, and its flowers are produced in immense trusses; it forms a capital contrast to the dark varieties. *Jessie* belongs to the nosegay section, but the flowers and trusses are so large and fine, and the colour—deep crimson—so rich, that it is first-rate for pots. It is in the way of *Wellington*, but better. *De Lesseps* has bright scarlet flowers of fine form, and can be commended for its brilliant colour and fine quality. *A. F. Barron*, like the preceding, has large flowers of a dazzling scarlet. *Harry King* is remarkable for the fine form of the flowers, the immense size of the trusses, and the deep rich scarlet colour; the flowers have a large pure white eye. *Peter Selby* produces immense trusses of reddish scarlet flowers, and is very attractive; in habit it is very

robust, and therefore especially adapted for large bushy specimens. *Arico* differs from the whole of the preceding in having flowers of a bright orange hue, and is alike remarkable for high quality and distinctness. *Cannell's Dwarf* also has red orange flowers, but they are of a redder tone than the preceding.

Turning to the varieties with purple and blue-tinted flowers, we have several of great beauty. *Nelson* is one of the best, for its flowers, although not quite up to the standard, are produced in splendid trusses. *Mr. Chandler* quite surpasses *Iunthe*, which has hitherto been the best of the "blue" geraniums, for it has better shaped flowers, and the blue tint is more distinctly developed. *Mrs. Turner* is one of the best in the section, for the colour is a glowing purple-crimson. *Heartsease* is a little gem; it is dwarf, and produces a profusion of blue-tinted flowers in neat trusses; it should be in every collection. *Dr. Sharpe* may be considered a first-class acquisition; the flowers are of good form, and of a glowing purple-crimson.

Amongst those with pink flowers, and of which *Christine* and *Blue Bell* may be mentioned as types, we have several most lovely varieties for pot culture. *Master Christine* still maintains its reputation as one of the very best for pot culture, with rose-pink flowers; it is dwarf, produces very freely fine trusses of flowers, and, properly prepared, will bloom freely during the winter. *Madame Rendatler* is very similar in habit and colour, and the flowers are of fine form; this is, as yet, but little known, but the colour is so pleasing, the flower of such fine form, and the habit so good, that in a very short period it will become very popular. *Rose of Allandale* is stronger in habit, and has flowers of a different shade of pink to the foregoing, and is in every way first-rate. *Mrs. Musters* belongs to the nosegay section, and has flowers of a pleasing shade of lilac pink; the flower trusses attain enormous dimensions, and the effect produced by a fair-sized specimen is wonderfully good. *Mrs. Kent* is similar in habit to the preceding, and produces immense trusses, but the flowers are of a warmer tone of pink. *Mrs. Holden* also produces grand trusses of warm rose-pink flowers, and is wonderfully effective.

At the head of the list of varieties with white flowers having a pink centre, stands *Alice Spencer*, a robust grower, producing immense trusses of flowers of superb quality. *Remus* is very similar in style, but it is much smaller in every way, and exceedingly pretty. *Beau Villageois* is also a superb variety, with pink centre. *President Thiers* and *Truth* are two fine varieties with salmon-pink flowers, without a white margin, and can be recommended as the best in their class, although there are several others in the same way possessing considerable merit.

There are several fine white varieties; and the best for small plants is *White Clipper*, which, from its dwarf habit and free flowering propensities, will, no doubt, become extremely popular for bedding purposes as well as for pot culture. *Reine Blanche* is a fine white-flowered nosegay, well adapted for large specimens. These, and *Madame Vaucher* or *The Bride*, will be quite as many white varieties as will be required in any one collection.

Cuttings of any of the foregoing, struck at once in three-inch pots, and early in the spring shifted on as may appear necessary, will be in grand condition for decorative purposes next summer. They bloom superbly, and remain in splendid condition for a very considerable period, when grown in six or eight-inch pots. Those readers of the *FLORAL WORLD* who have no adequate idea of the extreme magnificence of a well-flowered collection of zonal pelargoniums, should, if possible, avail themselves of an early opportunity for inspecting the fine collection in Mr. Cannell's nursery at Woolwich. Several hundred specimens are grown in pots, and as the colours are most tastefully arranged, the effect is so good that it would be difficult to convey an adequate idea of it. The collection is, perhaps, the most comprehensive in the neighbourhood of London, and as such a large number of the varieties are grown to a specimen size, abundant opportunities are afforded for purposes of comparison and selection.

HOW TO PRODUCE AN ABUNDANCE OF MUSHROOMS.

BY GEORGE GRAY,

Head Gardener, Ewell Castle.



THE production of Mushrooms is attended with so few difficulties that there are no valid reasons why the amateur with accommodation of a very limited character may not engage in it. In making this assertion I am well aware an impression prevails that it is a work of great difficulty to grow mushrooms, and that considerable experience is needful before a thoroughly good crop can be insured. There can be no doubt failures do occur frequently, but they are invariably the result of a neglect of some of the rules necessary to be observed in prosecuting the work to a successful issue. There are, of course, rules to be observed, but they are simple enough to admit of their being readily understood by an amateur having some knowledge of garden practice. With a supply of short stable manure, and a spare shed or cellar, the amateur may with very little trouble insure a supply, extending over a considerable period, of mushrooms of fine quality.

The amateur who is anxious to supply his table with mushrooms, must reject all the fanciful methods of growing them as quite unworthy of his notice; for to insure supplies worth gathering a good bed must be made to grow them in. Tubs, boxes, or flower-pots, as have been recommended by people who know very little about the subject, entail an immense amount of labour, and the results are not often satisfactory. The bed to be of practical service should be four feet in width, and not less than ten feet in length. From a bed less than this the supplies will be more or less intermittent. It may be made up in any spare shed or out-house, or it may be made in the cellar. The latter is perhaps the most suitable for beds made up in the autumn, because the temperature will be quite high enough throughout the winter, and as it will not vary much even in severe weather, the

beds will continue in bearing much longer than is the case when they are in unheated structures on the ground level. Those who have no cellar may make preparations with the full assurance of reaping an ample harvest, for the beds can be kept warm even in the winter by means of a thick covering of short hay or straw and mats. The most suitable place of all for making up a bed is in a shed, through which a hot-water pipe passes on its way to one of the plant or fruit houses. In gardens where a shed of this kind exists, it should be taken advantage of for the purpose indicated, as they are in their way well nigh equal to a properly constructed mushroom house. Indeed, these sheds are so valuable in mushroom growing, that I would advise their being fitted up with shelves, formed of stout rough planks of wood, to admit of two or three beds being formed to insure a continuous supply.

A suitable place for the bed having been found, the next matter requiring attention will be the preparation of the materials of which it is to be formed. Mushroom beds may be made up with all horse droppings, or part horse droppings and part short litter. The mixture is the most economical, as a much larger bed may be had with the manure obtained from the stables in a given time, or from a certain quantity of manure purchased. The horse droppings and short manure must be shook out from the bulk and spread out somewhat thinly for it to dry a little to prevent its heating too violently when thrown into a heap. When the manure for a mushroom bed is collected day by day, it is very important to spread it out under cover, to prevent its exhausting itself before the bed is formed. When sufficient has been collected, it should be thrown together and turned over every other morning, for a period of ten days or a fortnight, to sweeten it.

The dimensions of a bed likely to yield good results has been already stated, but it may be of a greater or lesser width and length if more convenient; the depth must in all cases be about twelve inches. As each layer of manure is put in its place it must be well beaten with the back of the spade, for it cannot well be too solid. Sticks should be inserted in the manure and drawn out and examined occasionally to ascertain the heat. If at the end of a week the sticks are of a nice degree of warmth, the bed can be spawned; but if they feel hot, the spawning must be deferred until the heat begins to decline. It will be perfectly safe to spawn when the heat of the bed is about 75° , provided it is not increasing, and at the end of a week there will be no difficulty in determining this point if the test sticks have been examined daily, or a thermometer buried in the manure, and drawn out every other day,

Mushroom spawn is purchased in small cakes, similar in shape to bricks, by the peck or bushel. It may be had of any seedsman, and a peck will be ample to spawn a large bed. The spawn must be broken up into pieces about the size of a walnut, and dibbled into the bed at a distance of six inches apart; it should be buried about four inches below the surface, and the holes filled in. If the temperature is as low as 70° at the time of spawning, with no likelihood of its going higher, cover with an inch or so of fine dry soil; if 75° ,

wait for a week or so before covering with soil. In a few days afterwards, place a layer of worthless hay or other dry material over to preserve an equable temperature.

The bed must be maintained of a nice degree of moisture, but under no consideration must it be made too moist. When the materials are dry the spawn will not run, and no mushrooms will be produced; on the other hand, if kept too wet it will perish altogether. As a rule very little moisture will be required, but when water is applied, it must be used in a tepid state, so that it does not cool the bed. In gathering the mushrooms it is good practice to pull them up, provided it can be done without disturbing those remaining, as the stumps decay and afford a lodgment for grubs. When growing in clusters, as they frequently do, they must be cut off as low down as possible, the necessary care being taken to avoid injuring those remaining. The temperature of the structure should be maintained, if possible, between 45° and 50°, and the doors and windows be kept close. The length of time the beds remain in bearing differs considerably, and sometimes they cease to bear through becoming dry. Therefore when the mushrooms cease to make their appearance, examine the bed, and if it is dry, give it a moderate watering. In breaking up an old bed, a portion of the material containing a goodly proportion of spawn may be put by for spawning those made up subsequently.

A NEW MODE OF GROWING LILY OF THE VALLEY.

BY F. SANDER AND CO.,

Royal Herbs Seed Establishment, St. Albans.



LORTUNES are being built up on this humble plant, it employs thousands for several months in the year, in this and other countries; it is the most favoured of all the bulbous plants that come into Covent Garden Market, in the winter and spring months, and loaded with little green-tipped lamps of white, is undeniably a queen among flowers. As in many other cases, the demand has not only created a supply, but improved its quality, and extended its season. At one time, Lily of the Valley in plenty in May and June sufficed, now it is wanted from December to August. At first, too, any flowers and foliage were good enough, the perfume and the freshness of leaf and flower satisfied; now flowers and leaves alike have to be developed to the uttermost, to satisfy the new and growing demand for quality in both.

The resources of the plant, and the skill of the cultivator, have both been taxed to meet the new requirements. It will not do now to go to the native haunts of this sweet Lily, and dig up a barrow-load of roots for forcing as of old—neither is it enough that an old shady border in some out-of-the-way place is devoted to its cultivation. To have it in perfection, it must have a bit of the richest soil England can furnish, and be liberally nurtured with water during dry weather. Continental growers seem to have first discerned how amenable the plant was to high cultivation. They set about growing the Valley Lily, as they did the Hyacinth and other bulbs. By incessant sub-division, and annual

or biennial planting in rich soil, they grow plants so fine and strong as to be thought a superior and quite different variety. It is, however, only the difference between a liberal and starving system of cultivation. It was this superior mode of treating the Lily of the Valley, and the continued demand, that originated the clump system. The crowns grew so strongly, and produced a series of other strong crowns around them, forming, in fact, clumps that were transferred to the English and Foreign Markets bodily, just as they grew. The trade purchased, and growers gladly bought, and still buy these clumps; they are an immense improvement on the old plan of taking up patches of any and every sort from wood and border for forcing. It is, however, obvious that the clumps must contain a mixture of flowering and merely leaf crowns, and so far there is a loss of space in forcing such; besides, the carriage of clumps is heavy, consequently expensive; but the system is not a bad one, especially for those who grow their own clumps. But, doubtless, the single crown system is better, and will speedily supersede it. It is more certain, requires less space, and is, therefore, more economical; only the strongest flowering crowns are picked out, and each of them holds a flower-spike in embryo.

The mode of cultivation, and the single crown system, also tend to develop the full strength of each crown. They are picked over annually or biennially, all the finest crowns selected, and the others sorted and planted on fresh ground. By such means, the entire energy and skill of the cultivator is directed to the development of individual excellence; the consequence is, that the crowns improve from year to year, and seem in a fair way of overtaking ordinary asparagus heads. Space in heat is always costly in winter and early spring, and as a dozen or more single crowns may be flowered to perfection in a 4 or 5-inch pot, both space and heat are economized.

These pots, fully furnished and in flower, are a sight to gladden the eyes, and cheer the hearts, of all lovers of beauty. The flowers stand up boldly above the foliage; and the Valley Lily, by the single crown system, has assuredly risen in the world. They should be potted rather firmly in a rich soil, and placed in a gentle heat; it is better to keep them in a shady place until fairly started, when they may be gradually inured to the light. Some keep the plants in semi-darkness until the flowers are almost expanded; in that case there will be few or no leaves. For cut flowers that may not matter, but for plants in pots, the furnishing of vases, etc., the leaves are as essential as the flowers, and must either be developed by growing the plants in the light, or forcing clumps of common plants in boxes, specially for foliage; it may be well in private establishments to do this, if the crown system is adopted, lest a scarcity of foliage should occur. Some ladies like to see a thicket of leaves, studded over with the charming crystal flowers. It is well, too, with crowns, to excite root action rather in advance of the top, as it will be apparent to those familiar with the crowns and roots of the Valley Lily, that there cannot be a very large portion of root to each, but the root is the part always on the move for extension and reproduction, and with a little genial treatment at starting, it will be sufficiently developed to sustain the flower stem through its flowering period. More need hardly be added on either the crown or clump system, the former is now firmly established. Nearly all the beautiful plants that are sent to Covent Garden Market are the produce of single crowns. Other furnishers follow the lead of the row, and soon the system is likely to be the only one in the trade. It is founded on a true principle; the more all such plants as these are subdivided, the stronger the separate parts become. Multiplication of parts, if skilfully managed, leads to a concen-

tration and augmentation of vital force. This is exactly what is wanted in such plants as Lily of the Valley, *Astilbe japonica*, Violets, *Myosotis*, and others used for forcing and furnishing. As to the exact mode of procedure, the plants should not be kept too long out of the ground; lay in the crowns as soon as received behind a north wall; they must not be tempted to start out of doors. Put the first batch into the house in November, and succeeding batches every fortnight, and continue according to the demand till March. Place them in a close warm atmosphere with little or no light, and abundance of moisture. The crowns will throw up with a rush, and soon break into blossom in a temperature of 65 to 75 degrees. Very early and late blooms are somewhat difficult to obtain. Crowns will require sharper forcing to start in November than in January, and may be assisted with warm water early in the season, and a temperature of from 75 to 80 degrees.

The crown system, with ordinary care, and a little more skill than is needed to grow them in patches and clumps, will yield a capital supply of Lily of the Valley from December till March. About the end of May, and through June, the Valley Lily flowers in the open air, and by choosing two or more situations, one the coldest, and the other the hottest the garden can command, the season out of doors may be very much extended. Another point remains to be noticed; the crown system indoors will compel its adoption in the open air. It will hardly do to reverse the usual order of things, in the case of the Lily of the Valley, and have much finer forced flowers than those that come in their natural season. The starving system with which the plant has been treated in the open air, will no longer be tolerated; it must have liberal treatment, and well-grown clumps or crowns be bought in, or prepared at home, for the production of fine, strong flowers, either for cutting or for the forming of beds, clumps, edgings, etc. For all these purposes prepared crowns would create a new sensation, and give a fresh pleasure.

CARPET BEDDING AT THE CRYSTAL PALACE.

BY GEORGE SMITH.



CARPET BEDDING has, during the last five or six years, undergone a wonderful degree of development, and many, indeed, have been the happy combinations of low-growing leaf-plants which have been presented to public notice in the metropolitan parks. Indeed, the examples of this style of bedding during the last two years have been so thoroughly good, that even the experts have been led to believe that it was incapable of improvement. But it is not so, as in the grounds of the Crystal Palace at Sydenham, Mr. G. Thomson, the able superintendent of the outdoor department, has this season most clearly demonstrated. The system of carpet-bedding developed at the Crystal Palace is alike remarkable for its extreme beauty and originality, and it may be safely said to quite surpass all previous efforts in the same direction. The examples should certainly be seen by all who are interested in flower-garden decoration. There were a few carpet beds on the upper terrace, but the principal examples were on the rose mount, which, as the readers of these remarks are well aware, is contiguous to the

entrance from the station on the Brighton and South Coast Railway, On the mount, Mr. Thomson has designed a series of eighteen beds, which, seen from the broad walk at the foot of the glacis, have an exceedingly beautiful appearance; for, from this point, the bold outlines appear to great advantage; and, from the walk above them, they are by no means ineffective. The beds are circular, and of a uniform size, the diameter being twelve feet. The designs worked out are more or less complicated, but they are all characterized by great taste, and in a critical examination, one is struck by the fact, that the materials employed are simple in character and limited in number. There were less than a dozen different subjects employed in the colouring of the beds, yet the designs were perfectly distinct, and all were alike satisfactory. To describe the designs would be practically useless, for, without the assistance of diagrams, no one would be able to copy them in a satisfactory manner. In one, the leading feature is a Maltese cross; in another, a lovers' knot; in another, a star, and so on. Indeed, these examples prove to demonstration that the combinations which may be formed with leaf-plants are well nigh endless, and that, in consequence, even when the number of beds is large, new designs may be employed every year, and an immense amount of interest created thereby in the embellishment of the flower-garden. We shall now speak as if the beds were before us.

The principal plants employed in the carpet-beds on the rose mount are — *Alternanthera amœna*, *A. magnifica*, and *A. paronychioides*, three dwarf-growing plants, with carmine, orange red, crimson, and bronzy foliage; *Coleus Verschaffelti*, a well-known, dark-leaved plant, *Echeveria secunda glauca*, a most useful succulent for edgings; *Lobelia pumila grandiflora*, a well-known variety of cushion-like growth; *Lobelia Bright Eye*, a compact growing form of *L. speciosa*; *Pyrethrum Golden Feather*, the well-known yellow-leaf plant; *Cerastium tomentosum*, one of the most useful of silvery-leaved plants of low growth; *Mesembryanthemum cordifolium variegatum*, a decumbent growing plant, with small leaves broadly margined with creamy yellow; and *Tugetes signata pumila*, which is employed for forming green bands. The flowers are removed, and by moderate pinching, it forms capital bands of green. These are the only subjects used, but there are several others which may be used with good effect. There is, for example—

Alternanthera amœna spectabile, a robust growing variety of this highly-coloured plant. The leaves are of the same brilliant carmine hue as the type, but the growth is more vigorous, and it is, therefore, a decided acquisition. *A. magnifica*, used extensively at the Crystal Palace, is of more robust growth, and has foliage of a bright orange-red and pale carmine, and is more generally useful than *A. amœna* or its variety, as these are not so hardy or so free, and have to be planted much closer together. But they are not surpassed in brilliancy of colours.

Coprosma Baucriana variegata, a beautiful shrubby greenhouse plant, with shining leaves broadly margined with yellow. It is rather difficult to propagate, but when strong plants are put out, and the branches pegged down, it is the most sumptuous yellow

carpet plant we have. Mr. Cole, the talented gardener at Ealing Park, increases it freely by planting those lifted from the beds in the autumn in a bed of light sandy soil made up in a frame from which the frost is excluded. The branches are pegged down and covered with soil, and by the spring roots are emitted from the whole length of the stems, which are cut up into as many pieces as there are small side-shoots, and potted singly.

Stellaria graminea aurea, a distinct variety of this well-known weed, with very bright yellow foliage. It is several shades richer in colour than the Golden Feather, but in some respects it is less useful. But as they are perfectly distinct, both are required. The Golden Chickweed, as the *Stellaria* is now generally designated in response to my suggestion, when first directing attention to its merits as a bedding-plant, spreads close upon the ground, and forms a dense carpet of gold. It is quite hardy, and can be propagated freely by division or cuttings.

Cineraria maritima compacta, *C. asplenifolia*, and *C. ceratophylla*, are three hardy plants, with greyish-white foliage, which can be kept down to a uniform height of six or eight inches, by a judicious system of pinching. When propagated from cuttings, and planted thickly, they form a most effective mass or line.

Centaurea ragusina compacta and *C. plumosa argentea*, are two white-leaved plants of great merit for lines or masses, eight inches in height. They cannot be stopped in the same manner as the *Cinerarias*, but if they attain too great a height, they can be kept down by removing a few of the larger leaves. They are not first-class carpet plants, but for some designs they will be found very useful.

Lobelia Lustrous is one of the best of the whole series for carpet-bedding. It attains a uniform height of four inches, is moderately dense in growth, and blooms freely and continuously throughout the season; and does not go off in the same manner as *L. pumila grandiflora* frequently does.

Leucophyton Browni is most useful for divisional lines. It is peculiar in growth, and when planted thickly, and pinched moderately, it forms a miniature hedge of the most silvery whiteness. It is not easy to propagate, but the best way of striking the cuttings is to insert them thickly under a hand-glass, placed on a warm border in the autumn.

Achillea umbellata and *Veronica incana* are two greyish-leaved hardy plants of considerable value, but less so than others enumerated. The first-mentioned forms a pretty band from four to six inches in height, but it is rather difficult to propagate.

Sedum acre elegans resembles in habit the specific form generally known as the common stonecrop, but instead of being deep green, it has a decided creamy yellow hue, and for a low front line of a quiet tone it will be found useful. It can be increased freely by division, and requires no attention to keep it in order.

Carpet-bedding is undoubtedly costly when well carried out, and unless it is done well, it had better not be done at all. The plants must be put close together for the purpose of producing an immediate effect, and for securing the formation of good solid lines and

pands from the first. Consequently, the number of plants necessary is considerably in excess of the number required of such things as geraniums and calceolarias. To plant each of the beds at the Crystal Palace, to which allusion has been made, about seven hundred were required, the total required for the 18 beds, therefore, was 12,600. But it must not be forgotten that a very considerable proportion of the subjects are perfectly hardy, and also that the beds present a finished and attractive appearance immediately the planting is completed. There is no waiting for effect, and no matter what the weather during the summer may be, they present a most attractive appearance until the frost cuts off the *Alternantheras*, and other tender things. Those who are strongly wedded to flowers will not like the carpet system, because, with one or two exceptions, leaf-plants are exclusively employed. That it has defects there can be no doubt, but when well carried out, it has advantages over flowering plants which cannot be gainsaid. It has been said by those who object to it, that an equally good effect could be produced by stretching strips of coloured calico over the beds; but to make this assertion is to talk nonsense, and to exhibit a profound ignorance of the whole question, as the examples at the Crystal Palace abundantly testified.

STANDARD WISTARIAS.

BY A KENTISH GARDENER.



EVERYONE is acquainted with the lovely *Wistaria sinensis* as a climbing plant, but very few people know how effective it is when grown in the form of a standard tree. It is not unfrequently supposed that the character of its growth renders it unsuitable for standards, but it is not so, and I hope to be able to show how readily they may be produced. There are not many examples to which reference may be made, but there is one in the gardens of the Crystal Palace at Sydenham, at the foot of the Rose Mount, and those who have seen it when in full bloom will readily call to mind the very beautiful appearance it had. I should not advocate the planting of a considerable number of standards in one garden, as one or two will be quite sufficient for those of an ordinary size.

As the *Wistarias* trained in the manner here referred to cannot, so far as I am aware, be purchased, they will have to be grown at home, and in selecting a position, it must be remembered that the *Wistaria* thrives best in a warm well-drained spot, and in a rather light soil. In forming a standard in a place where the natural soil is not deep and good, take out the old soil two feet deep in a circle eight feet over, and well stir up the bottom, and then fill up the place with turfy loam, half rotten turfs chopped to pieces, and leaf soil, in equal proportions. Well mix these ingredients together, and put the stuff in the hole when quite dry. If the tree is to be on turf, as it ought to be, there should be a circle two feet over left

not turfed, in which to plant the tree, and to receive the support for its branches.

A strong young healthy plant in a pot is decidedly the best; and when it has shed its leaves in winter, cut it down to within four inches of the ground. Early planting will enable it to make some new roots, and in the spring it will put up one or more young shoots. As soon as these are observed, a neat stake must be firmly fixed in the ground, on which to train them. I should prefer always to take as many as four shoots up from the bottom, but not to exceed that number. And, if neatly and frequently trained straight up the stake, they will in all probability grow high enough to form the compound stem the first year; if they do not, they must be allowed to remain without any further preparation for another year, or at least until they have grown seven clear feet from the ground.

When they have grown thus far, the frame on which to form the head must be put in its place. It should be formed of one quarter inch wire, at least eight feet over, in the shape of an umbrella, only not so convex in form, and supported in the centre by a stout oak stake, six inches diameter at the ground level, and tapering to the top to four inches in thickness. When this is completed, the young growth in the winter should be headed back to the height of the stake, which will induce more rods to spring out, and these must be trained as near as possible at equal distances all over the wire frame, and the next winter to be cut back again to within two feet of the crown of the frame. This cutting back will induce the formation of a greater number of shoots from each point headed back, but only one of these is wanted for the purpose of training over the frame from each point. The others are to be constantly pinched back, in the first place at six inches from the old wood, and then, after it has grown a foot or two more, to the third bud from the previous pinching. This constant heading back, as will be understood by the experienced, causes the production of spurs, on which the *Wistaria* always flowers; and by securing these in the first instance, at pretty nearly equal distances over the frame, we add not only to the beauty, but also to the form of the tree. We might cover the frame sooner by a couple of years if we were not to cut back at all, but that would be at the risk of having a much less number of flowering spurs, and those would be distributed unequally over the frame. In every case it must be a work of time; but when the object is once attained by following the directions here given, there will be no regrets at the time occupied to secure it.

The cutting back at every two feet should be continued every winter, and the same principle of pinching carried out during the summer, as above advised, until the frame is covered down to the outermost ring. The next summer's growth may then be trained round the outer ring, and, if necessary, the cutting back and pinching must be followed up until every vacant space is filled with flowering spurs; after which the tree may be said to be formed, and must be left almost to itself. At all events, no further pruning or pinching will be necessary, except to cut in any stray growth. But as much as possible the young growth should be tied in, and always be

kept at least five feet from the ground at the extremities. The tree will of its own accord increase in height a few inches every year over the crown. This must not be interfered with, for it gives to it a more natural appearance than when trained.

In a sheltered spot, and planted in the soil recommended, a few years would do much in the formation of a standard tree. The frame and supporting stake must, of course, be left to its chance, for, after a few years, the tree will so entwine itself about it, that it would be almost impossible to remove it, although the tree might be able to support itself. The frame, at all events, will be no eyesore, for the growth soon hides it. The tree will also extend itself outwardly, if left alone; but this must be allowed only by small degrees beyond the frame, until the growth becomes strong enough to support itself, and then it may be allowed to spread three or four feet farther than the frame, if desired. The tree in the Crystal Palace grounds is of a considerable age, and is now standing without a support of any kind.

ON FORCING VEGETABLES.

BY W. BRADBURY.



THE forcing of asparagus, seakale, and a few other vegetables, is by no means of a difficult character, and a very few words will suffice to explain the details sufficiently to enable the inexperienced amateur to act upon them. French beans require a properly heated structure, and some knowledge of their peculiarities before they can be grown under glass with a fair degree of success, and it therefore does not appear desirable to include them with those vegetables which can be grown in rough-and-ready contrivances, and from the hints that will be given as we proceed.

ASPARAGUS.—This delicious vegetable is usually so much appreciated that wherever it is practicable a rather liberal supply should be maintained during the early spring. There are two ways of forcing it. One in the beds, by means of fermenting materials and a covering of glass; and the other in pits or frames. The last-mentioned plan is the one to which we shall now direct attention, because to force it in the beds they must be specially prepared for forcing when formed. As asparagus is practically worthless when white, excepting it be to look at, it should be grown in the full light, and a moderate circulation of air maintained in the frame for the development of the full flavour. The simplest course is to make up a good bed of leaves, put a one- or two-light frame upon it, and, after covering the surface with a good layer of light soil, pack the roots close together. They will require a covering of two or three inches of fine soil, and a little soil should also be worked between the roots to insure a proper degree of moisture being maintained about them. By lifting them with a moderate quantity of soil adhering to the roots, they will hardly feel the removal, and will, with the assistance of a genial warmth

push up strong, and yield a good supply. An excess of heat will be most injurious; and when the bed is made up with manure from the stable, the roots must not be put into the frame until the heat has declined to 80 deg., for if the roots are not injured by the heat, the growth will be too rapid and the produce small and second-rate in quality. With a good bed of fermenting materials in the frame, the heat rising from it will be quite sufficient for the maintenance of the top heat. When forced in a pit heated with hot water, a temperature of 60 deg. will suffice. At first the frame may be kept quite close for the purpose of economizing the heat as much as possible; but immediately the shoots make their appearance above the surface, the frames must be ventilated freely whenever the weather will admit of its being done. The lights must be tilted an inch or so both night and day, to allow the steam arising from the fermenting materials to escape. When shut up in the steam for any length of time, the flavour will not be so rich and full as could be desired. To maintain a supply of crowns for forcing, a bed should be planted with two-year-old roots annually. Roots of this kind do not cost much; but an abundance may be obtained by sowing a few rows in the kitchen-garden, and thinning the young plants to a few inches apart, when large enough to handle conveniently. They should remain in the rows for two years, and then be lifted and replanted in soil that has been well prepared and enriched with old hot-bed or farmyard manure. It is not needful to prepare beds in the usual manner, as good roots may be obtained by planting, in rows eighteen inches apart, on the level. The roots should be planted about eighteen inches apart in the rows.

SEAKALE is in some respects preferable to asparagus for forcing, as much larger supplies are obtainable from a given space and with a certain amount of trouble. It is also more accommodating than asparagus, as it may be forced in a mushroom-house, cellar, or in boxes or barrels covered over to exclude the light. It may also be forced in the open ground by covering with pots and fermenting materials. When forced out-of-doors strong clumps should be formed about three feet apart each way by planting three or four roots together, so that no time may be lost. For convenience of gathering, the ordinary seakale pots with the moveable tops, or old casks cut in half and fitted with a loose top, should be used. A thickness of from two feet to thirty inches of fermenting materials will suffice to cover the crowns, and if much more is put on, the heat will be too much, and the leaf-stalks will be thin and cut a poor figure upon the dinner-table. When forced in a cellar or mushroom-house, the roots must be lifted and packed close together in a corner where no light can reach them. It is advisable to place a little soil between the roots and to bury them low enough to leave the crowns visible above the surface. The side roots will require removing when they are lifted, and all that are of the size of a pencil must be put by for planting in the spring. Those roots when planted in rich soil will acquire sufficient strength to be forced the winter following, and, under ordinary cultivation, they will be large enough for forcing the second year. The roots should be planted early in the spring, nine

inches apart, in rows fifteen or sixteen inches from each other. A very good supply may be obtained by packing the roots, with a little soil between them, in the bottom of a barrel or deep box, and then covering them with a board and some old woollen material to effectually shut out the light. They can then be placed in the greenhouse or forcing pit, where, by placing them under the stages, they will practically take up no room. To maintain a regular supply, a portion of the roots in the open border must be covered up at intervals of three weeks; and when forced in-doors, a batch of roots will require to be lifted at the same intervals between. In cutting seakale, take off a small portion of the crown, as the cook can send it to table quite whole with considerably less difficulty.

RHUBARB is so easily forced that very few words will suffice to convey an idea of the best means of securing an abundant supply. The small growing high-coloured sorts are the most useful for forcing, as they do not take up so much room, and are of a higher quality. In forcing it out-of-doors it is simply necessary to cover the roots with a cask without a bottom, and provided with a loose lid and fermenting materials in much the same manner as the seakale. When forced under cover, lift the roots with as much soil adhering to them as possible, and place them in the mushroom-house, a warm cellar, or a dark corner in the forcing-pit. When placed in the dark it is of a more delicate flavour and richer in colour than when fully exposed to the light. Some difference of opinion exists in reference to this point; but by comparing the produce of roots placed in the light with that obtained from those in the dark, there will be no difficulty in determining which of the two is the best.

CULTIVATION OF THE PHLOX.

BY JOHN FRASER,

Lea Bridge Road and Leyton Nurseries.

PHLOXES are beautiful hardy plants, and to have them in the finest possible condition, they must not be planted out in the borders, as heretofore, and left to their fate; but attention is invited to the following remarks on their culture, which are the result of some years' experience. Early in spring procure healthy young plants and in selecting a situation for planting out, choose a spot where there is a little shelter from strong winds; but otherwise it should be fully exposed to all the air and sunshine. The ground should be trenched, and enriched with some good rotten manure, and the plants planted from fifteen to eighteen inches apart. Care should be taken to have a good stake to each plant, and as the shoots advance in growth, they should be securely tied to it. If this is neglected, they are very likely to be snapped off close to the ground. A slight wind is sufficient to do this, and then the plant is spoiled for the season. Upon the approach of dry weather, the beds should

be mulched, and copious waterings with liquid manure will be very beneficial. If a Phlox is well managed, it will be in its prime the second year of its flowering. A good two-year-old plant will generally start many shoots, but five or six only should be left to go up for flowering. The spare shoots may be used for cuttings, and make fine flowering plants for the next year. There cannot be much done in arranging these Phloxes according to their height; in this (with two or three exceptions) there is very little difference. The first year they generally flower when about fifteen or eighteen inches high; but the same plants, in the second year, will grow two or three feet. A continual succession of young plants should be kept up by cuttings. Dividing the roots is a clumsy method of increasing the stock, and plants obtained in this way seldom produce fine healthy foliage and good flowers.

A Phlox should be thrown away when it gets over two years old, and a young plant put in its place. Sometimes Phloxes may be placed here and there in mixed borders or shrubberies, where they help to make a garden gay and furnish a few cut flowers; but the spare plants only ought to be used for this purpose, as they never under this treatment produce such fine flowers as when they have a place to themselves.

It is remarkable that the distinguished beauty of the Phlox does not yet seem to be fully appreciated. It is now pretty generally acknowledged that something is wanted to relieve the monotony of the solid daubs of colour that are found in the flower-beds in the public parks and in our best gardens. The Phlox, with its variety of colours, and its distinct and elegant habit, seems to be one of the very best and most effective plants for the purpose. All shades of colour such as purple, rose, salmon, crimson, white, scarlet, pink, etc., are to be had; some of the darker colours being particularly rich and attractive. Round beds of good size—say eight, ten, or twelve feet across—if managed upon the system of culture here given, and the plants be prevented from seeding, will give a grand display of bloom from July till September. Anyone who has read the foregoing remarks must be aware that the management of the plant is simple; and being quite hardy, its culture may be carried out by those who have only scant accommodation for storing plants in winter.

The varieties of Phlox *decussata* are the best and hardiest, and have been very much improved lately. There used to be some pretty varieties of Phlox *pyramidalis*, but they are delicate, and, with few exceptions, have given place to the former.

MESSRS. SUTTON AND SONS offer for competition at the exhibitions of the Royal Horticultural Society, to be held in 1875, a series of silver and bronze medals, in addition to numerous money prizes, for vegetables.

DR. HOOKER'S PAPER ON CARNIVOROUS PLANTS has been reproduced in a neat pamphlet form, and freely distributed amongst members of the literary world and scientific societies.

NOTES ON LYCASTES.



THE beautiful *Lycaste Skinneri* is specially adapted to the requirements of amateurs, for it succeeds, and grows, and flowers freely under ordinary good management, does not require a very high temperature, and blooms during winter and spring. It is indeed one of the best known of cool orchids, as well as one of the cheapest. There are several varieties of this beautiful species, and that known as *L. Skinneri alba* is the most distinct and expensive. There are in addition to *L. Skinneri* several pretty species, which, although not so valuable, are well worth growing. There is *L. aromatica*, which blooms in May, with lovely yellow flowers, which are most deliciously fragrant. One good-sized plant of this kind is sufficient to perfume a large house. Another good kind is *L. cruenta*, which flowers two months earlier than the preceding, with yellow and crimson flowers. *L. Deppiei* is also worth growing; it has a pretty yellow flower, with a brown lip, and is in perfection in June. *L. Lawrenceana* is really splendid, and should be in every collection.

A most suitable temperature in which to grow *Lycastes* is from 55° to 65° through February and March, which will start them beautifully, and then as the days lengthen, and the principal atmospheric warmth is derived from the sun, a rise to 75° or 80° will keep them growing vigorously, and enable them to complete their growth early, so that the young bulbs will be well ripened, and able to stand a low temperature of from 45° to 50° through the winter. When the season's growth is about finished, and the plants are gradually declining to rest, they should have all the light they can conveniently be exposed to without the sun actually scorching them. I might mention here that it is very difficult to keep them in a low temperature through the winter, unless the young bulbs are thoroughly matured; the importance of this cannot possibly be overrated, as a great deal, if not everything, depends upon this as to whether the plants bloom profusely or not the following season.

There will be no difficulty in growing *Lycastes* in a mixture of equal parts of sphagnum and rough fibry peat, combined with plenty of drainage to allow free egress for the water, which should not be administered in too great abundance, even when the plant is in full growth, and not more than is sufficient to keep the bulbs from shrivelling when it is at rest. Some of them have large fleshy bulbs, which are exceedingly liable to decay at the base if kept too wet at any time, particularly through the winter. To guard against this as much as possible, the plants should be potted so that the base of the bulb stands three or four inches above the rim of the pot, varying it according to the size of the plant. All the species are propagated by division, which is best effected in the spring, after the young growths have pushed about an inch or so in length. But amateurs who purchase medium-sized plants will have no occasion for dividing them for some years hence, as the best effects are produced by specimens of a rather large size.

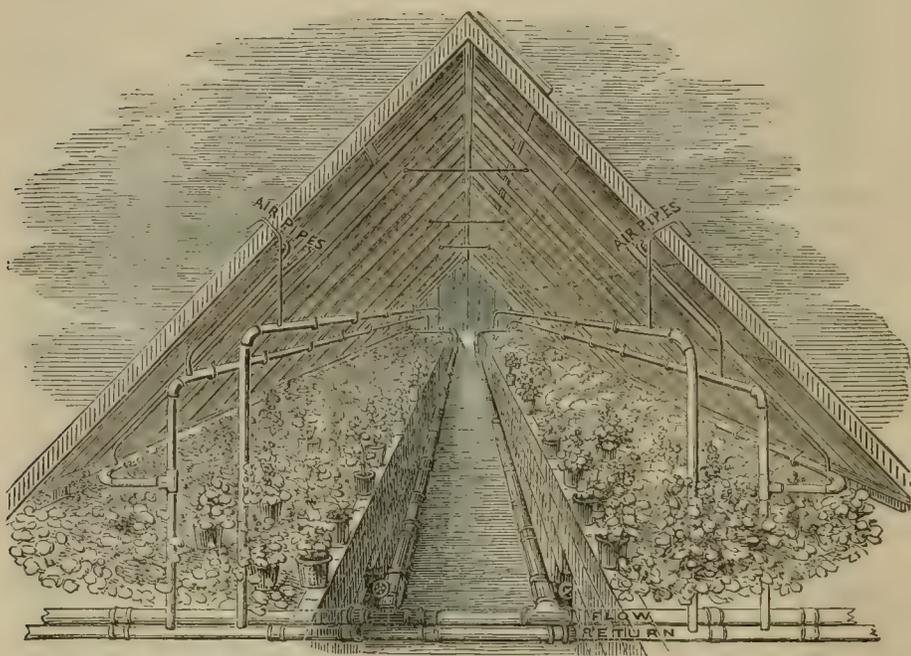
J. W.

CANNELL'S SYSTEM OF HEATING PLANT-HOUSES.



R. CANNELL has, during the last few years, introduced a system of heating plant structures in his nursery at Woolwich, which is certainly quite new, and appears to be well deserving of the instant attention of those who are interested in the heating of plant-houses and pits.

Instead of fixing large pipes upon, or just above the floor of the house or pit, small pipes an inch or so in diameter are fixed just under the roof, as shown in the accompanying illustration. By this arrangement, Mr. Cannell considers that he is able to provide the



GERANIUM HOUSE HEATED BY CANNELL'S SYSTEM.

inmates of the houses with warmth in the most congenial form possible, and he also believes the plants thrive better in houses so heated, than when the pipes are fixed in the usual way. He has now adopted this system in nearly all the plant-houses and pits in his nursery, and the healthy condition of the plants prove in a most unmistakeable manner that it may be adopted elsewhere, without any risk of the plants suffering. This system of heating cannot, of course, be adopted in ornamental structures, because of the necessity for keeping the pipes out of sight, but for houses in which plants are prepared for conservatory decoration and the flower-garden, no difficulty will be experienced.

THE GARDEN GUIDE FOR JANUARY.

“ The scene is cloth'd in snow from morn till night,
 The woodman's loath his chilly tools to seize;
 'The crows, unroosting as he comes in sight,
 Shake down the feathery burden from the trees:
 To look at things around he's fit to freeze;
 Scar'd from her perch the fluttering pheasant flies;
 His hat and doublet whiten by degrees,
 He quakes, looks round, and pats his hands and sighs,
 And wishes to himself that the warm sun would rise.

“ The robin, tamest of the feather'd race,
 Soon as he hears the woodman's sounding chops,
 With ruddy bosom and a simple face
 Around his old companion fearless hops,
 And there for hours in pleased attention stops;
 The woodman's heart is tender and humane.
 And at his meals he many a crumble drops.
 Thanks to thy generous feelings, gentle swain;
 And what thy pity gives shall not be given in vain.”—CLARE.

ANNUALS sown now in pans, and placed in a cucumber-pit or in a vinery, will make a good start for early bloom. They should be sown thinly, the pans should have plenty of drainage, and a fibry soil should be used, so that in pricking them out they may be lifted with bundles of fibres with little injury.

APPLE AND PEAR TREES infested with moss or vermin may be much benefited by being painted all over with a mixture of Gishurst Compound and clay, or a mixture of lime, soot, and clay.

ASPARAGUS.—The soil of the forcing-beds must be sufficiently moist. A heat of 55° to 60° will be sufficient, but it must not decline below 55°. Straw hurdles are of great service to prevent a cooling of the bed during severe frost and north-east winds.

AURICULAS should have the old decayed leaves removed, but in doing so be careful not to injure them. The plants must never be dust dry; but beware of damp, and during frost avoid watering until a favourable change occurs, if possible.

AZALEAS coming into bloom must be kept at a regular temperature, and have plenty of water. Beware of urging them too rapidly, and place none in the stove until they have been first gently stimulated by the warmth of an intermediate house.

BEDDING PLANTS should be propagated according to their habits. Those that require to make a free growth before they bloom to be pushed on first, and those that come into bloom quickly may be deferred.

CAMELLIAS coming into bloom to be assisted by sprinkling the borders, paths, and pipes occasionally, to allow a diffusion of vapour. There is no class of plants that more enjoy atmospheric moisture, but as the blooms expand they require a drier and cooler air.

CINERARIAS throwing up their flower stems to be put in an intermediate house for early flowers. The most backward to be repotted at once, so as to make fine specimens for a very late bloom. Keep the stock clean, use sulphur where mildew occurs, and fumigate for green-fly.

CONSERVATORY.—Let nothing suffer for want of fire-heat. Forced bulbs will require warm positions; but Heaths, Epicrises, and other hard-wooded plants, may be at the cool end. For succession now, Mignonette, Primulas, Violets, Lily of the Valley, *Luculia gratissima*, Poinsettias, Euphorbias, and Justitias are particularly valuable. Keep the atmosphere dry, to prolong the bloom of Camellias and Azaleas. Average temperature, 45° by night and 55° to 65° per day.

CUCUMBER PLANTS in bearing will require occasional watering with liquid manure, and as much light as possible to keep them in health. Keep the atmosphere moist; temperature, 60° by night, 70 to 75° by day, 80° with sunshine. Sow in pots for succession plants.

GREENHOUSE to be kept clean and airy, and the whole of the stock to be revised, that there may be no propagating of useless stock, and no delay in securing stock of things really desirable. Nearly all the small plants from cuttings of last autumn will now require to be repotted, and, as they are now intended to grow, a

generous soil may be used, rather rough, turfy, and quite sweet. Fill in round the roots with fine sandy mixture. Keep close till they make fresh roots. If convenient, have all the lights cleaned inside, and be on the look-out for slugs and woodlice, which are now coming out hungry from their winter retreats, and will do great havoc among pans of seedlings and tender vegetation of all kinds.

KITCHEN GARDEN.—There should be no delay in getting ready every inch of ground intended for summer crops. Get all plots requiring manure ready at once, as it is much better to have the ground prepared in advance, than the manure may be more completely incorporated with the soil, than to sow or plant immediately after manuring. Ground for peas, beans, onions, cauliflowers, and broccoli must be liberally manured and deeply stirred.

MELONS for a first crop to be sown at once. The seeds to be put singly in small pots.

MIGNONETTE is one of the most useful annuals to sow now, as it will come into bloom by the time the weather is sufficiently genial to allow of the pots being placed in windows.

MUSHROOM BEDS for an early supply should now be commenced. Save for the purpose fresh horse droppings, spread thinly on in very small heaps.

ORANGE TREES should be well cleaned now, to remove scale; and the tubs and pots have a fresh surfacing of rich soil. When starting plants of this kind, keep up a moderately-moist atmosphere.

ORCHIDS showing signs of growth to be potted or shifted into larger baskets according to requirements, and be at once placed in the warmest end of the house. The general stock to have no more water than will suffice to prevent shrivelling. At this time of year take especial care to guard against lodgments of water among the bulbs, or on the surface of the soil in pots where the drainage is defective.

POTATOS may be planted in frames, where they can be covered with mats or calico lights. Choose hard tubers, and let them sprout in full daylight first; the sprouts should be dark coloured, firm, and plump.

SALADINGS.—On warm sloping borders under walls facing south, sow early short-top radish, Hammersmith and Paris còs lettuce, two-bladed onion, mustard, and golden and Normandy cress. Sow but small breadths at first, as some of the sowings may be lost; and at the same time sow a few boxes of lettuce, to be placed in a gentle heat for planting out hereafter.

Sow in heat tomatoes, capsicums, melons, cucumbers; out of doors, on warm slopes, dwarf-beans, early peas, early horn carrot, short-top radish, cabbage, and Hammersmith lettuce.

STOVE.—The temperature may be increased now with advantage. Achimenes and Gloxinias, pushing briskly, to be potted to succeed the first batch. These require full light while growing, though their flowers must be shaded.

VINES well started to have all superfluous buds rubbed off, and the young shoots to be stopped as soon as they have made growth enough to allow of the removal of the joint one bud above the bunch. A full development of leaf surface is most important, and every leaf should have its proper share of light. Vines to be started with fire-heat must have the assistance of atmospheric moisture by copious syringings, and the use of troughs on the pipes or flues.

BOUSSINGAULTIA BASSELLOIDES, one of the most beautiful plants from the Quitian Andes, may be considered one of the finest climbers for cool conservatories in cultivation. A specimen planted on one of the mounds in the conservatory of the Royal Botanic Society in the Regent's Park, makes annually a most vigorous growth, and during the month of September produces an abundance of flowers. It has a slender twining growth which, with the assistance of a trellis, or a few wires, soon mounts to the roof, and in the autumn blooms very freely. The flowers, which are borne in clusters, are pure white and highly fragrant. It was introduced as a stove climber, but subsequent experience has shown that it is not only adapted for cool conservatories but will also grow sufficiently to produce a good display of flowers when planted out of doors in a favourable situation. It has, indeed, been recommended as a hardy climber, but it is too tender for planting out of doors, excepting in a kind climate, and even then it is killed outright by a sharp frost.

HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY has, we are informed, determined to hold a series of evening meetings at South Kensington. The meetings are to be of an educational character, as, for example, the reading of papers and oral addresses, and lectures on the scientific principles of practical horticulture. The present series will comprise six meetings, to commence early in the present month. The dates and particulars will be shortly announced.

THE HORTICULTURAL INDUSTRY OF GHENT is a very important one, as may be gathered from the following particulars furnished to the *Gartenfreund* by Professor Van Hulle. The writer observes, there are as many as two hundred nurseries in and around that town, almost exclusively devoted to raising ornamental plants and the better sort of fruit trees. The glass houses occupy an area of nearly eighteen acres, and in these houses from 2,705,000 to 3,542,000 plants are annually raised, to the value of from 5,930,000 to 7,705,000 francs.

THE BOTANICAL MAGAZINE FOR 1874 is dedicated to Mr. G. Maw, of Benthall Hall, Broseley, by Dr. Hooker, as a tribute to the value of the services rendered in introducing hardy plants to English gardens.

THE FRUIT SHOW held in the Pomona Gardens, Manchester, in the early part of last month, was attended with a large measure of success. The schedule was comprehensive and the prizes liberal, and, as a natural result, the competition very spirited. There were something like two thousand entries, including over sixty hand bouquets, and a large number of epergnes for the dinner-table. There were nearly fifty Pine-apples, an immense quantity of Grapes, and of Apples and Pears the numbers were simply enormous. Palms, Tree Ferns, and flowering and fine foliage plants, were also staged in large numbers, and added materially to the attractiveness of the exhibition.

THE PELARGONIUM SOCIETY is making good progress, and the Committee, which includes the names of Dr. Denny, Mr. Shirley Hibberd, Mr. Pearson, Mr. George, Mr. Postans, Mr. Grieve, and other well-known raisers and cultivators, have prepared and issued a liberal schedule of prizes for competition at the exhibition of the Royal Horticultural Society, to be held at South Kensington on the 21st of July next. In addition to the prizes mentioned in the *FLORAL WORLD* for October, 1874, page 317, others will be offered for Cape species, hybrids, and stands of cut blooms, of twelve and twenty-four trusses respectively.

THE LINDLEY MEDAL, which was proposed some years ago since by the Council of the Royal Horticultural Society, as a reward for superior cultivation of any special subject exhibited at the meetings of the society, is at length prepared; it is a handsome work of art, and its estimated value, £15. On the obverse is a portrait of Dr. Lindley, enclosed with a laurel wreath, and the inscription, "Dr. John Lindley, F.R.S., born February 5th, 1799. Died November 1st, 1865;" on the reverse, Flora with wreath in her left hand, and the inscription, "Royal Horticultural Society."

THE ROYAL BOTANIC SOCIETY will hold the undermentioned exhibitions in their gardens in the Regent's Park during the current year, namely:—Spring Flowers, Wednesdays, March 31, April 23; Summer, Wednesdays, May 26, June 16; Fruit and Cut Flowers, Wednesday, June 30; Evening Fete, Wednesday, July 14; Special Exhibition of Clematis from the nursery of G. Jackman and Son, Woking, May 1 to 24; Lectures, Fridays in May and June.

POINSETTIA PULCHERRIMA formed a grand feature in the Church Walk Nursery, Stoke Newington, previous to the Christmas festivities. Mr. Oubridge had in one house alone over 2,000 plants, all of which were furnished with splendid bracts, and consequently made a grand display.

BOLDOA FRAGRANS, the plant yielding the new drug "boldo," which is said to be remarkably efficacious in promoting digestion and in liver diseases, has recently flowered in the gardens of the Royal Botanic Society. Specimens may also be seen in the collection of economic plants at Kew. It is a native of the Chilean mountains, where it assumes the form of a small, much branched tree. The flowers are borne in auxiliary racemes. It was introduced in 1844, and has been figured and described in the *Botanical Register* and in Lindley's *Vegetable Kingdom*.

TO CORRESPONDENTS.

MOON FLOWER.—*W. K., Madeira.*—There are two plants known as the Moon Flower; one is *Chrysanthemum segetum*, and the other *Ipomea bona-nox*. The last mentioned is the one known in India under that name.

NAMES OF FERNS.—*Enquirer, Tarbolton.*—The names of the ferns are as follows:—No. 1. *Gymnogramma leptophylla*; 2. *Asplenium adiantum nigrum*; 3. *Asplenium trichomanes*; 4. A small barren frond, and insufficient for identification; it is probably the same as No. 2.

A. Y. B.—In reference to your first question, we can only say that we cannot advise you to do that which is illegal.

ONION GRUB.—*A. Y. B.*—The onions are suffering from the attacks of the grub or larvæ of the onion fly (*Anthomyia ceparum*), and there is no means of destroying the grubs without injury to the crop. One of the best preventatives is to spread a little gas-lime between the rows when the onions are in a seedling state, as the smell is offensive to the fly, and may prevent its eggs being deposited in the onions. A sprinkling of charcoal over the surface has also been tried with some degree of success, as the eggs are frequently deposited in the charcoal, and consequently perish. In the cultivation of onions on soils in which the fly is troublesome, it is a most excellent plan to soak the bed a month or so before sowing with dilute sulphuric acid. In the case of spring-sown onions, a light dressing of gas-lime applied in the autumn, and dug in after it has been exposed to the atmosphere, will be of considerable service in warding off the attacks of the grub.

SNAILS.—*A. Y. B.*—Search amongst the crops and gather up all that can be found, and destroy by sprinkling lime or salt over them, or by scalding them with boiling water. A few heaps of brewers' grains in various parts of the garden will form excellent trap; and if these are occasionally examined a considerable number may be caught and destroyed. A little powdered lime sprinkled about, not over, the plants most severely attacked, will assist in protecting them from the ravages of these pests.

BOWLING GREEN.—*G. J. W.*—Ashes are quite unnecessary and the turf should be laid upon the soil without any ashes underneath.

NECTARINE TREE.—*M. A., Kent.*—As the tree makes a most vigorous growth and bears abundance of fruit, it is difficult to suggest the cause of the fruit not ripening properly, especially as the other trees on the same wall bring their crops to maturity. It would be interesting to know which variety it is, as the Stanwick, a large and handsome fruit, seldom ripens properly against an open wall. Under the circumstances the gardener acted wisely in giving the tree liberal supplies of water. It will not be needful to cover up the wood of Marechal Niel on the wall unless the weather sets in severe, when the protection of mats will be required to protect the shoots from injury. In a kind climate in which the "sweet-scented verbena" can be grown out-of-doors with very little protection, this rose will not in ordinary seasons require covering at all, but as it is best to be on the safe side, you will act wisely in covering where there is a probability of more than eight or ten degrees of frost, and to save time and labour the protecting materials may be left on until all danger is past.

VARIOUS.—*Miss J. L., H. J. Moffat.*—Taking the questions *seriatim* we would say, in answer to No. 1, that the hay will do no harm whatever; but, on the contrary, afford material protection to the roots. No. 2. The crab should not be pruned, with the exception of shortening back a few of the longer branches, which are likely to spoil the outline of the tree. In the course of the forthcoming season these shoots will be well furnished with flower-buds, and the following spring the trees will, in all probability, be solid with bloom, and present a wondrously attractive appearance. No. 3. Vegetables cannot well be grown underneath the stage in the pit, as there would not be sufficient light, and moreover the drip from the plants above would be very injurious. Radishes and small salading may be grown in a bed of soil made up on the stage, and the genial warmth derived from the bed of leaves and manure would be of considerable assistance in promoting an early growth. The bed should be from nine to twelve inches in thickness, and be formed with some nice, friable soil. It will also be useful for raising a stock of lettuce, caulif-

flowers, and cabbage, for early planting, and also for raising half-hardy annuals, such as asters and stocks. The best radish for frame culture is Wood's short-top scarlet. No. 4. We have advised borders filled with herbaceous plants not to be dug when the plants are at rest, because of the risk of a large portion of the stock being injured in the operation. When done carefully, as in your case, it is most beneficial to the plants, and also gives the border a more tidy appearance. No. 5. The Weigela will require very little pruning. Some of the longest shoots may be shortened back, some time in February, and a few of the weakest shoots where the wood is crowded, may also be thinned out.

NAME OF PLANT.—*X. Z.*, *Bretlands*.—The plant is most probably *Pelargonium spinosum*.

TUBEROSES.—*H. M. Carwardine*.—The bulbs should have been kept in the pots until they were at rest. As a rule, however, they are of very little use after they have done flowering. The young bulbs are of no value, and they may therefore be taken off and destroyed.

TREES FOR SHELTER.—*H. F.*—As the lawn is in an exposed situation we think your idea of enclosing the lawn with a belt of free-growing trees such as you name, a good one, as they will serve to shelter the choicest subjects. We should make two belts, one for the Scotch firs and other hardy trees, and the other for the shrubs. In the outer belt we should plant three rows of Scotch and spruce firs, with a few larch. The latter will do well in a high and exposed position, but as it grows thin and loses its foliage through the winter, it is of very little use for protective purposes. In the inner belt we should plant *Abies Douglassi* rather extensively, *A. nigra*, *Cedrus atlantica* *C. libani*, (the cedar of Lebanon), *Pinus austriaca*, *P. Lambertiana*, *P. strobus* (the Weymouth Pine), *Thuja orientalis*, *T. gigantea*, *T. Lobbi*, *Taxus baccata*, *T. baccata nigra*, *T. fastigiata* (Irish yew). The foregoing are all good and hardy, and we should prefer having several plants of a few kinds that will do well to one plant each of a large number of kinds. We should plant little else beside evergreens for mixing with the above. If you use many deciduous trees or shrubs, the lawn will be without shelter in the winter, which is just the time it is most required. Plant the common *Tree Box* and the broad-leaved variety, *B. latifolia*, the common *Laurel*, and the handsome hardy *Colchican*. Almost any of the *Hollies* will suit you; *Phillyrea media* and the evergreen oak, *Quercus ilex*, are also good. You had better plant the whole of the subjects rather small, for there is a great risk of their perishing if large.

SHRUBBY VERONICAS.—*B. B.*—Veronicas are, comparatively speaking, easy to grow, and when done well they are grand subjects for conservatory decoration through the latter part of the summer. Small plants can be grown without any special training; but larger specimens will, of course, require a little attention in that way. Those intended for growing into specimens should be potted on as required through the first season and kept tied out, and the young shoots pinched back, to get them into a good shape. Use, for potting, good turfy loam two parts and a third part of equal quantities of leaf-mould and rotten dung, and give the last shift not later than September. Keep the plants rather dry through the winter, and prune and start early in March. After the young buds are nicely started shift the small plants into larger pots; but the large plants should be taken out of the pots, the ball reduced, and repotted into the same sized pots again. Water liberally when the plants are in full growth, and give them a weak dose of manure-water once or twice a week. The plants may be set out of doors through the early part of the summer to make their growth, if the space under glass is limited. The second season the young shoots must not be pinched but trained out neatly, when they will continue to produce their beautiful spikes of flowers for a long time. Several varieties do well as standards; grown that way they make capital subjects for mixing with other plants.

READ'S SLOW COMBUSTION BOILER.—*Amateur*.—We can say much in praise of this boiler. In economy of fuel, efficiency in action, and simplicity of construction and management it is just the thing for a tenant at will, who cannot comfortably put up brickwork on substantial foundations. The only fault we can find with it is that the outer jacket is thin. We had several examples of this invention under observation during the past winter, and in each case they have given complete satisfaction: These boilers should always be under cover of some sort.

ERICAS AND EPACRIS.—*Inquirer*.—Heaths and epacris are not of the same

genus, nor are they now regarded of the same order. Heaths belong to the order *Ericaceæ*, and epacris to the order *Epacridaceæ*. Previous to 1810, however, they were regarded as of the same order, but were separated by Brown, partly because of the desirability of breaking up so vast an order as *Ericaceæ*, and partly because of a distinctive character—the true heaths or ericas having anthers with many cells, the true epacris having anthers that are one-celled. It is an interesting fact, too, that epacris are natives of Australia and Polynesia, countries in which scarcely any species of erica are found.

Miss R., Bath.—The young man must have several years' experience in pushing nurseries before he can hope to carry on an establishment of his own with a fair prospect of being successful. It would be preferable to work in two or three good nurseries, and remain a year or two in each, before setting up on his own account. We cannot offer any advice in reference to the best locality, and as regards the amount of capital required, it can only be said it entirely depends upon the class of business it is desired to establish.

ROCHEA PALCATA.—*Miss H.*—This requires a sunny greenhouse, soil broken bricks, sandy peat, and rotten dung, equal parts, plenty of water and full sun all the summer, and not a drop of water all winter.

TRADE CATALOGUES.

JAMES BACKHOUSE AND SON, YORK.—*Catalogue of Hardy Trees and Shrubs.*

JAMES COCKER AND SONS, SUNNYPARK AND FROGHALL NURSERIES, ABERDEEN.—*Descriptive Catalogue of Forest Trees, Ornamental Trees, Shrubs, Roses, Fruit Trees and Vines.*

DICKSON AND ROBINSON, 22, MARKET PLACE, MANCHESTER.—*Descriptive and Priced Catalogue of Roses.*

JAMES DICKSON AND SONS, NEWTON NURSERIES, AND 198, EASTGATE STREET, CHESTER.—*Catalogue of Forest Trees, Shrubs, and Evergreens.*

WM. DRUMMOND AND SONS, STIRLING, AND 58, DAWSON STREET, DUBLIN.—*Catalogue of Forest, Ornamental, and Fruit Trees, Roses and Shrubs.*

JAMES HOLDER, CROWN NURSERY, READING.—*Retail Catalogue of New and Choice Pelargoniums.*

KELWAY AND SON, THE ROYAL NURSERIES, LANGPORT, SOMERSET.—*Twenty-fourth Annual Catalogue of Gladioli.*

THOMAS KENNEDY AND CO., DUMFRIES, *Catalogue of Forest, Fruit, and Ornamental Trees.*

THE LAWSON SEED AND NURSERY COMPANY, LONDON AND EDINBURGH.—*Nursery Trade List for 1874-5.*

LITTLE AND BALLANTYNE, KNOWEFIELD NURSERIES, CARLISLE.—*Catalogue of Forest and Ornamental Trees, and Deciduous and Evergreen Shrubs.*

MILLER AND SIEVERS, 27, POST STREET, SAN FRANCISCO, CALIFORNIA.—*List of Californian Tree, Shrub, and Flower Seeds.*

ROBERT PARKER, EXOTIC NURSERY, Tooting, Surrey.—*Catalogue of Double-flowered Pyrsthrums and Miscellaneous Plants.*

WM. POTTEN, SISSENGHURST, STAPLEHURST, KENT.—*List of Roses, Fruit Trees, Coniferæ, Evergreens and Shrubs.*

ROBERTSON AND GALLOWAY, 157, INGRAM STREET, GLASGOW, AND HELENSBURGH.—*Catalogue of Roses, Gladioli, and General Nursery Stock.*

ANT. ROOZEN AND SON, OVERVEEN, HAARLEM, HOLLAND.—*Autumn List of Gladioli.—List of Bulbous Begonias.*

THOMAS SAMPSON, PRESTON ROAD NURSERIES, YEovil.—*Catalogue of Gladioli.*

SIMON LOUIS, BROTHERS, PLANTIERES-LES-METZ, LORRAINE.—*General Catalogue and Price List.*

J. M. THORBURN AND Co., 15, JOHN STREET, NEW YORK, U.S.A.—*Wholesale List of American-grown Seeds for the European Trade.*

MAURICE YOUNG, MILFORD NURSERIES, NEAR GODALMING.—*Catalogue of Coniferæ, Hardy Ornamental Trees and Shrubs, Rhododendrons, and Forest Trees.*





COMPARETTIA (CYPRIPEDIUM)

MINIATURE ORCHIDS.

BY WILLIAM GEDNEY,

Head Gardener to J. C. Day, Esq., Tottenham.

(With Coloured Illustration of Comparettia coccinea.)

MINIATURE ORCHIDS, of the type represented by the pretty little *Comparettia coccinea*, will not for a moment compare in attractiveness with the lovely Odontoglots, and the more showy Cattleyas, yet they are so interesting as to be well deserving of the attention of those who are fond of growing botanical curiosities. Some of them are exceedingly beautiful, all are very interesting, and by reason of their small growth, a comparatively large collection may be cultivated in a structure of small size; especially are they deserving of the attention of those amateurs who have heated plant cases indoors; for in one of these, about four feet in length and thirty inches in width and in depth, a good collection could be grown, because in addition to those placed on the floor of the case, a large number may be suspended from the roof. Provided the case occupies a light position, facilities exist for maintaining a suitable temperature, and the plants receive the needful attention in the way of watering and air-giving, there will be no great difficulty in keeping them in good health. Of course, an ordinary house is the most suitable, and where orchids are cultivated, the miniature growing kinds should be associated with them, either suspended from the roof or placed upon the stage, according to their peculiarities. In the collection under my charge are a large number of these little gems, and when they are in bloom they receive their full share of attention from the visitors. Indeed, not unfrequently, they receive something more than their "full share," for some visitors will pass large and beautifully-flowered specimens of the showy lœlias and dendrobiums to have a look at a modest little restrepia, or one of the more curious bolbophyllums. I should not, of course, recommend their cultivation in roomy structures to the exclusion of the more robust kinds, but as supplementary to the latter, and in little houses and in cases where the space would not suffice for the production of fully-developed specimens of the larger growing cattleyas, dendrobiums, and vandas.

As they vary somewhat in character and in cultural requirements, it will be necessary in describing the several species most worthy of general cultivation, to indicate the conditions under which they make the most satisfactory growth; coming as they do from different quarters of the globe, some require a higher temperature than the others. They also differ in the character of the growth, and some succeed best on blocks of wood, whilst others thrive in pots filled with either peat or moss, or a mixture of the two. The pots must be proportionate to the size of the plant, perfectly clean, and be half filled with crocks. The majority of those best suited for pot culture will

thrive in a mixture consisting of equal proportions of sphagnum moss and fibrous peat, and unless some other preparation is recommended, it may be inferred that this mixture is the most suitable. Rough and rather thick pieces of virgin cork will make most excellent blocks upon which to put those which succeed most satisfactorily upon blocks suspended from the roof of the house. The pieces of cork should be from six to eight inches in length, and about four inches in width, and the plants must be fastened to them with small copper wire; they will soon push out new roots, and take a firm hold of the block. Provided the blocks are large enough and in a sound state, the plants should not be disturbed. The majority of those grown in pots, will require rather liberal supplies of water during the growing season, and short supplies when at rest. Those on blocks will require dipping in a vessel of water nearly every day when growing freely, and less frequently at other times, according to the season and the weather; in dull, damp weather in winter once a week will be quite often enough.

I will now proceed to give a brief description of those which can be the most strongly recommended for small collections. Unless their cultivation on blocks, or in baskets, is recommended, it must be assumed that they succeed best in pots.

ANGRÆCUM CITRATUM.—A pretty, small growing species, producing long pendulous spikes of pale yellow flowers, which are closely set on each side of the spike; succeeds best on a block.

BARKERIA SKINNERI.—A beautiful species, producing good spikes of rose-coloured flowers; one of the finest of the miniature species, should be grown in baskets.

BOLBOPHYLLUM BARBIGERUM.—A curious orchid; the flowers greenish brown; the lip, deep brown and covered with hairs; it is loosely attached, and when breathed upon, moves about in a most comical manner.

B. SALTORIUM.—This is another interesting species with greenish brown flowers; should be placed in the warm end of the house.

CATTLEYA WALKERIANA.—A very distinct species, about four inches in height, and producing rich, rose-coloured, and sweet scented flowers at midwinter and midsummer; should be grown in a basket in sphagnum.

CIRRHOPETALUM MEDUSE.—A very curious orchid, dwarf in growth, and most desirable.

COMPARETTIA COCCINEA.—A beautiful species, similar in habit to *Sophronites grandiflora*. The spikes are produced from the base of the pseudo-bulbs, and bear from three to six orange and scarlet flowers. It flowers in winter, and is especially valuable; should be grown on a block with sphagnum fixed round it for the plants to root into. It requires a liberal supply of water when growing freely, and to be kept rather moist when at rest.

C. FALCATA.—A pretty species, similar to the preceding, and bearing crimson flowers.

DENDROBIUM AGGREGATUM MAJUS.—A pretty species, attaining a height of four inches, and producing short spikes of bright yellow flowers.

D. JENKINSI.—A close growing species, not exceeding two inches in height, bearing rather large yellow flowers; should be grown on a block suspended from the roof.

DENDROCHILUM FILIFORME.—A neat growing orchid, usually attaining a height of six inches. The small yellowish flowers are produced in summer in long spikes, and when they are of the same height as the foliage, droop over in the most graceful manner possible.

D. GLUMACEUM.—Similar to the preceding, but with whitish sweet-scented flowers, which are produced in spring.

EPIPHORA PUBESCENS.—A neat growing species. The flowers are yellow spotted with brown, very fragrant, produced in long spikes, and last a considerable time in perfection.

GOODYERA DISCOLOR.—A dwarf species, with velvety leaves, producing during the winter neat spikes of white flowers. Should be potted in peat, leaf-mould, and sand.

IONOPSIS PANICULATA.—A pretty species, with rose and white flowers. Should be placed at the cool end of the house, and be grown on a block to which a little sphagnum has been fixed.

MASDEVALLIA COCCINEA.—A neat grower, with bright red flowers.

M. INFRACTA.—A pretty species of small growth, the flowers pale yellow stained with purple.

M. TOVARENSIS.—A dwarf-growing species, with pure white flowers, which are borne just above the foliage, distinct and desirable. All the Masdevallias should be grown in pots in a cool house.

NANODES MEDUSÆ.—A very singular orchid of low growth; the flowers are borne in pairs, and are light green and maroon.

ONCIDIUM CHEIROPHORUM.—A small-growing species, producing, during the winter season, a large number of dense spikes of rich yellow flowers.

O. CUCULLATUM.—Small in growth and exceedingly beautiful; flowers rose and purple.

O. PULCHELLUM.—Neat species, bearing white flowers. Should be grown on a block.

RESTREPIA ANTENNIFERA.—An interesting orchid, with yellow and brownish-red flowers, which are freely produced.

R. ELEGANS.—A neat species, similar in character to the preceding.

SOPHRONITES CERNUA.—A neat species, with pale red flowers.

S. COCCINEA.—A lovely species, with bright scarlet flowers.

S. GRANDIFLORA.—A fine species, with large brilliant crimson-scarlet flowers.

S. VIOLACEA.—A beautiful species, resembling the preceding in growth, but bearing violet-coloured flowers. All the Sophronites should be grown on blocks suspended from the roofs, and receive moderate supplies of water throughout the year.

THE CARTER CUP, value fifty guineas, with other prizes offered by the same firm for the best collections of vegetables, will be competed for at South Kensington on the 7th of July.

February.

CULTIVATION OF POINSETTIA PULCHERRIMA.

BY ROBERT OUBRIDGE,

Church Walk Nursery, Stoke Newington, N.



POINSETTIA Pulcherrima is so thoroughly valuable for decorations during the festivities of the New Year, that every amateur who has the convenience of a stove should grow a few plants. It may not at first sight appear to be well adapted to the requirements of amateurs, but it is quite as much so as any other winter-flowering plant that could be named. It is wonderfully effective when associated with the other plants in the stove, or with groups of palms, ferns, and fine foliage plants, which are occasionally arranged in the indoor apartments. Its grand crowns of crimson bracts show to wonderful advantage when under the influence of artificial light; and the bracts can be most advantageously employed in the dressing of epergnes or vases. There are not many readers of the FLORAL WORLD who have not seen Poinsettias at some time or other, and I shall not, therefore, occupy much space in describing them. They bear, it may be observed, large heads of bracts of the most brilliant crimson at the end of the shoots; and these heads range from four to twelve inches in diameter, according to the strength of the plants. The smallest sized heads are not large enough to make much of a display, unless the plants are trained in the form of bushes, and then their number compensates to a certain extent for their want of size. But the amateur who can assure heads ranging from six to eight inches across, may rest content, for they will be quite large enough for producing a decisive effect.

The Poinsettia is grown largely in the Church Walk Nursery for the London markets; and this season we had considerably over two thousand plants. In the management of so large a stock, we are bound to avoid all unnecessary work, and have consequently deviated somewhat from the system which prevails in private gardens. The case of the amateur and market-grower is much the same in the cultivation of plants of which a comparatively large stock is required; both are of necessity compelled to adopt the easiest and the most simple system possible. The way in which our stock of Poinsettias is grown is simple enough to be readily understood, and there is certainly nothing about it that cannot be carried out by an amateur cultivator who is fortunate enough to possess a stove in which to place them during the winter season. It may be said that the present moment is most favourable for purchasing a few plants, provided they be protected from frost and cold on their way home. There will not be much difference in the price that will have to be paid now and that which will be required in the spring; but from a plant that is now nicely established, several plants may be obtained. Those raised from cuttings struck at home will, in all probability, be more thrifty than those purchased in a small state. Until the freshness and beauty of the bracts are

gone, the only attention required will be to supply them with water. When they go out of bloom, the supply of water must be materially reduced. They should also be placed in a cool part of the stove to insure their having a thorough rest. They are frequently packed away under the stages, but it is not a good practice to put them there, especially as they may be placed out of sight behind other tall plants.

There are two good ways of propagating Poinsettias; one is by means of eyes prepared in much the same manner as the eyes of grape vines, and the other by cuttings. The latter is decidedly the best for amateurs, because of the danger of the eyes decaying. We have no difficulty with them, but then we are accustomed to the work, and know exactly what to do and what to avoid, and I am anxious that the amateur should not undertake anything of which there is good grounds for believing that he will not be able to carry out. I will therefore say nothing about the striking of eyes, but will proceed to deal with the propagation by cuttings. This work should commence in April, and to insure a supply of cuttings the old plants must be started into growth by the end of February or the beginning of March. The soft tops may be removed when the plants are at rest, but no further pruning will be required. Placed in a warm corner of the stove, and supplied moderately with water, they will soon commence to make new growth. Cuttings which have become rather firm strike most readily; shoots of three or four joints each are the best, and, if taken off with the thinnest slice possible, there will not be much danger of their damping off. They will soon strike in a brisk heat, and if a hotbed has been made up for cucumbers, partly plunge the cutting-pots in the bed, otherwise let them have a warm corner in the stove.

They must have no check from the first, and if plants with single stems are required put the cuttings singly into "thumbs," and shift them on until they are put into six-inch pots. Large specimens may be obtained without the labour of training, by putting four or five cuttings into three-inch pots, and then repotting them as more root space is required, until they are put into eight-inch pots. They must be shifted on as fast as they fill the pots with roots, until they receive their final shift, because allowing them to become pot-bound in the earliest stages of growth is most hurtful to them. A nice moist atmosphere and plenty of moisture at the roots is most essential to success, and it may be well to mention also that if they suffer much from dryness at the root, a large portion of the leaves will fall off. They do not require much air excepting during the hottest summer, and the pit or house in which they are placed must be ventilated freely, for they require no shade, and if exposed fully to brilliant sunshine with but little air, some of the leaves will in all probability be scorched. Cold draughts are most injurious, especially during the early part of the season. They will bear a high temperature without injury, but during the summer season they require very little artificial heat, as sufficient warmth can be provided for them by a careful storage of the sun's heat, by shutting up early in the afternoon. As there is a considerable risk of their being drawn up when

grown with the general collection in the stove, it is an excellent plan to place them in a small pit with subjects requiring similar management.

The compost in which we have found them to thrive the most satisfactorily is prepared by well mixing together equal parts of turfy loam, fibrous peat, leaf-mould, and silver sand. If the loam is mellow, fibrous, and silky, the peat may be dispensed with, and a smaller proportion of sand used. The simplest way is to allow the plants to grow to their full height, for they require no stopping, and flower as they please. They are then gorgeous in the extreme, and those who have grown them, so that their bracts are large, and the leaves of a deep rich green, may well feel proud.

The plants may be grown a second year, and the proper course is to prune them rather low early in the spring, and when the shoots are about two inches in length to shake them out and repot, using fresh soil. The shoots will require tying out a little to ensure the full development of the leaves, and dwarf specimens may be had by twisting the shoots round three or four stakes inserted in the pot, sometime in August. They should be allowed to grow naturally afterwards. Some practice is needful before much success can be expected in training Poinsettias, and I should recommend amateurs to be in no hurry to attempt it.

GERANIUMS FOR EVERYBODY.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex, W.



It is yet too early to buy or commence the work of propagating geraniums, whether for the flower garden or the conservatory, but these matters will soon have to be thought about, and in the meanwhile a few critical remarks on the varieties which should be grown by everyone, will perhaps be useful to those who will find it necessary, during the forthcoming season, to increase their stock either by propagation or purchase. "Everybody's geraniums" are those varieties which, by reason of their floriferous character, neat habit, and adaptability to all soils and situations, are as well suited for the garden of the humble amateur as they are for the garden of the wealthiest nobleman. These varieties are not so plentiful as it may at first sight appear, for of the five or six hundred found in the catalogues, there are not perhaps more than twenty sorts that are admissible in a selection prepared with a view to its being adapted to the requirements of all classes. In cases where the amateur has plenty of space, and takes an especial interest in zonal geraniums, he may of course select according to his fancy, but in other instances where it is desired to produce a good display of bloom with as little trouble as possible, I should strongly recommend the undermentioned as being preferable to all others.

BEDDING VARIETIES—First in the list of bedders, stands *Vesuvius*, which has now found its way into the majority of gardens. It has a

neat compact habit, produces good trusses of nicely-formed flowers, and the colour is a very bright scarlet, although a few shades less rich than some few varieties that could be mentioned. It blooms freely and continuously, and it resists the effects of a little rough weather, better than the majority of varieties. This may be considered the best of all the scarlets for bedding. For a deep crimson take *Crimson King*, which is rather more robust than the preceding, but it produces a profusion of fine trusses of deep crimson flowers. The best of the light red varieties is *Lucius*, which is rather robust, and well adapted for back rows and the centre of large beds. The trusses are usually very large, and the colour a light orange red. *Warrior* is another strong grower; and is specially adapted for dry sandy soils: the trusses are large, and the colour a bright fiery scarlet. Amongst white varieties, *White Clipper* is unquestionably the best for general purposes, but as it is comparatively new, it commands a rather higher price than some of the most popular of the older kinds. *White Wonder* still remains one of the best of the older kinds, none of which, it may be said, are as good as could be wished. As regards pink varieties, *Cleopatra* may be safely put down as the best; it has the neat habit and free-flowering qualities of *Christine*, is richer in colour and produces very few seeds. *Mrs. Haliburton* is also in the way of *Christine*, but brighter in colour and in every way better. There is now no lack of good pink bedders, but these are indispensable, and should be grown by every one.

Several of the nosegays are quite invaluable. *Bonfire* is the first to claim attention, for it surpasses in richness of effect *Stella*, *Waltham Seedling*, and all the others of that class, whilst it is equal to the best of them in adaptability to all soils and situations. The trusses are of great size, and the flowers of a rich crimson scarlet.

Anna Pfitzer is rather dwarf, very neat and compact, and produces continuously a profusion of flower trusses of the most brilliant orange scarlet. It is unquestionably the best of the colour, which by the way is very telling. The varieties with purple-crimson flowers, are mostly of robust habit, and the best of them is *Lady Kirkland*, which is well adapted for large beds or back rows. The richest pink in the section is *Mrs. Holden*, a superb variety of medium growth, and wonderfully free flowering. Hibberd's *Feast of Roses* is the best of the pinks for large beds and borders. *Rose Bradwardine* is also a valuable variety, with neat trusses of warm rose-pink flowers. *Violet Hill Nosegay* is perhaps the best of the nosegays as regards habit, and is very free flowering; but the flowers are of a dark salmon red colour, and it is, therefore, less effective than the scarlet varieties.

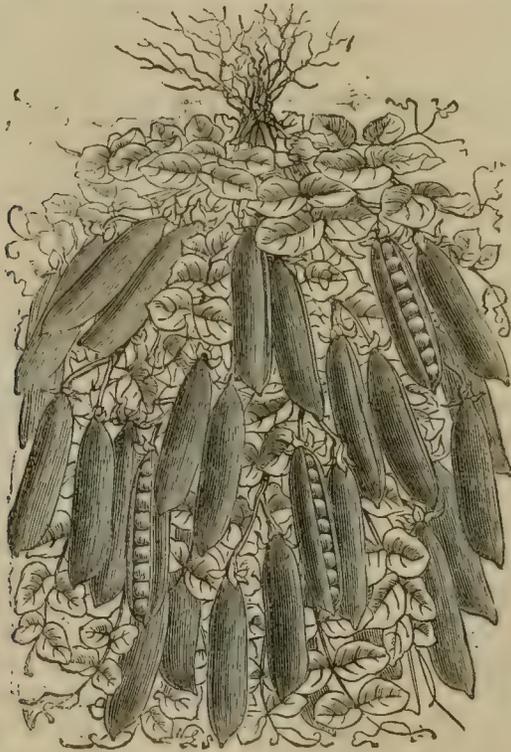
CONSERVATORY VARIETIES are those which have flowers of good form and neat habit. It is important to select varieties that have flowers of better quality than those grown in the flower-garden, and bloom freely for a very considerable period. Some varieties produce a grand display of flowers for a short time and then go out of bloom, and are of very little service during the remaining part of the season. These are of very little use for the conservatory, unless a reserve stock is maintained, from which to renew them as they go out of bloom. *Arago*, *Corsair*, *Harry King*, and *Richard Heady*, are four

grand varieties with scarlet flowers. *Ianthe* and *Heartsease* are the best of those with bluish-purple flowers; *Master Christine*, *Mrs. Musters*, and *Mrs. Fytche*, three of the most useful pinks. Of those with crimson flowers, *General Outram* and *Wellington* are perhaps the best. The most useful salmon-coloured varieties are *President Thiers* and *Gloire de Corbeny*; and the best of those with white flowers *White Wonder* and *The Bride*. The best of the painted flowers are unquestionably *Alice Spencer* and *Beau Villageois*. The three best varieties for winter flowers are *Vesuvius*, *Master Christine*, and *White Clipper*, as they bloom very freely during winter with very little preparation.

MR. LAXTON'S NEW PEAS.



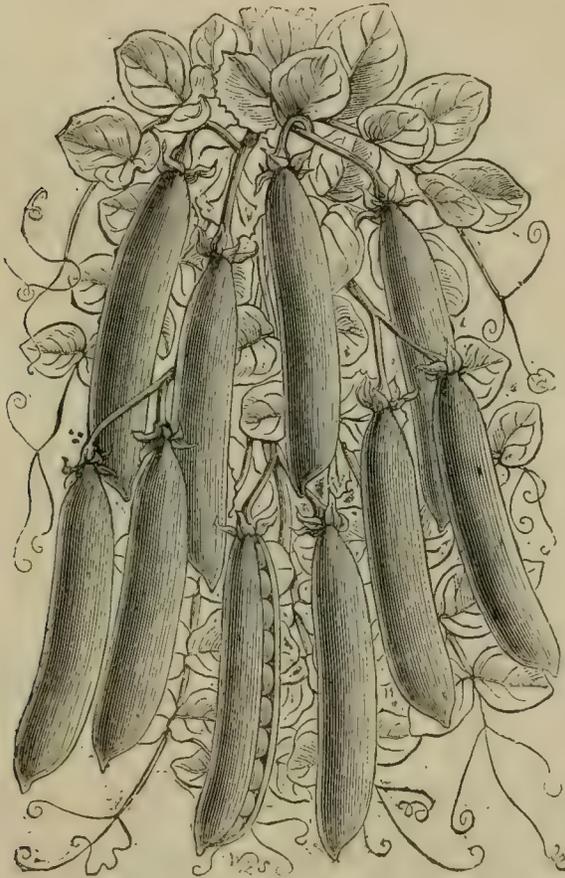
MR. LAXTON, of Stamford, has entrusted to Messrs. Hurst and Son, of Leadenhall Street, a series of new varieties of peas, which merit the attention of the cultivators of the most esteemed of garden vegetables. The aim of Mr. Laxton, in his labours as a cross breeder, appears to be to insure the production, by dwarf plants,



UNIQUE.

of peas of the finest quality, such as we have hitherto obtained only from the tallest growers. Dr. Maclean, probably, was actuated by a similar intention, for he certainly secured some grand varieties characterized by robustness, productiveness, fine quality, and quite

moderate growth. Mr. Laxton's successes promise to insure for him as high a rank in this useful department of horticulture as that attained by his distinguished predecessor, and we have no doubt he will go far beyond the point at which the hero of Colchester closed his labours. His William I., Omega, and Popular are invaluable: the first being the earliest green marrow out; the second the very best late pea; and the third one of the most prolific, and withal of the finest quality. The new varieties now offered for



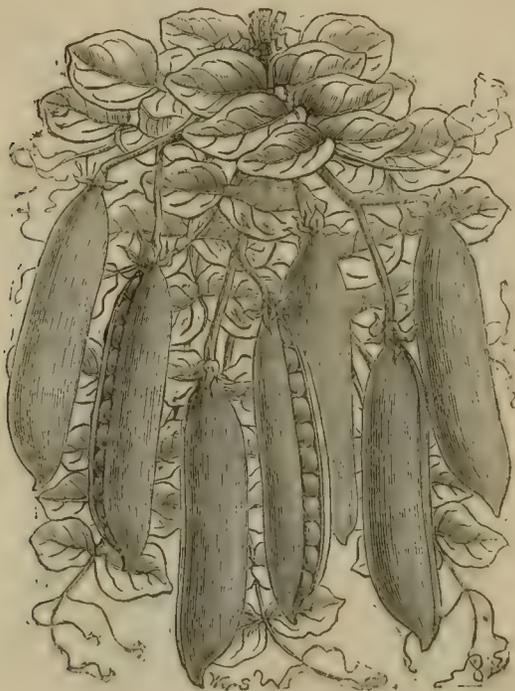
DR. HOGG

the first time have been submitted to the tests appointed for such things in the public interest, and have been certificated by the Fruit Committee, and strongly recommended. Having seen samples, and having grown nearly all Mr. Laxton's varieties from seed supplied by him, we are enabled to recommend the new varieties as worthy the immediate attention of our readers.

Unique is a dwarf pea, requiring no support. The pods are produced in great abundance, as early as Sangster's No. 1, but it is a true green marrow, the pods long, deep green, and well filled with peas of large size, that are of the finest quality when served on the table.

Dr. Hogg is a very early green wrinkled marrow, coming in some days before Sangster's No. 1. The growth is robust and leafy, rising three feet. The crop is heavy, the pods of a fine deep-green colour, well filled, and the peas of the finest quality.

Supplanter is the result of a cross between Veitch's Perfection and Little Gem, combining the qualities of both, and being characterized by a particularly fine appearance. The plant is very vigorous, rising three feet. The pods are produced in pairs, they are large



SUPPLANTER.

and broad, and well filled with large peas. This is one of the finest exhibition peas we have.

Connoisseur is a late wrinkled pea, raised from *Ne Plus Ultra*; the plant rises six feet, and produces abundantly for a considerable length of time handsome peas of a fine green colour. In deep strong soil this will be found a most valuable late pea.

The best early pea for all purposes is *Laxton's No. 1*, sent out last year. It is a blue wrinkled marrow, coming in with the first earlies, the plant rising only three feet, or less. S. H.

THE ROYAL BOTANIC SOCIETY has issued the schedule of prizes offered for competition at the summer exhibitions to be held in its gardens, Regent's Park, on Wednesdays, May 26, June 16, and June 30. The exhibitions on the two first-mentioned dates will comprise specimens of stove and greenhouse plants, roses, orchids, heaths, pelargoniums, ferns, and fine-foliage plants. The third exhibition will be devoted to cut flowers and fruit.

HAND AND BUTTON-HOLE BOUQUETS.

BY MISS A. HASSARD, ST. RONAN'S, UPPER NORWOOD.

HAND BOUQUETS.



FROM time to time I have often written in these pages on the subject of floral decorations, but never on that branch which I now intend to treat of, namely, Hand and Button-hole Bouquets. Therefore, a few hints as to their construction may prove interesting. There is no portion of floral decorations which requires more skill, neatness, and lightness of touch, and exhibits more satisfactorily the good taste of the arranger, than either of these styles of bouquets. In the knowledge of their construction there are many advantages. Suppose a lady be on a visit to friends in the country, and invited to a ball, she will wish to be possessed of a handsome bouquet; and though there may be many plants from which choice flowers can be cut, after all, if she does not know how to mount and arrange them, they are comparatively useless. True, some of my readers may exclaim, "Of course the gardener could make up a nice bouquet;" but I am not so sure of that; it does not hold good always that because a man is a good plant grower, he needs must be a good arranger of flowers in a cut state. If this were always the case, there would be no work for the girls in the florists' shops, as it would be cheaper for the florist to buy them ready made, than pay others for making them. Enough of this, however. It suffices to say, should occasion occur, it is pleasant to be able to make a bouquet, and the knowledge of how to do so is not a heavy burden to carry, though it may not require to be constantly employed.

An experienced bouquet-maker could make *four* large handsome hand bouquets with the same amount of flowers that an ordinary amateur would require to employ in the construction of *one*. The bouquet maker would separate all the geranium pips, and such like, and mount them singly, whereas the amateur would just arrange them in the truss on their own stem as cut. Though it may appear that they would soon fade when subjected to the former, that is to say, the dividing process, nevertheless, they really last very much longer, as each is mounted with wet moss, which tends to keep them fresh. There are many short-stemmed flowers, such as azaleas, which must be mounted on artificial stems, as they have not any of their own long enough without cutting the plant back very hard. As a substitute for their own stems, what are termed "stub wires" are employed; and here I may mention the different kinds, namely, "stubs," "piercing"—two sizes of the latter—and "binding," or "reel wire." The former two are sold in bundles cut in lengths, and the latter by the reel. I always purchase my bouquet wires at Hooper's, in The Arcade, Covent Garden Market. I shall not here enter into the different modes of mounting each flower, as space would not permit of my enumerating half the number; but

let it suffice for me to say the best manner of learning this art is to purchase a good specimen of a hand and button-hole bouquet at some first-class florist's, take it to pieces, and see how each bloom is mounted. Though there may not be very many different flowers in the bouquet, you can easily see how the same mounting which suits this bloom would be equally adapted to that, and so on, as the case may be.

As a rule, all hand bouquets have their centre formed of some large-sized flower, such as a camellia, eucharis, gardenia, etc., and then the other portions of the bouquet are composed of such flowers as roses, violets, azaleas, pelargoniums, stephanotis, or whatever else may be obtainable. Some admire bouquets mounted in patterns such as bands of distinct colours, or a coloured cross on a white ground, while others prefer them simply mixed. But this is quite a matter of taste. I shall give descriptions of some I have myself made, and which were successful in taking prizes at the Crystal Palace, and exhibitions of the Royal Botanic Society. Some were brides' bouquets, others for daylight purposes, and some for balls or the opera. In the latter case, they had to be made of colours which would endure subjection to artificial light. I shall first take, for example, the bride's bouquet, to which was awarded the silver medal at the Regent's Park show. The centre was composed of a very large-sized gardenia bloom, while round it was a ring formed of the common white woodruff, then came stephanotis, jasmine, azalea, etc., four blooms of *Eucharis amazonia* being also placed so as to form quarters, while the whole was dotted over with blooms of lily of the valley and white campanula, so placed that they stood up well above the other flowers, and tended to give a light look, which should always be aimed at in this style of arrangements. Through these, and above the whole, were fronds of *Adiantum cuneatum*, a fringe of which was also formed round the outer edge, the whole being finished off with a handsome paper (with white lace round the edge), and tied with a white satin ribbon bow, and long ends.

The ball bouquet, for which I was also awarded a medal at the same exhibition, was made of scarlet and white flowers in the form of a scarlet cross on a white ground, a bloom of eucharis being in the centre of the cross, and also forming the centre of the bouquet. The cross was formed of single pips, or flowers of a bright scarlet geranium, and the quarters of stephanotis, gardenias, white carnations, rose-buds, woodruff, and lily of the valley, with plenty of fronds of light maiden-hair fern distributed through the whole and round the outer edge; it was finished off, in regard to the paper, in much the same style as the bride's, only one end of ribbon was scarlet, in place of both being white.

That for which I was awarded a prize at the Crystal Palace was for morning use, such as a wedding, etc. It was arranged also in the form of a cross; only in place of the cross being formed of scarlet geranium pips, it was made of large purple pansies of a rich shade. In the centre was a white camellia, and the four quarters were made of stephanotis, azalea, geranium, gardenia, etc., and in the centre of each quarter of white was a tuft of blue forget-me-

nots. Over the whole was interspersed spikes of lily of the valley and fronds of maiden-hair fern, plenty of the latter being put round the outer edge. It was finished off with a good paper, and tied with white ribbon.

I made a bouquet last season of much the same flowers, save in place of the purple pansies and blue forget-me-nots, I employed a purple or rather mauve-shaded cineraria, and blooms of *dendrobium nobile*, and through the lily of the valley placed mauve cyclamen. It was not arranged in any set form, but the orchids were mounted to stand up above the other flowers amongst the lily of the valley, cyclamen, and maiden-hair fern. Round the edge were fronds of the latter, also those of *Pteris serrulata*; it was tied with ribbon, one end white, the other being mauve of corded silk. The paper was a handsome one, but with no lace attached.

In conclusion, I shall describe one I saw lately exhibited in a florist's window in Covent Garden Market, and I remarked at the time that it was very elegant. The following flowers were employed in its construction: gardenias, bouvardias, camellias, and, in the way of colour, yellow rose-buds (*Marechal Niel*), and little bunches of a bright blue *nemophila*. It was one of the most charming arrangements I have ever seen.

BUTTON-HOLE BOUQUET AND COAT FLOWERS.

Every one knows the difference between a button-hole bouquet and a coat flower is, that the bouquet consists of two or three varieties, as the case may be, while a coat flower should be only a single bloom, associated with some fern or other foliage. The prettiest coat flowers are a rose-bud, gardenia, orchid, camellia, and such like. These should, as a rule, always have plenty of fern fronds associated with them. The same flowers may be employed in bouquets with the addition of such as bouvardias, *pelargonium pips*, heaths, forget-me-nots, and the hundred-and-one other varieties suitable for this purpose, which it would be impossible for me here to enumerate. A foundation, or back to each bouquet, should be formed of a camellia leaf, or any similar leaf of strong texture, which keeps the whole arrangement firm and in its place. Bouquets should be made of a pointed form, the point being formed by means of such a flower as a spike of lily of the valley, heath, etc. The mounting of flowers with wire for button-hole bouquets is similar to those for the hand, save that so many stubs are not employed. But any one who can mount and make up a good hand bouquet need not fear a button-hole one, though, of the two, the latter is by far the most difficult.

A DOUBLE *GLADIOLUS*, raised by M. Bernard Nantais, and exhibited before the Horticultural Society of the Haute-Garonne, is described as highly ornamental. For some time past the tendency of the flower to doubling has been apparent to cultivators, and it is probable that we shall, in course of time, have a series of double varieties, possessing considerable value for garden decoration.

February.

SHORT NOTES ON USEFUL VEGETABLES.



THE kitchen garden will, for some time to come, claim a considerable share of the attention of the amateur, and a few hints on the cultivation of the more important vegetable crops will, perhaps, be of considerable service to many readers of the FLORAL WORLD. As the cultivation of all the vegetables has been dealt with at considerable length in past issues, it is now proposed to allude to those points only which are of the most importance.

BRUSSELS SPROUTS.—This is, perhaps, one of the most popular, as it is one of the most valuable, of winter vegetables. It is hardy, elegant in appearance, delicious in flavour, and may be had in perfection for quite four months. To insure a good crop of sprouts the plants must be grown in rich soil, and have a rather long season of growth. The seed should be sown early in March on a sheltered border, and, as soon as the plants are large enough, commence to plant out the strongest, two feet apart, on a piece of ground that has been well manured and stirred deeply. Continue to plant out until the space allotted is filled, and be careful to well water them until they are well established. By planting at intervals and selecting the strongest each time, overcrowding is prevented, and a supply of a more satisfactory character than would otherwise be the case will be secured during the winter. A second sowing may be made in April if the stock of plants is short, otherwise it will not be needful, as the best crop is obtained from the March sowing. *Scrymger's Giant* is, perhaps, the best stock of this vegetable in general cultivation.

BROAD BEANS.—One of the main essentials to success in the cultivation of these vegetables is to sow in deeply-stirred and well-manured ground. To maintain a succession from the earliest moment possible, sow early in February one or two of the earliest sorts, and towards the end of the month make a good sowing of a main crop variety, and continue sowing, at intervals of a fortnight, until the end of April. As a rule, it will suffice in small gardens to sow an early sort in the first week in February, and to make sowings of a main crop variety at the beginning and end of March. The dwarf sorts will require a space of fifteen or eighteen inches between the rows, and the tall sorts from twenty-four to thirty inches; and in each case the seed to be sown thinly in two rows. The hardiest sorts for sowing early are the *Early Longpod* and *Mazayan*, and the best for main crops are *Green Windsor*, *Taylor's Broad Windsor*, and *Minster Giant Longpod*. *Beck's Green Gem* is a very excellent and productive dwarf sort, well adapted for small gardens.

BORECOLE, OR KALE.—There is not, perhaps, a more thoroughly useful class of vegetables grown than the borecoles, or kales, as they are most generally designated. They are of especial value for their hardiness, and the amateur may sow and plant with the full assurance of obtaining a good supply of tender greens during the winter and the spring. As a long season of growth is of considerable importance, sow on a warm border early in March, and commence to plant out immediately the plants are large enough. Draw from the seed-bed

the strongest first, and continue to plant at intervals, as they become strong enough, until a sufficient breadth has been planted. The rows should be from two and a half to three feet apart, and the plants from two to two and a half feet apart in the rows, according to the character of the soil. Those planted in rich soil will require the greater space. The finest crops are obtained from quarters that have been liberally manured and dug deeply, but fair crops may be had from any ordinary soils. Even in the smallest gardens several sorts should be grown. The best are the *Cottage's Kale*, remarkable for its hardiness, the large crop of sprouts produced in the spring, and its delicate flavour; *Chou de Milan*, a delicious vegetable, but rather tender in constitution; *Jerusalem Green Curled*, hardy and productive; and the *Tall* and *Dwarf Scotch Kales*, which are well known for their hardiness, productiveness, and high quality. The dwarf form is the most suitable of the two for small gardens.

CORN SALAD, or, Lamb's Lettuce, may be most successfully grown in any ordinary garden soil, provided it is not heavy. To insure a successional supply throughout the year, make three sowings—the first in February, the second early in August, and the third in September. Sow in drills six inches apart, and thin the plants to three inches apart in the rows. A rather dry and sheltered border should be selected for the last sowing.

CAULIFLOWER.—A liberal supply of cauliflowers of the finest quality is a prime necessity in all good gardens, and as few vegetables pay better for liberal cultivation, the ground should be well prepared, and the plants have careful attention during the earlier stages of growth. To maintain a supply from the early part of the summer, sow in boxes in February and March, and place in gentle heat; in April, May, and June sow in beds in the open; and in August or September in a bed out-of-doors, to furnish a stock of plants for wintering in frames. Those raised in heat must be pricked off on a bed of light rich soil, made up in a cold frame, and be planted out when they have acquired sufficient strength to admit of its being done with safety. Those from the spring sowing out-of-doors should be planted direct from the seed-bed. In both cases they should be planted in a quarter that has had a liberal dressing of manure in the winter previous, or at least has been stirred to a depth of not less than twelve inches. The soil cannot well be too rich for this vegetable, although good heads may be produced in any good garden soil. Those raised in the autumn should be planted, towards the end of October, in a cold frame or under hand-glasses. Medium-sized plants are the best for keeping through the winter under glass. They should be put four inches apart, the frame be ventilated freely (excepting during wet or frosty weather), and the soil maintained in a nice moist state. Towards the end of March or early in April, plant out on a warm border, and cover with flower-pots or bell-glasses in case of sharp frosts. In all cases a space of thirty inches should be allowed each way between the plants, to afford them sufficient space for their proper development. The most useful sort for sowing in spring under glass is the *Walcheren*; for spring sowing out-of-doors, *Veitch's Autumn Giant*; and for sowing in

autumn to keep through the winter, *Early London White* or *Walcheren*.

CABBAGE.—This is, perhaps, one of the most profitable vegetables that could be grown in small gardens, and well deserves generous cultivation. In seasons of scarcity, a sowing may with advantage be made in boxes placed in heat, to secure a supply at the earliest moment possible; but under ordinary circumstances, the plants should be raised in the open ground. For the late summer and autumn supply, sow in March and April; and for the spring and early summer supply, sow towards the end of July. The spring-sown plants must be put out at intervals, according as the plants acquire sufficient strength and the ground is ready for them; and those raised in July should be put out about the middle of September. The distance at which they should be apart depends entirely upon the sort, but, as a rule, the small sorts will require a space of twelve inches and the larger ones eighteen inches each way. As a quick growth is essential in the production of tender hearts, well-tilled ground should be selected for all the plantations of cabbage. *Barr's Dwarf* and *Hill's Incomparable* are two excellent cabbages of small size for sowing in spring; *Enfield Market* and *Wheeler's Imperial* two of the best large sorts for sowing in spring for main crops; and for sowing in autumn, to stand over the winter, *Enfield Market* and *Nonpareil Improved* are the most useful, because of their hardiness and good quality.

CUCUMBER.—To maintain a supply throughout the year requires well-constructed houses and much skill, but the production of a supply from early summer until late autumn is a comparatively easy task. For the summer crop sow the seed in March, and when the plants are well above the surface, pot them off separately, and place near the glass to afford them an opportunity of making a stocky growth. In the meanwhile prepare a brisk hotbed, and when all danger from over-heating is past, put a barrowful of soil in the centre of each light, allow it time to be warmed through, and then put one plant to each hill of soil. Shade when newly-planted, but as they become well established, dispense with shading materials, and ventilate sufficiently to prevent scorching. Syringe once or twice a-day, according to the weather, water liberally, and close the ventilators or lights rather early in the afternoon to husband all the sun-heat possible. Stop at the fourth or fifth joint, train the shoots regularly over the bed or trellis, and stop again when at from eighteen inches or two feet in length, according to the space they have to cover, and also nip off the points when the shoots reach the outside. Apply fresh soil to the hillocks as fast as the roots come through, and this must be done before the shoots have extended far, because of the great risk of injuring them. The bed should, as a rule, be made at two operations after the formation of the hillocks, and it should consist of a mixture of good turfy loam, leaf-mould, and manure. When cucumbers are grown in ordinary wooden frames placed on a bed of fermenting materials, the heat may be maintained during the greater part of the summer by means of linings of grass mowings, which should be placed round the sides as they are brought

from the lawn. The best sorts for frame-culture are *Blue Gown* for beauty, and *Masters' Prolific* and *Telegraph* for usefulness. Cucumbers may be most successfully cultivated without artificial heat from May to October in any of the houses and pits usually devoted during the winter season to bedding plants.

CAPSICUMS AND CHILIES.—The pungent little fruits of these are so useful in the kitchen that a few plants should be grown in the smallest garden. They require a comparatively long season of growth to enable them to ripen their pods; therefore, sow in heat about the middle of February, and when the young plants are about two inches high, pot them off, use small sixties, and put two plants in each; shift, when established, into five-inch pots, and then transfer to two sizes larger. Use a rather light and rich soil, place in warm position in the greenhouse and supply liberally with water. A portion of the stock may be planted early in June at the foot of a south wall, for the production of a supply of green pods for pickling. The *Small Cayenne*, and *Long Red Chilies*, and the *Long Red* and *Long Yellow Capsicums* are the most useful kinds.

LETTUCE.—Although the finest crops are obtained from well-manured soil, it is proper to add that Lettuces of excellent quality may be obtained from ordinary good soils, to which manure has not been applied for several years. They will, however, well repay good cultivation, and should, as far as practicable, be planted in soil that has been recently manured, or is in good heart from the manure applied for the previous crop. To produce a successional supply, extending over the year, sow in boxes, and place in heat in February and March; from the middle of the last-mentioned month until the end of July, sow out of doors at intervals of three weeks, and again in the middle of August and September. The plants raised in boxes must be pricked off in a bed made up in a frame to strengthen previous to planting out. The plants raised in beds out of doors should be planted direct. From April to July the best crops will be obtained by sowing thinly in rows in the open quarters, and then thinning them out to the proper distance apart. The thinnings may be planted out if needful, but as plants that have not been disturbed stand the hot weather so much better than those which have been transplanted, make a point of sowing sufficient seed to render transplanting unnecessary. The plants from the two last sowings should be put in frames, under hand-glasses, or at the foot of south walls. On dry soils lettuces will live through the winter without the protection of glass, provided the winter is not severe; but, as a matter of precaution, a one or two-light frame should be filled with small plants to put out on warm borders in the spring, to furnish the earliest supply. The distance at which lettuces should be planted will depend upon the kinds, and the season of the year. The small cabbage varieties should be six inches apart, and the large growing cabbage and cos varieties a foot apart each way. A space of six inches each way will suffice for any of the sorts planted early to draw rather young. The best sorts for general purposes are for early spring sowing, *Hicks's Hardy White Cos* and *Leyden White Dutch Cabbage*; for sowing out of doors from March to July, *Paris*

White Cos, *Holme Park Green Cos*, and *Brown Sugar Loaf Cos*, and *All the Year Round Cabbage* and *Drumhead Cabbage*; and for sowing in autumn for winter and early spring use, *Brown Bath Cos*, and *Hammersmith Hardy Green Cabbage*.

PEAS.—Amongst the numerous crops grown in the kitchen garden, there is none, perhaps, which will pay so well for thoroughly good cultivation as the pea crop. The earliest sorts are not profitable, and amateurs with small gardens should only grow main crop varieties. To secure a supply extending over the longest possible period, sow in February the first earlies in rows four feet apart on a warm sloping border. The first week in March make a sowing in rows eight feet apart of a main crop variety, and sow other good sorts at intervals of a fortnight or three weeks, until the last week in May. Sow again towards the end of June and the end of July good breadths of one or more of the first earlies, with the chance of obtaining a supply late in the autumn. The soil cannot be well too rich, and if the tall main crop varieties are sown in trenches prepared in much the same manner as for celery, but not quite so deep, the produce will be materially increased. The tallest sorts are the most productive, but the dwarf sorts, ranging from three to four feet in height, possess the advantage of not requiring such tall sticks. The spaces between the peas may be cropped with cabbage, lettuce, potatoes or spinach. Rows of the latter should be sown between the early peas. The early sorts must be sown rather thickly, but the others must be sown rather thinly or they will smother each other. The best sorts for sowing in February are *First Crop* and *East's Kentish Invicta*. For successional sowings for main crop, the best of those not exceeding four feet in height are *Champion of England*, *Wonderful*, *Princess Royal*, and *Veitch's Perfection*, and the best of those from five to six feet, *Laxton's Supreme*, *British Queen*, and *Ne Plus Ultra*. For sowing for the latest supplies the best are *Advancer*, *Laxton's Alpha*, and *Taber's Perfection*.

THE AMATEUR'S VINERY.—NO. 2.

BY THOMAS TRUSSLER,

Nurseryman, etc., Edmonton, N.



IN the FLORAL WORLD for January directions were given for the construction of vineries, the formation of borders, and planting the vines, and I now purpose offering a few hints on the management of the vines.

To avoid repetition, we will suppose the amateur to have planted the vinery according to the instructions already given, and the vines to be remaining unpruned. No attempt should be made to crop the vines the first season, for it cannot be done without seriously injuring them, and the produce is usually so very poor as not to be worth having. The best course, in fact the only course

that can be recommended, is to prune those planted inside the house to the first or second bud above the surface of the soil, and those planted outside, to the second bud, from the point of their entering the house. When they commence to grow, select the most promising shoot on each vine, and rub all the others off, and train up the one remaining in its proper position. The utmost care must be taken to guard the remaining shoots from injury, because, if they are damaged in any way, there will be a considerable loss of time. The pruning must be done at once, to afford time for the wound to heal over before the sap begins to move freely. No fire-heat will be required for the first season, as the sun-heat will, if carefully husbanded, afford sufficient warmth to insure a vigorous growth from the first. To secure a stout base to the rod, stop it when it has reached about half-way up the rafter, and then train the shoot, which will push from the topmost bud, to take the lead again. The laterals, which push lower down, should be stopped when about twelve inches in length, with the exception of the smaller ones that do not appear likely to exceed fifteen inches, as a somewhat free development of the laterals will be of material assistance in increasing the thickness of the lower part of the rod. The cane will require stopping again when it reaches the top of the rafter; and the laterals, which push from the second section, will require regulating in a similar manner to those on the lower part. As the border will not be very full of roots, moderate supplies of water will suffice to maintain the vines in a flourishing state; they must not, under any consideration, be allowed to suffer from dryness at the roots, for if this happens, the growth will be weak, and the foliage quickly become infested with red spider. A moderate degree of atmospheric humidity will be most favourable to the production of stout rods, and, therefore, when the house is closed in the afternoon, the vines and the walls should be syringed, and the floor and walls sprinkled somewhat liberally. The syringing must be followed up from the time the vines begin to grow until the canes reach the top of the rafter and begin to assume a brownish hue, when it must be discontinued. After a cold, dull day, sprinkling the floor will suffice; and it will perhaps be useful to intimate that, if the syringe is plied vigorously in cold, sunless weather, and no fire-heat employed, the speedy development of mildew will be the result, and do much mischief to the vines. The vinery will require ventilating rather liberally, and to guard against the foliage being scorched, admit a little air just before the sun begins to shine upon the roof, and increase the ventilation as the sun acquires power. By opening the ventilators early, the foliage has a better chance of becoming dry before the sun can act upon it. In warm, genial weather, the ventilation must be abundant, especially towards the end of the summer, when the growth of the canes will be nearly completed. In the early part of the season, especially during the months of March and April, the admission of air must be regulated with care, to prevent cold currents injuring the tender foliage. After the canes have attained their full size, the vinery should be left open night and day, and continue open until Christmas, excepting during a severe frost.

Previous to starting them for the second season's growth, prune the canes back to about nine inches below the joint, at which they were stopped in the summer, and remove all the laterals close to the main stem. After they are pruned, wash them with hot water and soap, and secure them to the wires with strong bast or rather stout cord. The weight of the vines, when in full growth the following season, will be considerable, and unless the supports are strong, there will be a risk of their giving way. They must not be tied tightly, or as soon as the cane begins to swell, the ties will cut it, and much injury be done to the vines in consequence. As a precautionary measure, the ties should be loose enough to afford space for the rods, should they swell to double the size they are when pruned. As they should not be forced the second year, they will require no artificial heat to start them; but to afford them some assistance to break strongly, the house must be kept rather close until the shoots are six inches or so in length, and they should also be syringed twice a day. After this stage, admit the air freely to promote the production of a stout and firm growth. The ventilation will require regulating in much the same manner as during the first season. The topmost shoot must be trained up the rafter, and stopped when it reaches the top of the house. The other shoots will require training out horizontally, and to be stopped when about fifteen inches in length. Fruit will be produced on nearly all the laterals; but as over-cropping at this stage will be most injurious, all but four of the most promising bunches on each vine should be removed. The removal of the bunches may be deferred until after the berries are set, without much injury to the vines; but, as a rule, there will not be much trouble in determining which of the bunches are the best before they arrive at that stage. In cold, sunless weather, a little artificial heat should be employed to prevent the atmosphere becoming stagnant, but very little indeed will suffice to accomplish the desired purpose. When the fire is burning during the day, the ventilators at the apex should be opened, to secure a complete change of air. The laterals should be nine inches apart, and if the canes are very short jointed, remove those not required when two or three inches in length, and, as far as practicable, preserve the strongest.

HOW TO BEGIN BEE-KEEPING.



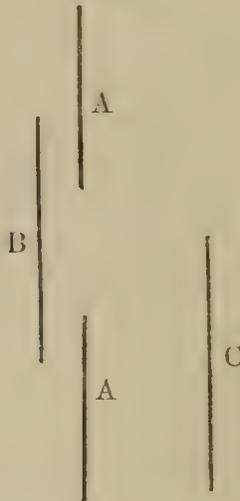
THIS is the best time in the whole year to begin bee-keeping; but those who have resolved to begin, and are not now prepared for action, may very well defer operations until May or June. In the month of February you may safely buy old stocks, for they have passed the worst of the winter, and will from this time improve. In May or June you may secure newly-hived swarms, and, if that is your intention, you must arrange for purchasing them some time in advance, that they may be delivered soon after they

are hived. Many amateurs would take to bee-keeping if they could see their way clearly to the first start, but that appears to them wrapped in mystery. If they think of building a bee-shed and buying the bees, the question arises, What am I to do with them then? I should like to answer that question at once, before we go into practical matters. The best you can do with them is to leave them alone. But you must admire them, or they will not thrive; you must visit them, watch them, take an interest in them; in a word, you must become used to them, and they will become used to you, and you and they will get along very well together. It is the master's eye that makes the horse fat; it is the bee-keeper's love that makes docile bees and heavy honeycombs, and gives a suitable tune to the music of the morning. This is no dream. I paid dearly for the knowledge of it. While I could pet my bees they thrived, and were a comfort to the household; when travel and care kept me much away from them they went to ruin, and were not only a discomfort, but discreditable. As a preliminary advice, then, I say, if you are not likely to give the bees a little of your time, and especially if you are not likely to be at hand for hiving a swarm and for taking honey at the proper time, don't begin bee-keeping, for assuredly you will soon be sick and tired of the business. "They want a deal of shepherding," said an old countryman who knew all about it; and, in truth, the shepherding is the chief joy of the apiary, and renders bee-keeping the most delightful of all rural pursuits.

You have determined to begin, and you must settle where the hives are to be placed. Now, let me warn the novice, that, if bees are put "out of the way" because they shall not hurt anybody, they will never prosper, and they will become so wild that you will find them very troublesome to deal with. They ought to be *in the way*. Or, to put the case differently, they ought to be in a position to see human beings constantly; and it is all the better if there is a constant traffic in front of the hives, at a distance of a dozen yards or so from them. Bees that see much of human society—if only the garden boy trudging to and fro with the wheelbarrow—become quite tame and gentle, so that you may take one off the alighting-board, and imprison it in your hand for five minutes, and it will not sting you; while bees that lead a lonely life, and never see the human form divine, grow so savage that they can only be approached by a courageous bee-keeper, clothed with protective harness. There was never in the world a more successful apiary—all things considered—than mine at Lordship Terrace, and that stood within ten or twelve feet of a walk that was constantly traversed. The bees had to fly over this walk on their way to the open country; and there never were bees more gentle and manageable, as hundreds of friends can testify. That the proximity to traffic did not interfere with their work, was made evident by the splendid boxes of white honey I was enabled to exhibit, and of these reports have appeared in the FLORAL WORLD. The second item of advice can hardly be mistaken. Find a place facing any point of the compass, except due north, in a spot where there is a frequented walk or play-

ground, or some other means of compelling the bees to see in front of their hives human beings in motion frequently. Having thus located them, they will become so tame that you may proceed to practice Wildman's tricks, and become a great bee conjuror.

Now we come to the bee-shed. It is not absolutely necessary, but very desirable, for bees need shelter from rain, sun, and wind. As regards elevation and ornament I shall say nothing. As regards construction it should be roomy, dry, with a secure roof, and closed with wood-work all round, unless in a very sheltered spot, in which case it may be quite open, consisting of roof only, and supporting uprights, with a shelf for the hives. A small bee-house becomes so hot in summer that the combs melt, and the bees are seriously injured by their falling. My bee-shed is open at the back only, the front and ends are closed because of the winds that occur on three sides. A very convenient way to provide for the escape of the bees is to have an opening the whole length in front opposite the stand on which the hives are placed, and over this opening to hang a board considerably wider than the opening itself, and two inches or so distant from it. The bees will go out and return above and below this board, the house will be thoroughly ventilated, and neither wind nor rain will drive in upon the hives. In case I am not understood I will re-state the case by the aid of a diagram. Let A A be the front, and B the board covering the opening; C, the stand on which the hives are placed. To hang the board B is but carpenters' work, and its utility is I hope manifest.



THE HIVES next demand attention. You will probably desire some fanciful things with much glass, and many ornaments about them. Now I have nothing to say against fanciful hives for those who understand them, but as a rule they are quite unsuited to beginners. You want simple service, and the bees are very simple creatures, as ready to work in a washing tub or plain peck measure as in the most fantastic "home of industry," with painted pinnacles and peepshow windows ever held out to tempt the unwary. The

sort of hives to encourage will depend on your location. If you dwell near a town you will do better with smallish than with largish hives; if you dwell in a country rich in bee flowers, and known to be favourable to the growth of honey, go in for large hives and store-ying boxes, and from the very first, have a reserve of empty hives, and get them well painted and put away in a clean, dry place, ready for use. Wood and straw are about of equal value, when small hives are required; but where money may be made by bees, there is nothing like wood, and my favourite hives are the octagon Stewarton's, and the square Tegetmeier's and Woodbury's. By having everything in readiness in good time you will not be flurried when a swarm comes off, and you will not risk the loss of a swarm through hiving it into newly painted boxes. Not that the bees suffer through being put into a newly-painted hive, if it is so far dry as not to stick to the fingers. All that happens is that, having hived them, you, of course, leave them alone to settle down, and they, making discovery of the newness of the paint, turn up their noses and *fly away!* Next day your nice hive is empty, and must remain so until you get another swarm.

These are the only advices that occur to me as needful, in reply to a correspondent who asks for a little advice on the subject. If he can buy a heavy stock, two or three years old, and have it home at once, he may expect one or two swarms in June, and having hived these into new hives, he will be fairly on the road to acquire experience, and realize the enjoyment of bee-keeping. But he must not attempt to remove the bees and the comb out of the purchased hive into a new one, for the endeavour will end in failure certainly, and if clumsily undertaken may prove as dangerous to the operator as it must be disastrous to the bees. To sum up, the best way to begin bee-keeping is to begin humbly, not attempting over much, and by constant watchfulness to do what is right at any time, while abstaining from mere meddling, to grow into a knowledge of the ways of bees, while winning their confidence and affections. S. H.

A POTATO CATALOGUE.

“Let the sky rain potatoes.”



PHINK of a potato catalogue! It strikes one as a joke, but it's a fact as sure as daylight. The enterprising “tater dealer” who provides this catalogue is my friend Mr. Richard Dean, seedsman, of Ealing, London, W. Anybody who wants it, need only write and enclose address and a halfpenny stamp, and a few hours afterwards the postman will politely lay the catalogue on the parlour table. It contains descriptions of fifty-five varieties of potatoes, and there is not a bad one in the lot. This catalogue is entitled to a special note, in the first place as a novelty, and in the second place as a very useful guide to the grower of potatoes; for it is full of information, and

what it withholds is of no less advantage than what it offers us. "What it withholds!" repeats the reader in surprise. Yes. The varieties described are, in number, fifty-five only. I will undertake to say, as a potato fancier of long experience, that it would be easier to make a list of two hundred and fifty than of fifty-five. In preparing such a catalogue as the one before us, the difficulty will be to determine what to strike out, and the task demands knowledge, taste, and moral courage. The work is well done, as a matter of course. R. D. could not make a bad catalogue of potatoes if you bribed him to try. Procure it, and judge for yourself.

Before I put the catalogue aside, I feel bound to select from it the best six potatoes; that is to say, the best six in my opinion. They are—*Myatt's Ashleaf*, *Beaconsfield*, *King of Potatoes* (yellow flesh), *Waterloo Kidney*, *Late American Rose*, and *Rixton Pippin*.

S. H.

FARMYARD AND STABLE MANURE.

BY MR. J. MITCHELL, MONTROSE.



UNTIL recently the chief, and in many cases the only fertilizer the farmer used was farm-yard manure; and now that this is being to a certain extent superseded by artificial manures, there is just the danger that it may be too much overlooked. Farm-yard manure has its proper place in agriculture, and so has artificial manure. I propose, in the following remarks, principally to treat the question of urine; its relative value to the solid excrements, and the most effectual manner in which the urine can be economized. Some agriculturalists hold exaggerated opinions as to the value of farm-yard manure, others undervalue it, whilst some manufacturers and agents of artificial manures only manifest their ignorance by treating farm-yard manure slightly, and decrying it, in season and out of season, on the absurd supposition that by doing this they will induce the farmer to order more artificial manure than he otherwise would. The only valuable ingredients in farm-yard manure are the urine and the solid excrements. The other ingredients are simply straw, etc., which have little or no value in themselves, and simply serve to absorb and keep together the urine and solid excrements. The approximate value of the urine of the horse, cow, sheep, and pig, is as follows: Horse, 30s.; cow, 20s.; sheep, 30s.; and pig 10s. per ton. The approximate per-centage of ammonia contained in the urine of these animals is: Horse, 1·6; cow, 0·9; sheep, 1·7; and pig, 0·4. The phosphates contained are trifling, being about 1 per cent. in the horse and pig, about $\frac{3}{4}$ per cent. in the cow, and about $\frac{1}{2}$ per cent. in the sheep. The additional value of the urine of these animals consists of a small per-centage of potash and soda-salts, etc. Comparing these facts with the approximate composition and value of the solid excrements of the same animals, we find that the solid excrements of the horse are worth 15s. per ton; the cow, 10s.; the sheep, 25s.; and the pig 6s.; or, in other words, the value of urine is about double that of the solid excrements. In comparing their value, however, it is only fair to say that the value of the solid excrement is principally owing to its being saturated with the urine. Thus it is evident that if anything is to be done in economizing the farm-yard manures, it must be the urine that is to be considered first.

In considering this subject, a good deal of valuable information can be obtained from the Chinese. We are often apt to consider these Celestials as little better than savages; it is, however, a well-known fact that they are much before us in this matter, as in many others, and there is no doubt that we are the losers by thus disparagingly treating them and their ideas, or rather ignoring them altogether. It is certain that they are now, and have been for hundreds of years, in many respects very far advanced in the science of agriculture, and amongst them the

excrements, liquid and solid, treated and prepared in various ways, serve almost entirely as their fertilizers. One writer says: "Human urine is, if possible, more husbanded by the Chinese than night soil for manure; every farm or patch of land for cultivation has a tank, where all substances convertible into manure are carefully deposited, the whole made liquid by adding urine in the proportion required, and invariably applied in that state. The business of collecting urine and night-soil employs an immense number of persons, who deposit tubs in every house in the cities for the reception of the urine of the inmates, which vessels are removed daily with as much care as our farmers remove their honey from the hives." It may be roughly estimated that the average urine passed by a cattle beast daily is about two gallons, so that in the course of a twelvemonth each cattle beast would pass from three to four tons of urine, the value of which would be from £5 to £6; and, in addition, a proportionate quantity and value of solid excrements, or in other words, the total excrements, liquid and solid, obtained from a cattle beast in a year would be worth from £8 to £10. Thus, supposing the case of a farmer with an average stock of cattle during the year of 50 head, he would collect from 150 to 200 tons of urine per annum, showing a value of £200 to £300. Of course a very large proportion of this would go direct to the soil during the time the cattle were upon the grass; still it is not over-estimating the value of that which can be collected, taking into account the urine from the horses and other animals on the farm, to say that, provided the whole urine could be collected, the quantity would represent a value, say, of £100, or even more. Of course, as it is at present, nothing like the whole of this is lost, a great part being absorbed in the court bedding. In open courts a very large proportion is of necessity lost, being washed away by the rain. In covered courts, however, there is also a large proportion lost by evaporation. Perhaps the most economical plan would be to have the covered courts properly paved, with charnels conducting to a tank or reservoir where the urine would collect. These tanks would, of course, then be emptied from time to time, and applied to the soil as required.

Without going very minutely and at length into the details, it would be impossible to give practical hints further upon this matter, but it would be well to state that it would also be a great saving were the courts from time to time to be sprinkled with vitriol. This could be done very simply by means of a common watering-pan. The ammonia fumes caused by evaporation would thereby be fixed, and, as a matter of course, the loss of the most valuable and important ingredient of the urine prevented. The sprinkling of the courts with vitriol would also have a very beneficial and important effect, as it would keep the courts much sweeter, and therefore tend to preserve in better health the animals in the court. The vitriol would require to be used only sparingly, and diluted with water before application. It may also be worth while to state that the fumes arising from the manure in the courts have a peculiar chemical action, which is injurious to the stone and lime, and in course of time would destroy them. The sprinkling of vitriol from time to time on the courts, as above explained, would to a great extent check this. In connection with these remarks, it may be of advantage to bear in mind that, in turning the dunghills, there must of necessity be a great loss of ammonia by evaporation. This loss can easily be entirely prevented by the use of vitriol sprinkled during the time the heap is being turned. In conclusion, Mr. Mitchell said that there was poetry to be found even in a manure heap, and so Pope, one of our greatest English poets, could write—

" See dying vegetables life sustain,
 See life dissolving vegetate again ;
 All forms that perish other forms supply,
 By turns they catch the vital breath and die."

LEAVES FOR GARNISHING IN PARIS.—Among the minor horticultural industries of Paris may be mentioned, says M. Mayer de Joube in the *Revue Horticole*, the sale in large quantities of leaves for garnishing purposes. They consist of ferns, chestnuts, lilacs, maples, nuts, elms, poplars, and especially of the vine, and are used for decorative purposes, garnishing dishes, and the like. Large quantities of bramble leaves are also used, in spite of their prickles, during the winter season, when they are still to be found in the woods near Paris. The leaves are collected into little packets, slightly pressed, and sold by hundreds of thousands in the Paris markets.

THE GARDEN GUIDE FOR FEBRUARY.

“Then shall our summer haunts again

Renew their former pleasures;
The poplar grove, the shady lane,
For thee be full of treasures:
For flowers are treasures unto thee,
And well thou lov'st to find them;
To gather them with childish glee,
And then in posies bind them.

“Spring is to me no merry time;
Its smiles are touched with sadness;
For vanish'd, with life's early prime,
Is much that gave it gladness.
Yet, merry playmate, for thy sake,
I will not sing of sorrow;
But since thou canst its joys partake,
I would 'twere spring to-morrow.”—BERNARD BARTON.



ANNUALS for specimens and bedding out to be sown now include balsams, cockscombs, globe amaranths, portulacacas, schizanthuses, phloxes (don't forget *Phlox Drummondii* Radowitz), brachycomas, stocks, tropaeolums, cobceas, lophospermums, and accrolinium.

BEGONIAS should now be repotted, and have large shifts when required afterwards.

CAMELLIAS done blooming must be kept warm, and enjoy a moist air. Camellias in bloom keep at 45° by night, and 55° to 60° by day, and with plenty of water. Plants for late flowering keep only just safe from frost.

CARNATIONS AND PICOTEES.—Keep the plants hardy, and make ready for repotting. Turn over the compost intended for them, and make careful search for wireworm.

CINERARIAS will now want regular attention to preserve a healthy foliage, as well as secure a good bloom. Drought will do them much harm, but they must have plenty of air after being watered. Green-fly will now infest them unless kept in check. Put the forwardest in the house for blooming.

CLIMBERS for summer work to be propagated now in quantity. The rose-like *Calystegia pubescens* may be parted and planted out.

FLOWER GARDEN.—Deciduous trees remaining to be planted should be got in without delay. Fork over mixed borders where it can be done without fear of damaging pæonies, bulbs, etc.; but if these are not tallied, it will be best to leave the borders alone till the plants are visible above ground. Lay on a good mulch of half-rotten dung in quarters devoted to roses, or cover the surface with a mixture of guano and wood-ashes. Old plantations of American shrubs will be benefited now by dressing the surface with very rotten cow-dung, but they must never be dug between. Edgings, rockeries, walks, lawns, peat-beds, and roseries may all be made or planted this month, and the sooner the better. Part and plant herbaceous plants.

FORCING-HOUSES require special attention during this month. Use the syringe freely on fine mornings, to assist the swelling of figs, peaches, and nectarines. Figs will take more water now; peaches need liberal doses of liquid manure.

FUCHSIAS may now be started, and when well broken be repotted. Cuttings struck now will make good plants this season.

GREENHOUSE.—Fire-heat may be used more liberally now, as there is more light and many early subjects are advancing into bloom.

HOLLYHOCKS may be increased from cuttings in a gentle heat, and seeds of choice kinds may be sown with others in a warm pit. Get the stations ready for those to be planted out this spring. Dig deep, and manure well with rotted cow-dung.

GLADIOLI to be potted in batches, three bulbs in a seven-inch pot, in a compost of turfy loam, peat, leaf-mould, and sand. Keep nearly dry till the foliage rises. Keep the pots plunged in a cold frame, and let them grow slowly.

KITCHEN GARDEN crops to be cleared off as fast as possible, and the plots ridged up, to be well aired before being appropriated to summer crops. Breadths of cabbage, kale, etc., may be taken up and planted close in out-of-the-way places, where they will sprout as freely as if not lifted. Towards the end of the month sow main crops of peas and beans, earth up any that are now out of the ground, and if any fear of vermin, sprinkle with wood-ashes.

NERIUMS require to be started in a brisk, moist heat, and to have abundance of water as soon as the sap is fairly in motion. See that they are free from scale and all other vermin. Old plants should be shaken out and repotted in equal parts peat, loam, leaf-mould, and rotted cow-dung.

ORCHIDS will in many cases require to be repotted, after which they must have the warmest end of the house. Those that do not need a shift should have a little of the old surface material removed, and its place supplied with fresh.

PEACHES and other orchard-house trees will set their fruit more freely if there is a good breeze through the house every day; keep atmosphere as dry as possible.

PELARGONIUMS ought now to be growing freely, and on warm bright days should be watered so as to soak the ball, and bring every rootlet into action. Use heat enough to allow of air being on all day.

PINES may have an increase of bottom-heat, with more liberal supplies of water. Put suckers in a tan-bed, or a sweet and active dung-bed, to insure a plentiful growth of roots.

POTATOES.—The earliest sorts may now be planted out on warm borders in large breadths. If the sets are not sprouted, place them in full daylight, and wait till they have made short purple shoots half an inch long; then plant them without breaking the sprouts.

RANUNCULUSES and **ANEMONES** to be planted now in beds of sound loam, well drained and well manured.

STOVE PLANTS need a general revision at this time of year; those that have been blooming all winter require to be cut back, and encouraged to break, then to be shifted to larger pots if needful, or have top-dressings; where very large specimens are objectionable, the plants may be kept in bounds by the knife, and to obviate the use of larger pots, turn them out, remove some of the soil from the outside of the balls, and repot them with fresh compost in the same pots. *Justicias* are now going out of bloom, and may be propagated to any extent, to make fine specimens for next season. *Poinsettia pulcherrima* and *Euphorbia Jacquiniaeflora* should be grown in quantity, as they are invaluable for conservatory and drawing-room.

STRAWBERRIES coming into fruit need abundance of water, and occasionally liquid manure. Give as much air and light as possible, to insure well-flavoured fruit; those that set heavy crops, thin to a moderate number, or the berries will be small.

VINES started now will not need so much caution as to raising the temperature as those started in December and January, as there is now more solar light, and vegetation is active. Use the syringe freely among vines newly breaking, but sparingly, or not at all, to vines in flower. This is a good time to put in eyes for raising a stock of pot vines.



INGER-POST FOR PURCHASERS OF PLANTS, SEEDS, BULBS, ETC.

CHOICE VEGETABLES.

ASPARAGUS.—Grayson's Giant is the best type of this vegetable.

BROAD BEANS.—Mazagan for the first crop, because of its hardiness, Monarch Long Pod, and Taylor's Windsor for productiveness, Green Windsor for high quality, Beck's Gem for small gardens.

BORECOLE.—Dwarf and Tall Green Curled Scotch, Cottager's Kale, and Albert Sprouts for succession during the winter in the order they are here placed.

BRUSSELS SPROUTS.—Srymger's Giant is, perhaps, the best type. "Imported seed" is usually excellent.

BROCCOLI.—Walchren, Grainger's, Snow's Superb, Winter White, Lake's Fine Late, Leamington, Watts's Excelsior, and Cattell's Eclipse, are the finest varieties

for succession from October until the following May. They are arranged in the order they are ready for use.

CABBAGE.—Barr's Dwarf, and Atkins's Matchless for sowing early, to turn in quickly, Enfield Market and Wheeler's Imperial for main crops, Rosette Colewort for sowing in summer for autumn and winter use.

CAULIFLOWER.—Early London, to sow in heat in spring, Dwarf Erfurt Mammoth and Veitch's Autumnal Giant, to sow in March for late summer and autumn use, Walcheren to sow in autumn for wintering in frames.

CARROT.—Early Short Horn for sowing on borders for summer use, James's Intermediate Scarlet, and Red Surrey for main crops, to use during the winter.

CELERY.—Leicester Red and Incomparable White, are the two best types for garden culture.

CUCUMBER. — For winter and early spring, use Rollisson's Telegraph and Masters's Prolific; for general usefulness, Cox's Volunteer, Cuthill's Black Spine, Blue Gown; for ridges, Stockwood Ridge; for pickling, Short Prickly.

ENDIVE.—White and Green Curled, Moss Curled, Improved Round-leaved Bata-vian, and Fraser's Broad-leaved, the latter is valuable for winter use.

KIDNEY BEANS. — For pot-culture and early crops out of doors, Sir Joseph Paxton and Newington Wonder; for main crop, Negro Long-podded, Red Flageolet, and Dark Dun. The best Runner is Scarlet Champion.

LEEK.—Musselburgh, London Flag.

LETTUCE.—For autumn sowing for winter and spring use, Hammersmith Cabbage and Brown Bath Cos; for sowing in spring and summer for summer and autumn use, Malta Cabbage, Tom Thumb Cabbage, All the Year Round Cabbage, Bath Cos, Sugar-loaf Cos, Paris White Cos, Holme Park Green Cos.

MELONS.—For pot-culture, Turner's Scarlet Gem. For frame and house, *Green Flesh*, Colston Basset Seedling, Trentham Hybrid, Gilbert's Green Flesh, Improved Victory of Bath; *Scarlet Flesh*, Malvern Hall, Ward's New Netted, Royal Ascot, Scarlet Gem.

ONION.—For pickling, Early Nocera, Paris silver-skin; main crop for storing, Improved Bedfordshire Champion, Reading, Deptford, James's Keeping; for exhibition, White Spanish, Blood Red, Trebons, Giant Madeira, Giant Rocca; and for autumn sowing, Red, White, and Globe Tripoli.

PARSLEY.—Myatt's Garnishing, or Moss Curled.

PARSNIPS.—Hollow Crown, Student.

PEAS. — First early, Sutton's Ringleader or Carter's First Crop, Taber's Perfection, East's Kentish Invicta, Alpha and Advancer; second crop, Champion of England, Laxton's Prolific, Paradise Marrow, and Princess Royal; main crop and long gathering, Princess Royal, Hundredfold, McLean's Wonderful, Omega, Veitch's Perfection, The Prince, Ne Plus Ultra, British Queen.

POTATOES. — Veitch's Improved Ashleaf, Champion, Myatt's Ashleaf, Extra Early Vermont, Dalmahoy, Model, Paterson's Victoria, Sutton's Berkshire Kidney, Regent, Gryffe Castle, Headly's Nonpareil, Late Rose, Fluke, Giant King.

RADISH.—For frames, Wood's Early Frame; for summer sowing, Beck's Scarlet Short-top, French Breakfast, Scarlet Olive-shaped, White's Olive-shaped, Turnip (red and white); for autumn sowing, Black Spanish and China Rose Winter.

RHUBARB.—Myatt's Victoria, Myatt's Linnaeus, Johnston's St. Martin's.

SPINACH.—For spring sowing, Round-seeded; for summer and autumn sowing, Prickly-seeded. Spinach Beet is very productive, and lasts the whole season; but it is not so delicate in flavour as the ordinary summer spinach. New Zealand Spinach is a fine vegetable for hot dry soils.

TOMATOES.—Hathaway's Excelsior, Orangefield Dwarf, Key's Early Prolific.

TURNIPS.—To sow in spring, Early White Strap-leaved, Short-top Six-weeks; to sow in summer, Veitch's Red Globe, Beck's Golden Stone and White Dutch; to sow in autumn, Jersey Navet, Green-top Six-weeks, Chirk Castle.

VEGETABLE MARROW.—Hibberd's Prolific, Moore's Vegetable Cream, Short-jointed Long White, and Prince Albert.

HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY'S Annual Meeting will be held in the Council Room, South Kensington, on Tuesday, the 9th inst., at three p.m.

THE ROYAL HORTICULTURAL SOCIETY has recently issued a new part of its Journal, containing the Reports of the Trials of Plants and Vegetables at Chiswick, and a record of the Meteorological Observations taken at Chiswick during 1873.

THE CLASSIFICATION OF PLANTS will form the subject of a series of lectures to be delivered by Professor Bentley, at the London Institution, on Mondays, April 5, 12, 19 and 26, at five p.m.

A NEW BOTANICAL ANNUAL, intended chiefly as a record of progress, has been started under the editorship of Dr. L. Just, of Carlsruhe. It is entitled, *Botanischer Jahresbericht*.

MR. CUTLER, secretary of the Gardener's Royal Benevolent Institution, was, on the occasion of the Annual Meeting held on the 14th ult., presented with a handsome silver tea and coffee service, subscribed for by the supporters of the Institution.

BRITISH FUNGI.—Mr. W. Phillips is preparing to publish, under the title of "Elvellacei Britannici," dried specimens of British Fungi, belonging to the genera included in the order Elvellacei of the Rev. M. J. Berkeley's "Outlines of Fungology, and Mr. M. C. Cooke's "Handbook of British Fungi."

A NEW POTATO DISEASE is reported on in the journal of the Central Horticultural Society of France. It appears to be produced by the minute larvæ of a lepidopterous fly, which eat into the tuber, and cause the ultimate decay of whatever pulp they leave unconsumed.

MR. WILLIAM PAUL'S annual exhibition of roses in pots, pictorial trees, zonal pelargonius, etc., will this year be held in the gardens of the Royal Botanic Society, Regent's Park, from May 3rd to 10th.

THE COLORADO POTATO BEETLE.—The Swiss, Austrian, and Belgian Governments have adopted stringent measures against the importation of American potatoes infected with the Colorado beetle.

NEW BOOKS.

PIPER'S POULTRY YARD ACCOUNT BOOK. By HUGH PIPER (Groombridge and Sons).—This is at once a most ingenious and a most useful work, that must soon come into general use, and prove of the utmost value to keepers of poultry. There is a great bulk of diary for a shilling, sufficient for at least a year's records of most poultry-yards, and the pages are ruled for every item of account that can be thought of as desirable. On one side are columns for items of receipt, such as daily account of eggs laid, money produce of eggs sold, fowls sold, chickens sold, etc., while on the other are entered the outgoings, such as cost of birds, cost of food, rent, labour, and so forth. It is the first time we have been provided with a proper means of settling for ourselves the question, "Do poultry pay?"

THE ELEMENTS OF BOTANY. By THOMAS MOORE. (Longmans).—This is the eleventh edition of one of the most useful of school-books. It has been carefully revised, and is more than ever to be desired as a first step to one of the most useful and recreative of the sciences. The style is simple, the illustrations to the purpose, and the scheme so comprehensive, that while it is especially adapted for the young, the information it pleasantly conveys would be received with gladness by many who will see their youth no more.

HAYDN'S DICTIONARY OF POPULAR MEDICINE (Moxon).—This is on the plan of "Haydn's Dictionary of Dates," but not by the same author, Mr. Ray Lankester being responsible in the present case. It promises to be a thoroughly good book, too technical sometimes, perhaps, but copious and trustworthy, and especially adapted for the use of the clergy, and others who visit the poor, for captains of ships, missionaries, as well as for the family library. In some sense it is a dictionary of chemistry and physics, as well as of medicine, for in the number before us we find articles on ammonia, barometer, bone, brandy, etc. It is to be completed in sixteen shilling parts.

February.

BRITISH WILD FLOWERS. By O. E. SOWERBY (Van Voorst).—This reprint of "Sowerby's British Botany," edited by Mr. C. Pierpoint Johnson, is the cheapest complete English Flora ever produced. It comprises descriptions and figures of all known British flowering plants, the cost being less than a halfpenny per figure. It is true the figures are small, and there are twenty on a sheet, but they are wonderfully life-like and carefully coloured, and the descriptions, though brief, are sufficient for the genuine student. Let no one buy this as a picture-book, or a source of entertainment on the milksopism of botany, such as the "language of flowers" and the "sentiments they convey," etc. It is a book for the worker, and those who will work by its aid will have some respect for it all their lives after.

TO CORRESPONDENTS.

HEATING CUCUMBER FRAME.—*M.R.*—We should advise you to heat your pit with hot water; the expense would not be much, as one four-inch pipe round the pit would give you all the heat you require for cucumber growing. Have pipes which have troughs made on them; these can be filled with water and a constant steam kept up. You could also employ the ordinary-shaped pipes, and have troughs for holding the water made with zinc. In that case you must have them bedded on the pipes with red lead, for you will not be able to heat the water in them sufficiently to raise a steam. If the pit is heated with hot dung, you must have a trench about three feet wide, and about the same depth, round the pit. The walls of the pit nearly up to the ground-level should be pigeon-holed, to admit the heat supplied by the linings into the bed inside. The other side of the trench should be kept in its position with a four-inch wall; you can grow equally as good, and perhaps better, cucumbers in a pit heated with manure than you can in one heated with hot water; but unless you have a stable to run to for manure, you will find it an expensive affair. And, moreover, it will require more anxiety and attention to keep up a regular temperature; and such things happen to amateurs as having the roots burnt occasionally, through the manure becoming too hot.

PEACHES AND NECTARINES FOR OPEN WALL.—*D.M.*—We should advise you to make a selection at once, and get the planting finished by the end of February. The trees will then become nicely rooted at once, and start freely early in the spring. Spring-planted trees lose the best part of the season in making roots. If your soil is naturally good, you need do nothing to the border beyond trenching in a moderate dressing of thoroughly decayed manure. Mix the manure well with the soil, and trench as deep as the nature of the subsoil will admit. To insure the highest degree of success you had better take out about a couple of barrowfuls of the old soil where the trees are to be planted, and fill in with good turfy loam chopped up roughly. Spread the roots out carefully, and keep them near the surface. With uncongenial soil, your best plan will be to take it entirely away to a depth of three feet, and fill the space with good turfy loam. This would be an expensive affair, but you would be more than repaid in the superior quality and quantity of the fruit. We should not advise you to mix any manure with the soil in the first instance; it would promote too great a luxuriance in the growth. What you want is medium-sized stubby and well-ripened wood.

WALL-TREES.—*Subscriber.*—We are of opinion, judging from what you say, that the trees have exhausted the soil in which they are growing, and are therefore unable to make progress. We suppose you have not allowed them to become smothered with red-spider and green and black fly; either of these separately, or the three in combination, is quite sufficient, if they are allowed to get ahead, to check the most robust-growing tree. Give the border a dressing of about three inches of good rotten dung, and dig it in the border early in the autumn, but without going deep enough to injure the roots. Excessive cropping would account for the fruit being small on your free-growing trees, and the dry weather has not been favourable to the production of large fruit.

STANDARD CYANOPHYLLUMS.—*Amateur.*—There will be no difficulty in growing the noble *Cyanophyllum magnificum* as a standard. You must first grow it up to the required height with a single stem, and then cut the top off. After the branches which are emitted from the top buds have made several pairs of leaves, pinch out

the growing points, and that will cause them to break and form nice round heads. If you have a plant sufficiently high already, you can cut it down at once—any time from February to the end of September will do ; and as soon as the plant has broken, and the young shoots are about a couple of inches in length, take it out of the pot, reduce the ball, and repot in one a size smaller. Use good fibry loam and peat and leaf-mould in equal parts, with the addition of a good sprinkling of silver-sand. We like young plants with fine large foliage drooping over the sides of the pots. Standard specimens look very well in large stoves, but they are quite out of place in small collections.

FIGS DROPPING.—*Young Gardener.*—We expect the cause is neglect to keep the tree properly watered. We do not wonder at a few things suffering in such a dry summer as that of 1874. Too much water will cause the fruit to drop, but as the fig-tree, when in full growth, requires such a plentiful supply, we should hardly think that it has had too much. A deficiency in the air-supply through the summer is very prejudicial to the proper maturation of the fruit crop. To guard against losing any of the fruit through dropping off prematurely in future seasons, pay close attention to the roots. Keep them well watered, but without soddening the soil, and give plenty of air whenever the weather will admit of its being done without chilling the foliage. Regulate the admission of this element according to the weather, but contrive to give a little at all times when the trees are in full growth.

FUCHSIA FULGENS.—*Inquirer.*—*Fuchsia fulgens* will grow freely enough in good loam and leaf-mould, with a little sand. The plants should not be over-potted, or you will get too much foliage and few blooms. Keep them well watered when growing, and after they have done flowering harden well off. They should not be cut in too hard, as that would encourage the production of too strong-growing shoots. The plants require syringing to keep down thrip and red-spider, in much the same manner as other fuchsias. This grand old fuchsia is admirably adapted for windows.

CULTURE OF DAPHNE INDICA.—*J.C.*—This fragrant flowering plant requires the protection of a greenhouse through the autumn, winter, and spring. In the summer it should be placed out of doors along with the other hard-wooded plants. To keep the plants bushy, pinch or cut back directly they have done flowering, and let them make the new growth with plenty of light and air, to prevent its being weak and spindly. Unless the wood is strong and stocky, very few flowers can be expected. You will find your plants grow freely in good fibry loam and peat, two parts of the latter to one of the former, mixed with a liberal proportion of silver-sand. The pots must be well drained, and the plants have plenty of water when growing in the spring. During the remaining part of the time the soil must have no more water than is sufficient to keep it in a healthy growing condition, neither too wet nor too dry. Well established plants usually produce short jointed shoots, and do not require any stopping.

IVIES.—*W. C., Wallingford.*—You will be able to obtain the ivies and polyanthes from Mr. Charles Turner, Royal Nurseries, Slough.

OSMUNDA.—No. 1 is *Gaultheria Shallon*, and No. 2 *Spiraea arifolia*.

INJURED ROSE-TREE.—*Fothergill.*—The best course will be to prune the injured shoots back to a few inches below the wounds. The wallflowers may be cut back in the spring.

Petherwyn.—We value our time too highly to name thirty ferns for you. Our only course, when such a parcel comes to hand, is not to look at its contents.

Miss J. L. H. J.—The sand of which you sent a sample is not suitable for mixing with composts prepared for pot plants, and river sand will be in every way preferable. We cannot give the name of the rose from the leaves. Under the circumstances, the best course will perhaps be to have the ground dug up by a farm labourer, and to call in the aid of a strong girl to do the weeding and other light work during the summer season. The advice contained in the articles on vegetable culture, the first of which appears this month, will, doubtless, be found of considerable service in cropping the kitchen-garden. The *Hesperoscordum lacteum* will thrive in any light soil, and is quite hardy. *Gelasine azurea*, also, succeeds most satisfactorily in a light warm soil.

SUBSTITUTE FOR PEAT.—*Flower Frenzy* will find it an easy task to prepare a substitute for peat for some purposes ; but heaths, and indeed hard-wooded plants

generally, that require peat, will not put up with a substitute. The peat used for fuel is generally what we know as grassy bog, and quite unfit for plant-growing. If, however, it contains much fibre, and is not decidedly pasty, a liberal addition of sharp sand may render it serviceable. About one-fourth of sand to the bulk will be required. The begonias may be shifted in about a month to next size pots; a rich loamy compost suits them best, say two parts turfy loam, and one part each leaf-mould, and rotted hotbed manure, and sharp sand. For common ferns, and many of the more accommodating plants that grow in peat, a substitute for peat may be prepared by mixing equal parts of clean leaf-mould, well rotted cocoa-nut-fibre refuse, mellow loam, and sharp sand.

M. A. T.—The nectarine sheds its fruit because insufficiently nourished at the root. You probably begin to water it too late. In your climate, Marechal Niel and Cloth of Gold do not require to be protected. Whenever trees are matted up, the mats should be removed during mild weather. Ivy does certainly injure trees, but much depends on the extent to which it is allowed to run riot over them. Your fourth query requires consideration.

TRADE CATALOGUES.

BARR AND SUGDEN, 12, KING STREET, COVENT GARDEN, W.C.—*Descriptive Spring Catalogue of Seeds for the Flower and Kitchen Garden.*

J. CARTER AND Co., 237 & 238, HIGH HOLBORN, W.C.—*List of Flower and Vegetable Seeds.*

CHASE, BROTHERS, AND WOODWARD (ROCHESTER, NEW YORK.)—*Illustrated Catalogue of Flower and Vegetable Seeds.*

RICHARD DEAN, EALING, LONDON, W.—*Catalogue of New and Choice Potatoes.—Catalogue of Primroses, Polyanthus, and Violas.*

DICKSON, BROWN AND TAIT, 43 & 45, CORPORATION STREET, MANCHESTER.—*Catalogue of Vegetable and Flower Seeds, etc.*

DICKSON AND Co, 1, WATERLOO PLACE, EDINBURGH.—*Descriptive List of Gladioli.*

DICKSON AND ROBINSON, 23, MARKET PLACE, MANCHESTER.—*General Catalogue of Vegetable and Flower Seeds.*

FRANCIS AND ARTHUR DICKSON AND SONS, UPTON NURSERIES, CHESTER.—*Catalogue of Fruit Trees.*

JOHN FRASER, LEA BRIDGE ROAD, LEYTON, E.—*General Descriptive Catalogue.*

HURST AND SON, 6, LEADENHALL STREET, E.C.—*Trade List of Novelties.*

THE LAWSON SEED AND NURSERY COMPANY (LIMITED), EDINBURGH AND LONDON.—*Catalogue of Kitchen and Flower Garden Seeds.*

JOHN AND CHARLES LEE, ROYAL VINEYARD NURSERY, HAMMERSMITH, LONDON, W.—*Catalogue of Kitchen Garden, Flower Garden, Farm Seeds, etc.*

NARDY AND Co., SALVADOUR, HYERES.—*General Catalogue of Plants.*

NEW PLANT AND BULB COMPANY, LION WALK, COLCHESTER.—*A Retail List of Japanese Lilies, Orchids, Plants, Seeds, etc.*

DICK RADCLYFFE AND Co., 129, HIGH HOLBORN, W.C.—*Catalogue of Vegetable and Flower Seeds, and Garden Elegancies.*

W. H. ROGERS, 132, HIGH STREET, AND RED LODGE NURSERY, SOUTHAMPTON.—*A Descriptive Catalogue of Seeds.*

WILLIAM ROLLISSON AND SONS, TOOTING.—*General Seed Catalogue, comprising a List of Subtropical Plants.*

F. SANDER AND Co., ST. ALBANS.—*Coniferae, Tree, and Shrub Seed Catalogue.*

C. SHARP AND Co., SLEAFORD.—*General Catalogue of Seeds, etc.*

SUTTON AND SONS, READING.—*Amateur's Guide and Catalogue of Flower and Vegetable Seeds.*

SUTTON AND SONS, READING.—*Sutton's Miniature Seed Catalogue and Amateur's Guide.*

JAMES VEITCH AND SONS, KING'S ROAD, CHELSEA.—*Catalogue of Garden and Flower Seeds. List of Gladioli.*

VICK, ROCHESTER, NEW YORK.—*Illustrated Floral Guide for 1875.*

B. S. WILLIAMS, VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, N.—*General Seed Catalogue.*



VARIETIES OF ROSES THAT ORIGINATE BY SPORTS.

(With Coloured Illustration of Pink Gloire de Dijon.)

It is not known how many varieties of garden roses originated in sports, but the experienced rosarian will fairly assume that they constitute but a very small proportion of the kinds in cultivation. The rose is not sportive; it is one of the most constant of flowers, and on those rare occasions when sports occur it is difficult to fix them, and we are really not sure of them until they have been established some years apart from the plants out of which they originated. There is always a probability of their sporting back, and thus mocking all our labour. Hence it follows that to obtain new roses we must raise seedlings, and this brings the production of new roses into the front of the fine arts; whereas, if we waited for sports, we should be trusting to chance, which is not one of the arts at all. How different is it with the chrysanthemum, which is constantly sporting into new colours, and produces new varieties in this way, that are easily fixed, so that they soon acquire names and characters, and a place in competitions as important as veritable seedlings can hope for. Take *Cedo nulli*, for example. It exists in no less than five distinct colours, white, lilac, yellow, brown, and purple, and four of these are sports that appear to be as constant as seedlings. In Chapter xxii. of the "Rose Book" will be found an account of a method of producing rose sports by means of incipient buds, cut from the lower parts of the shoots of the year. This procedure may ensure spotted and striped flowers, but hitherto it has not, so far as I know, produced a single variety worthy to be named; for our annual importations of new roses are seedlings, certainly. In the case of a sport occurring, however, the cultivator would be bound to do his best to fix it, and the first step would be to enter on briers or manettis, as might be most convenient, all the good buds that could be taken from the shoot on which the sport occurred. That being done, we should make the best of what remained of the shoot, with a view to secure own root plants, even if we put the soft top into heat to compel it to make roots.

Amongst the more notable sports of roses, three occur to me as demanding notice. Some years ago I obtained from Mr. Verschafelt his red variety of *Souvenir de la Malmaison*, which was figured in "Illustration Horticole," pl. 303. This was an extremely pretty flower of a cherry-red colour; but the plant did not grow satisfactorily at Stoke Newington, and I never recommended it. The *Red Lamarque* was equally unsatisfactory, for although it flowered freely, the colour was not good. Now we have a *Pink Gloire de Dijon* that is really beautiful, and promises to become a garden favourite. Referring to the December issue of the "Journal of the Royal Horticultural Society," wherein it is figured, I learn that it originated with Mr. A. S. Kemp, the plant being a true *Gloire de Dijon* on its

own roots struck from a cutting four years since, and now producing none of the flowers proper to the variety, but rosy pink flowers only.

Whatever of interest for the physiologist or horticulturist there may be in the production of new varieties of roses from sports, it is at least curious that the three here named have originated as they have done, the parent varieties being so nearly alike. Two out of the three may be described as yellow Noisette roses, although Gloire de Dijon is usually classed as a tea, while the Souvenir, though a Bourbon and flesh-tinted, is really not far removed in affinities.

S. H.

THE AMATEUR'S VINERY.

No. 3.—THE MUSCAT HOUSE.

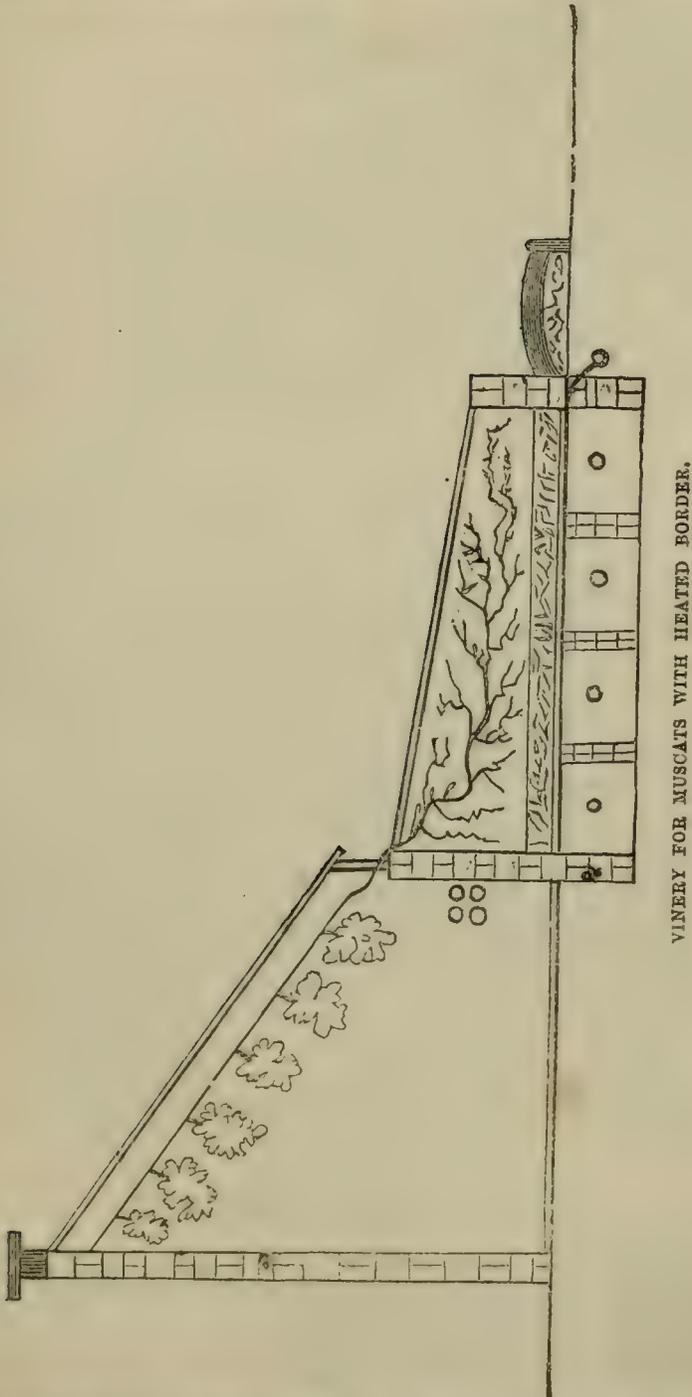
BY THOMAS TRUSSLER,

Nurseryman, etc., Edmonton, N.



TN speaking of the Muscat of Alexandria, which is one of the finest and most richly flavoured of all grapes at present in cultivation, it is needful to say it is not suitable for planting in the amateur's vinery, strictly so called. It requires more heat than the Black Hamburg, Buckland Sweetwater, and Black Prince, and for that reason alone cannot be cultivated with gain. It also requires more skilful cultivation. Yet it is so distinct and good, that the energetic amateur, with more than one house available for grape-growing, should take it in hand boldly. The production of a good crop of Muscats is an achievement of which an amateur may well feel proud, and with careful management, a large measure of success is well-nigh certain. The main point in which the cultivation of this splendid grape differs from the other kinds alluded to is in requiring a higher temperature, and it should, as far as practicable, be grown in a house by itself. It need not be a large house, and one twelve feet in width and twenty or thirty feet long, would yield a supply sufficient to last during the greater part of the winter. However, to show that it may be grown most successfully in very small houses, I will mention the fact that last autumn I saw in the garden of which a friend of mine has charge, a most beautiful crop in a house eight feet in width and sixteen feet in length. The house was one of a series of cucumber-houses that, as more cucumbers were produced annually than were wanted, and a supply of Muscats required, it was determined to plant it with vines. Hot-water pipes already existed underneath the bed on which the cucumbers were grown, and as bottom heat is of considerable service in the production of Muscats, the pipes were allowed to remain, and a strong platform formed with stone slabs, upon which to put the soil. When this was done, the border was formed with materials

similar to those advised in my communication to the January



VINERY FOR MUSCATS WITH HEATED BORDER.

number of the FLORAL WORLD. Three vines were then planted, and each was trained to have two main rods, for the purpose of afford-
 March.

ing them a greater development of foliage than would otherwise have been possible.

Bottom heat, although of considerable assistance to the vines, is by no means indispensable. It doubtless hastens the maturity of the crop, and helps the vines immensely; but good crops are annually produced without it.

The borders of the Muscat house at Ealing Park, from which Mr. Cole obtains the grand samples he exhibits at the principal autumn fruit shows, are *not* heated; and other gardens could be mentioned in which good crops are produced without bottom heat. It is mainly a question of money; but speaking in a general way, I should not recommend the amateur to heat the borders. The accompanying diagram illustrates the best system of heating vine-borders yet adopted. The border is twelve feet in width, and is supported with brick walls, and a platform of stone. The walls are nine inches in thickness, and "pigeon holed," that is, a number of openings are left in the wall to enable the heat from the pipes to circulate freely underneath the border. The stone slabs, which may be of the roughest description, are laid across, with the ends resting on the walls. The drainage is then laid on the platform and the compost filled in, in the manner advised when speaking of the formation of ordinary borders.

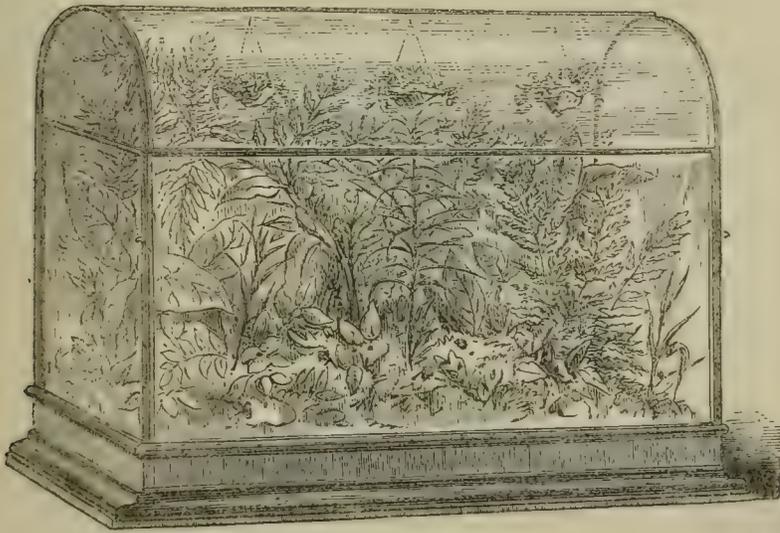
For maintaining the proper temperature inside the house, four rows of four-inch pipes will be required, and these must be carried round each end as well as along the front, as indicated in the diagram. In large gardens, it is all very well to start Muscats early, to have them ripe in summer; but in small gardens, no attempt should be made to force them. They commence to grow naturally in March, and when they once make signs of growth, they must be assisted with artificial heat whenever required. From the time the vines start until the bunches are visible, the day temperature must be maintained at 60°. From the time the bunches can be seen until the shoots are about four inches in length, the temperature must be increased to 70°. This heat will suffice until the vines are in bloom, when it must be increased ten degrees. After the berries are set, and until the crop is ripe, a temperature of 85° will be necessary. The above are day temperatures; the night temperature to be in every case five degrees lower; but in sunny weather an increase of five degrees in the daytime may be allowed with advantage.

EXHIBITION FERN CASES.



SINCE fern cases have had a place in competitive exhibitions, a number of elegant constructions, with a few decidedly inelegant, have been brought forward, not only to compete for prizes at exhibitions, but to share, if possible, in the favour of the general public. Of all the many forms and plans of construction, none ever satisfied us so well as those with curvilinear tops manufactured and furnished by Messrs. Barr and Sugden. These are so extremely elegant that, if

not too large to be moved about, they may be employed to embellish the drawing-room on occasions when special embellishment is required, and be taken away when the occasion has gone by. It will be seen by the figure that the glass is held in an extremely light framework, and it is this which especially distinguishes the make, for, generally speaking, the framework is too heavy, and when it is much ornamented it is apt to be hideous. In judging at exhibitions, we have many a time startled and vexed manufacturers by withholding prizes from huge, cumbrous, much-ornamented fern cases. It is astonishing how ready people are to forget that the jewel is of more importance than the case in which it is kept. We do not want heavily-ornamented fern-cases and aquaria, but we do want simple elegance, combined with strength, and the greatest capacity possible, consistently with the measurement. The case here figured is as strong as need be. We have not seen it surpassed in beauty of appearance, and it suits the ferns admirably.



BARR AND SUGDEN'S FERN CASE.

The soil used in the planting of these cases is a mixture of pounded charcoal and cocoa-nut fibre. This answers admirably when the cases are prepared for exhibition. Now it should be known to persons who admire fern cases at exhibitions that the rules do not require that the ferns have been grown in them. Consequently, the exhibitor selects from a stock of first-class pot ferns those that will make a telling group, and having knocked them out of the pots, plants them in the cases, and exhibits them in the most perfect condition. But they cannot be kept in this condition, and those who buy them must expect them to decline in beauty. However they are well worth having for all that. If the selection is a good one, and a compost be used consisting of turfy peat, three parts, silver sand, one part, and pounded charcoal, one part, the ferns will thrive, and look well at all seasons, and some day they will, in con-

sequence of their free growth, require to be thinned out. There should be sufficient planted in the first instance to make a good effect, but yet room for growth be allowed. It is of great importance to keep ferns in these cases only moderately moist, and to give air carefully, so that the thin textured ferns will not be distressed. It is the custom with amateurs who have not had much experience, to kill their ferns by giving too much water and too little air. They do not want much of either when grown in cases, but they want both in moderation, and should be regularly looked at, for when neglected or forgotten, they are in danger. It is often the case, too, that ferns in cases are deprived of sufficient light, and become attenuated and sickly in consequence. A little sunshine is good for them, although they will not endure to be roasted.

In selecting ferns for cases, it is a good rule to confine the selection to *evergreen greenhouse kinds*. The hardy ones can be well grown without the aid of cases, and the very tender kinds, such as are called "stove ferns," are likely to perish in winter, through insufficiency of warmth. But all the greenhouse ferns can be wintered safely in cases kept in apartments that are only moderately warmed during winter, and, if kept with some care, they will be scarcely less beautiful in winter than in summer. S. H.

ON THE MANAGEMENT OF PARROTS.

BY THE PRISONER'S FRIEND.

"A parrot turns
Up, thro' gilt wires, a crafty, loving eye,
And takes a lady's finger with all care,
And bites it for true heart, and not for harm."

TENNYSON'S "THE PRINCESS."



LETTER has been handed to me, with a request that I will answer it in the pages of the FLORAL WORLD. The writer has, during many years past, taken some interest in parrots, but has few opportunities of gratifying her love of these interesting birds. Now, however, the case is altered. With improved means, and increase of leisure, there comes a new desire to enjoy somewhat of the society of these beautiful and intelligent creatures, and I am asked to advise on the selection and management of a parrot family.

As a considerable number of parrots (I use the term in a collective sense) are unfit for a household, because of their ugly manners, discretion must be used in making a selection. The merits of the common Grey Parrot are well known, and it seems scarcely necessary to say that it is the very best bird for enlivening and embellishing a dwelling-house. It is, of course, generally understood that individual parrots differ in capacity and docility; but in the case of grey parrots the differences are not so great as with other kinds. They are *all* clever if well taught and they are *all*

gentle if treated kindly and kept in good health. The temper is influenced by the health in parrots as much as in men and women.

Next in importance to the grey parrot I should place the large White Cockatoo; for although this species never becomes loquacious, and is not particularly imitative, its beauty and gentleness render it most desirable. It is, in some sense, a mistake to have only one of these birds; they should be kept in pairs, for then they become immensely interesting; their mutual tender regard, their little quarrels, and their reconcilements, afford immense entertainment. I have a pair that are usually kept in separate cages, side by side, but are occasionally together in one cage. When one of these only is kept in a house, it is apt to become bare on the breast through plucking off its feathers—the consequence, I believe, in most cases, of lack of amusement.

The small Sulphur-crested Cockatoo is as well known as the grey parrot. It is no talker, but otherwise a very teachable and an extremely comical bird. One is enough in any household, for it is noisy and boisterous if in health; and a pair make so much noise, as to be unbearable. The greatest favourite we ever had was a bird of this species, that had long been accustomed to enjoy perfect freedom, and, though well able to use its wings, was allowed to roam about the house and garden, and do in all things as it pleased, except at night, when it was required to sleep in a cage, to prevent its doing mischief in the morning, before anyone was about to keep it in order.

For those who want a fireside pet of the quietest possible nature, the Rosy Cockatoo-parrot (*roseo-capillus*) is invaluable. It is much like a pigeon in size and shape, the prevailing colour mauvy pink, or soft purplish rose, with a very short crest, and a small, piping voice, which agrees with its pretty manners. This bird is decidedly tender, and suffers from catarrh if exposed to cold, and therefore is not adapted for a house where the parrots are treated somewhat roughly. In my case, one of these is enough; and it can be taught to say a few words, and to perform a number of tricks. Mine shakes hands prettily, does needlework if presented with a mite of calico, and varies its performances with such utterances as “Pretty Tibby,” “Kiss me, dear,” etc., etc.

For beauty and vivacity the King Parrot must take precedence of all others; but it is a somewhat tiresome bird, in consequence of its activity and guttural chattering. If a merry noise is not to be feared, this brilliant little parrot is much to be valued; for it may be taught to whistle a few bars of simple music, and will soon learn to make a harp of the wires of its cage.

The Amazons Parrot is the merriest bird of the whole family, though very far inferior to the grey parrot in vocal powers. When purchased, it will probably say, “Papaguy,” and may soon be taught a few more words. Its *forte*, however, is laughing and crying; and in a house with children it soon learns to imitate all their noises, from the scream of joy to the sobbing of despair, with all the intermediate grades of feeling.

The Festive Parrot, which is known as the Common Green, is

March.

scarcely desirable, except in a collection, as it is neither clever nor possessed of any striking characteristics of its own.

Of Maccaws it is not needful to speak. Whoever that loves parrots could be long without a maccaw? It is part of my duty, however, to warn the reader to think twice about it before taking charge of such a pet; for it is certainly not the most desirable amongst the many parrots that are at command for the private household. The Red and Blue Macaw is the grandest of the family, and as teachable as any. The Blue and Yellow is grand, but scarcely so pleasing in appearance. The green is beautiful, and somewhat more noisy than the rest. They look best and enjoy life best on poles. If kept in cages, the disposition and power of the bird to destroy must be thought of in time, or the cage will soon be torn to pieces.

In selecting parakeets and lorries, beauty of appearance is the principal matter to consider. The delicate Nymphacus, the Rose-ringed Parakeet, and the Zebra Parakeets, or Budgergars, of Australia, are especially pleasing, and adapted for domestication. The little Red and Blue-headed Parakeet is very tameable, and may be trained to go in and out of its cage as it pleases.

In the management of these birds careful feeding is, of course, of the very first importance. This part of the subject, however, is likely to obtain attention where what may be called the *moral* treatment is neglected. As to food, then, I shall merely remark that the best staple food is canary-seed, or maize slightly softened by steeping an hour or two in hot water. Hemp-seed should be given sparingly, and at intervals; it is too heating to be supplied in any plenty. Grey parrots like fresh bread and milk, which answers in place of water; but all parrots that are not supplied with bread and milk should have fresh water every day.

One of the first requisites of the moral training is to win the confidence of the bird. To say that kindness will ensure this happy result would be to say too little. You must be frequently near the bird, talking to it, observing its ways, and, as far as may be safe, making free with it, but always in a gentle and quiet manner. I have made very rapid progress with young wild birds by stroking their heads and shoulders with a feather. They soon learned to look for the feather. Then I would compel them to come close to the wires to reach the feather, and I would draw the feather back in my hand, so that at last I could scratch the pupil's poll with my finger; and thenceforward training and teaching became easy work, or rather a pleasant pastime. Towards dusk is the time to begin to teach a half-wild bird; they are not then in a snappish humour, and the wretched dithering (I know not what else to call it) that an untamed parrot indulges in best part of the day is over, and it is disposed to listen and observe.

One of the most important of all the points in the moral management is to provide the bird with amusement. I have all the cotton-reels saved for the parrots, and they look for them as a daily treat, the enjoyment consisting, of course, in tearing the reels to pieces. The employment prevents gnawing of perches, and

plucking off feathers, and is a delightful sedative to a noisy or ill-tempered bird. A bit of hard wood of any kind answers as well in place of a cotton-reel, but the latter possesses a charm of some sort. Perhaps the perforation suggests a mystery to be explored, the home, the bird may think, of a fat grub worth digging out for supper. A reasonable amount of shouting and riot is good for these excitable creatures. I sometimes wake them up by clapping my hands, and using loud, laudatory, and babyish language, and obtain immediate and frantic response, that goes all round the house; for the birds are scattered, and the sound of joy in one apartment soon travels to another, and screaming and crowing (or I might say *craying*, for the sound is such) makes the house a sort of bird-*Bedlam pro. tem.* The cockatoos display their crests, and their wings, and their tails gloriously on these occasions, and that wild, discordant, unteachable thing, the Red-throated Australian parrot, joins heartily in the chorus, and appears to consider it a war-whoop.

Occasional change is good for parrots, especially the more clever of their number—for these, of course, are the more observant. I occasionally send my best birds away to the houses of friends, where they are always welcome, and I find the procedure decidedly beneficial. It affords me a welcome rest, and, at the same time, provides the birds with new excitement, the result being a healthy rousing from the monotony of their ordinary life, and contributions of parrotical joy to other households. Change about the house is good in its way, but change out of the house is better. As a rule, however, when the birds are at home, they should be, as much as possible, kept in the same places. We all like change, and yet we like our customary chair and chimney-corner. It is just the same with the parrots; they are very human in their sympathies and requirements.

I ought, I feel, to say a word about the *biting* propensities of these pets. Good management does almost entirely obliterate this vexatious habit; but there are some that never give up snapping, however well trained they may be. The most tiresome kind in this respect is the Amazons parrot, which can never be depended on. There is one golden rule for the real lover of parrots in respect of this habit, and it is, *to ignore it as much as possible.* It is no easy matter, I know, to appear unmoved and quite unaware of the fact that your pet is disposed to make a hole in your finger; but it is the right way to behave in the hour of danger. It is astonishing how well you may get through a trial of the kind, if you completely control your fears. By the exhibition of fear, and snatching the hand away, the bird is encouraged to bite, and will bite hard; but if treated as worthy of the most complete confidence, it will be often found that the object was not to punish, but to play; and it must ever be borne in mind that affection, quite as much as dislike, is exhibited by parrots in the use of the mandibles, and they love to gently nibble the fingers of their friends, and must be allowed to learn to do it. I am much amused sometimes when my man is cleaning and dressing the parrots, and has his bare arms in the cage

busy at work. At such times the birds will often help by dancing up and down, with wings drooping, and all feathers up, and perhaps now and then giving the bare arms a gentle, playful nip. Yet the confidence shown in this way has never been betrayed, and a real case of cruel biting is in our house quite unknown.

PROMENADE TREES.

BY ALEXANDER M'KENZIE, ESQ.,

Landscape Gardener, etc., Alexandra Park, Muswell Hill, N.



FOR the promenade, the terrace, and the Italian garden, we require trees of a quite distinct character of growth to those best adapted for park and wilderness planting. In the one case, close-growing trees of an upright columnar habit are alone suitable, and in the other, trees with widely spreading heads, or remarkable for their gracefully flowing outlines, are the most appropriate. They are not only more in strict accordance with the straight lines with which they are surrounded, but they help to create a greater diversity in the garden scenery than would be the case were trees of all classes mixed up indiscriminately over the whole of the garden and park. Some writers would fain have us believe that we should bring the wilderness to the hall door and the drawing-room window; but those who have any knowledge of the principles of landscape gardening will, I feel assured, agree with me when I say that the garden contiguous to the house should be somewhat formal and highly dressed, and the wilderness and other rustic scenes be arranged at extreme points in the grounds, so that the transition from the warmth and richness to be found indoors to the wildness of nature may be as gradual as possible.

It is not my intention to enlarge upon these points, as my object in writing now is to indicate a few of the more important trees for promenade planting, and I have merely alluded to generalities in passing, to show how important it is to select trees of a character suitable to the position they are intended to occupy. Granted that trees of a close upright habit are required for the promenade, we have next to consider the length, breadth, and position of the latter, and to select the trees according. It would never do to select the same trees for small as we would for large promenades. No, the trees must be proportionate. For example, for walks eight or ten feet or so in width and several hundred feet in length, large trees of a close yet somewhat free habit, such as the *Wellingtonia* and *Picea pinsapo*, may be planted; but for ordinary promenades, especially on terraces near the dwelling-house, smaller trees, like the *Thujas* and *Junipers*, will be more appropriate.

Before passing on to give the names of the finest promenade trees, I am anxious to say that for the sake of uniformity the same class of trees should be planted throughout the promenade, and

that the trees on both sides must be planted opposite to each other. The trees ought also to be of the same height, the same size, and, as far as practicable, of an equal degree of vigour; for if they differ materially in the latter respect, some will grow more freely than the others, and in the course of a few years the lines will present an uneven appearance. But with ordinary care in selecting the trees, and a little regulation of the growth when needful, there will be no difficulty in keeping all the trees to precisely the same shape and size.

The trees which can be the most strongly recommended for promenade walks and geometrical schemes are—

Cupressus Lawsoniana, a handsome tree of medium growth, eminently suitable for rather broad walks, cheap, and thriving in ordinary soils.

Cupressus Lawsoniana erecta viridis is a fine form of the preceding; in growth more erect, and in colour of a much brighter green; it is one of the finest of promenade trees.

Cupressus Lawsoniana argentea is less erect than either of the preceding, and forms roundish and dense specimens; the tips of the shoots silvery, and drooping gracefully.

Juniperus chinensis, a hardy and beautiful tree of medium growth, and elegant pyramidal habit.

Juniperus excelsa stricta, a beautiful small growing tree, with a neat pyramidal habit and glaucous green foliage.

Juniperus communis hibernica is the Irish juniper, well known for its upright columnar habit; it can be clipped and kept to a small size, and is, therefore, well adapted for terrace promenades.

Juniperus hispanica has a dense pyramidal habit, and is very handsome when from four to six feet high.

Libocedrus decurrens, a rather robust tree, columnar in growth, and exceedingly handsome, resembling in some respect a gigantic lycopod. The colour is exceedingly rich.

Retinospora obtusa is a hardy and most elegant tree, forming dense roundish specimens; but it is not so generally useful as the other things mentioned.

Taxus fastigata is the Irish yew, so well known for its columnar habit, and is one of the best trees for promenades and geometrical gardens. It can be clipped to form neat columns three feet in height, or it may be allowed to grow into specimens twelve or fifteen feet high.

Taxus japonica is similar in character to the preceding, but dwarfer.

Thuja Lobbi, a handsome tree of upright growth, somewhat similar to *Libocedrus decurrens*.

Thuja orientalis aurea is dwarf and distinct in character. It forms dense round bushes, and is one of the finest of its class for geometrical gardens and terraces. The young growth has a golden hue in spring, and the plants are then very attractive.

Thuja orientalis elegantissima differs from the preceding in being of a more erect and columnar habit.

Thuja borealis, a fine upright evergreen, of rather free growth, and exceedingly handsome for broad promenades.

For very broad promenades in large gardens, and for carriage drives in those of a smaller size, *Araucaria imbricata*, *Cedrus deodara*, *Picea pinsapo*, and *Wellingtonia gigantea* are the most valuable of all the hardy coniferous trees. The three last mentioned are most preferable. The two last mentioned are perhaps the most symmetrical of the large growing trees in the class to which they belong.

NOTES ON SEED SOWING.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex, W.



SEED sowing of necessity occupies a large share of attention during the month of March, for nearly all the principal kitchen garden crops and numbers of flower seeds have to be sown. As so much depends upon the way in which seeds are sown, especially those of small size, I shall offer a few remarks bearing on the subject, for the purpose of assisting those amateurs who have not had much experience in work of this kind. The seeds to be sown now may, for convenience, be divided into three classes:—large seeds, such as the peas and beans; seeds which are to remain in the beds in which they are sown—as, for example, onions; and those which are usually sown in beds and transplanted, such as cabbage and lettuce. The sowing of peas and beans is simple enough, but as so many amateurs spoil their crop by sowing so thickly that the plants crowd each other in a manner that renders their proper development impossible, it will do no harm to point out briefly the proper way for sowing the seed to avoid waste, and at the same time secure a good crop.

Peas, more especially the tall-growing sorts, produce the heaviest crops when sown in rows from twelve to twenty feet apart, as both sides of the rows are fully exposed to the light and air. This has been pointed out in these pages on more than one occasion, and it is not needful to do more than allude to it in passing. In sowing the main crop sorts, it is an excellent plan to sow in trenches about nine inches in width and six inches in depth. The soil to be trenched over to a depth of two feet, and six inches of the subsoil to be thrown out of the bottom of the trench; for it would never do to remove six inches of the well-pulverized soil from the surface to form the trench. It is good practice to mix with the soil as it is turned over six inches or so of good rotten manure, and when this is done rather more soil must of necessity be removed. When trenches are prepared, it will be simply necessary to sow the seed on the surface and cover with three inches of soil.

In sowing on the level the drill should be three inches in depth and six inches in width at the bottom. The seed must then be

distributed thinly and evenly over the bottom and covered carefully. When sown in a very narrow drill and covered with lumpy soil, as is frequently done, the growth is unsatisfactory from the first, and in most instances the crop is less than it otherwise would be.

Broad and French beans should be planted with the hand in a double row in each trench; the rows to be four inches apart, and the seeds to be six inches apart in the rows. If a few miss it will be a matter of no consequence. In sowing these things in heavy soil, it is a most excellent plan to cover with fine soil, such as the siftings from the potting bench mixed with wood ashes and vegetable refuse decayed to a powder.

The surface of beds intended for onions, carrots, beetroots, and similar things, cannot well be too fine, for the seeds are small, and do not come up so strong and regularly when covered with rough lumps. Soils of a heavy character seldom work well when newly dug over, and a quarter which was turned over in the autumn, and the surface thoroughly pulverized by the action of the weather, should be devoted to these crops. Drills for all these things should be an inch in depth, and in the distance apart vary according to the character of the crop. The drills for onions and carrots should be twelve inches apart, parsnips fifteen inches, and beetroots eighteen inches. After the seeds are sown and the drills filled in, the surface should be well trodden and then raked over, and the alleys marked out, and the beds finished off in the usual way.

It is customary to sow cabbage, lettuce, broccolis, and winter greens in square beds; and as the plants become crowded immediately they are a few inches in height, and spoilt unless transplanted quickly, sowing in these beds cannot be recommended. But by sowing in lines fifteen or eighteen inches apart, the plants have sufficient room to acquire strength before it is needful to transplant, and if from any cause a delay should arise, it will not matter much if the plants remain a fortnight or so beyond the proper time. By this plan of sowing, which I have had in practice for many years past, a supply of short stocky plants is obtained, which at once take possession of the soil when put out in their permanent quarters, without any of the labour and worry incidental to transplanting into nursery beds, so much recommended by some writers.

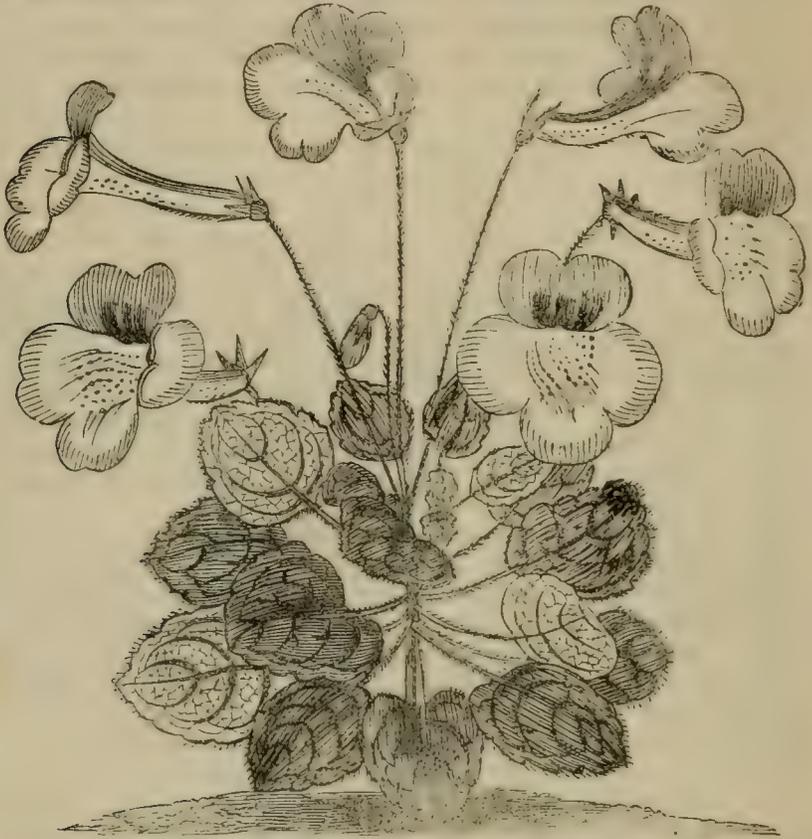
STENOCASTRA MULTIFLORA.



E have selected this pretty subject as an example of a genus of gesneraceous plants that amateurs have hitherto too much neglected. Not only *stenogastrea*, but *eucodonia*, *nagælia*, and other sections of the family are neglected, whereas they should have a little extra attention because of their beauty, their rapid development, and the very little trouble they occasion. The first requisite certainly is a moist stove, which, perhaps, comparatively few amateurs possess. But given this, the production of fine specimens of these handsome

March,

plants is one of the easiest tasks in horticulture. The two principal agents of production are heat and moisture, and given these, there is really very little to be said by way of direction. The stenogastras, in common with others of the family, require a rich soil and a half-shaded position. The plant before us produces lovely lilac-tinted flowers in the style of a miniature gloxinia. Another



pretty plant of the same genus is *Stenogastra concinna*, which has rich violet-coloured flowers dotted with purple. In case any critical botanist should read this note, we are bound to add (just to show that we know all about it) that *Stenogastra multiflora* is pronounced by Messrs. Veitch, of Chelsea, to be a cross between *Stenogastra concinna* and *Mandizola lanata*.

NEW MULBERRY.—The *Revue Horticole* speaks of a peculiar seedling variety of a mulberry, raised by M. Brun, and which is remarkable for its extremely dwarf tufted habit. During three years the stem has not attained more than about 18 inches, while other seedlings of the same batch have, in a like period, attained a height of 9 or 10 feet. Now, in the ninth year of its existence, the dwarf variety has a stem of less than 6 feet. The leaves are large, and retain their tufted character. Apart from its curiosity, the dwarf variety is important in relation to the plan of rearing silkworms in the open air, a plan alluded to by us in 1873, p. 773, and recommended as a remedial or preventive measure in some forms of silkworm disease.

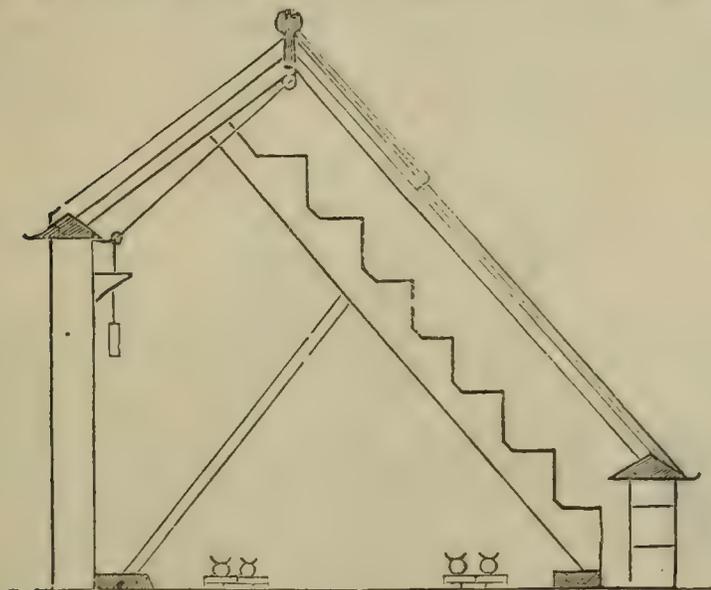
STRAWBERRIES AND GRAPES IN THE SAME HOUSE.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex.



It does not appear to be generally known by amateur cultivators that really first-class crops of strawberries may be obtained considerably in advance of those from the open borders, without the aid of fire heat. Yet such is the case; for with the assistance of glass only they come on very rapidly after they commence to make new growth



COMBINED GRAPE AND STRAWBERRY HOUSE.

in the spring, and the crop attains maturity long before it will be possible to gather ripe strawberries from the beds out of doors. Splendid fruit may indeed be gathered from plants in a cool house, when, at the wholesale rate, it is worth from eight to twelve shillings per pound. This being the case, I have thought many amateurs would be interested in knowing that good strawberries may be had from houses in which crops of grapes are obtained without forcing. The strawberry plants begin to grow a little before the grape vines, and by the time the latter have covered the roof with a canopy of green leaves, the crop of strawberries will be ready for gathering.

One of the best forms of house for growing grapes and strawberries together, is represented in the accompanying diagram. In a house of this kind, the vines are trained up the roof, and the pots containing the strawberries are placed on the stage, which is three feet from the glass. The plants are watered from behind; and as the shelves are eighteen inches apart, the plants can be

March.

lifted down and examined, should it appear needful. The young growth of the vines will require training rather close to the main rods until after the strawberry plants are removed, to afford the latter all the light possible; but the vines will receive no harm whatever, as the shoots can be tied out immediately the crop is gathered. The staging must be made to be readily taken down when no longer required, and as readily put up again in the spring. The rests upon which the shelves are placed are fixed at the bottom to a wooden sill, and at the top to the rafters, in each case with strong screws, and are supported half-way up with stays, as shown in the diagram. The shelves are six inches wide, and an inch in thickness. Air is admitted at the top by sliding lights, and at the bottom by means of openings in the front wall. In houses with half-span roofs there is more room for watering the strawberry plants, and the vines receive the advantage of more light than would be the case in lean-to's.

SHAKSPEARE'S WALL-FLOWERS.

“ Flower in the crannied wall,
 I pluck you out of the crannies;—
 Hold you here, root and all, in my hand,
 Little flower—but if I could understand
 What you are, root and all, and all in all,
 I should know what God and man is.”

TENNYSON.



THE wall-flower is described in the books as a biennial, and that is about as wrong as if it were described as an annual. The wall-flower is a perennial, and should always be so regarded, unless there are special reasons for treating it as a biennial. When required for spring bedding, it must be sown in the reserve ground, and be planted in the beds in September or October, and when the flowering is past, may be destroyed. But in an old-fashioned border, or on the skirts of a broad gravel walk, the wall-flowers should be allowed to grow into great bushes, for then they flower superbly, and last many years.

But what has this remark to do with Shakespeare's Wall-flowers? Not much, perhaps. As regards the place of the plant in the poet's works, it has no place, for he never mentions it, and so I have no chance of a sentiment to begin with, and may as well make an end of my essay as soon as possible. Three years ago I saw on the wall of the chancel of the church at Stratford, a tiny, half-starved wall-flower, with two pods of ripe seed on it. The position of the plant was exactly where, by piercing the wall, we should come upon the dust of Shakespeare. If I had been alone, I should certainly not have touched the plant, for I never have indulged in that sort of thing. But as one of the churchwardens was with me, I asked permission to take away the ripe seed, and permission was granted. The plants I obtained from those seeds proved, to my surprise, to be good garden wall-flowers, pure yellow, neat habit, and as well adapted for bedding as any in cultivation. I have now a fine lot of large

plants that began to show flowers before January was out, and are now like miniature mountains of gold. Last year I saved a lot of seed; but it was lost through not being looked after, and many friends have upbraided me for not sending them a little. Now I will engage to save and send to all who wish for a bit of seed of Shakespeare's Wall-flowers, for my plants will produce an enormous quantity. Those who would like to have a few pods have but to send a stamped and directed envelope to 5, Paternoster-row, and in due time it shall be posted to them with two or three pods of the ripe seed. I should certainly not offer this seed if the variety were of inferior quality; but in truth there is no better yellow wall-flower in cultivation, and if the plants are allowed to stand, they will spread into dwarf bushes two to three feet wide, and will flower with surprising freedom.

S. H.

NOTES ON CROTONS.

BY B. E. WILLIAMS, F.R.H.S.,

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Upper Holloway, N.



AMATEURS and others who possess the convenience for the cultivation of stove plants, are not so much concerned about the cultural requirements of crotons, which comprise some of the most beautiful of plants with ornamental leafage, as they are perplexed in selecting the best varieties. During the last five or six years a large number of new kinds have been introduced, and the list has been augmented so considerably that the amateur, who has but few opportunities for making comparisons, is necessarily at a loss to know, if he requires half-a-dozen sorts, which to select. For the purpose of assisting readers of the FLORAL WORLD, I shall, after making a few remarks on their cultivation, give a list of half-a-dozen sorts, which are remarkable for beauty and distinctness. This is the more especially necessary, as a few of the recently introduced sorts are more remarkable as curiosities than they are for the value they possess for decorative purposes.

In the first place, I would say that Crotons are more especially valuable for the rich appearance they present in combination with dracænas, and other dark-leaved plants during the winter season, when there are not many flowers to brighten up the plant-houses. They are of course very beautiful during the summer season, as amply demonstrated by the fine specimens which are presented annually at the principal exhibitions held in the metropolis and the provinces. As they develop their true character and rich leaf-tints at a very early stage, they present a most attractive appearance, even when in a small state, and the varieties with long narrow leaves are of great value for table decoration. The chief points in their culture are a fibrous soil, well-drained pots, and a light and rather airy position in the house. A compost consisting of good fibrous

loam and peat, with a liberal addition of silver-sand, is, perhaps, the most suitable, and, in shifting the plants into larger pots, it is necessary to press it firm between the ball and the sides of the pots. They require a light position because an abundance of light is necessary for the development of the variegation. Plants grown in a moist, shady part of the house, will produce leaves almost wholly green, and in time become quite unattractive; but by placing them in a light and airy position, those with yellow variegation will become like a mass of burnished gold, and the others will also be most brilliant. They must not in appearance be overpotted, as too much root room is favourable to the development of green leafage, and the production of this should, as far as possible, be avoided. At the same time, they must not be so confined that they only produce stunted growth and small leaves. With respect to watering, it will suffice to say that they require moderate supplies at all times, and that no liquid manure must be employed.

Very little training will be necessary; those with slender leaves, when intended for table decoration, should be allowed to run up with a single stem to a height of twenty inches or so, and then be stopped. The other kinds should be grown in the form of neat bushes, and an occasional stopping of a too vigorous growth, and a little regulation of the others, will suffice to produce most handsome specimens. Although requiring the temperature of a stove, they are rather hardy in constitution, and if they are carefully prepared, they may be placed in the drawing-room during the summer. The only preparation needed is to place them in the coolest and most airy end of the house for a fortnight before taking them indoors, and to be careful at first to place them where they will not be exposed to draughts. Duplicate plants only should be employed for indoor decoration, in case they should be injured.

The six kinds I should recommend for a small collection of stove plants are:—

C. angustifolium. A most elegant variety, with extremely long slender gracefully-drooping leaves. The colouring is bright yellow, and when fully developed, exceedingly rich. It is one of the best for table decoration and grand for exhibition or ordinary decorative purposes.

C. Johannis, a very beautiful form; the leaves nearly two feet long, pendulous. The margins and midrib deep yellow on a bright green ground. Well adapted to the same purposes as the preceding.

C. pictum. A magnificent plant, with leaves six to nine inches long, superbly coloured rich crimson, with black and green spots.

C. undulatum. One of the most attractive varieties. The leaves are of medium size, nearly yellow in their early stage, gradually becoming more deeply coloured, and when mature are of a deep rich green, richly painted and mottled with bright crimson. Very effective and good.

C. Veitchi. A distinct form, with leaves upwards of twelve inches in length, and nearly three inches in width, which in a young state are mottled with pale yellow, changing with age to reddish purple.

C. Weismanni. A very beautiful and elegant variety. The leaves are a foot in length, and about three quarters of an inch in width, and richly mottled with golden yellow on a green ground. Fine for table decoration.

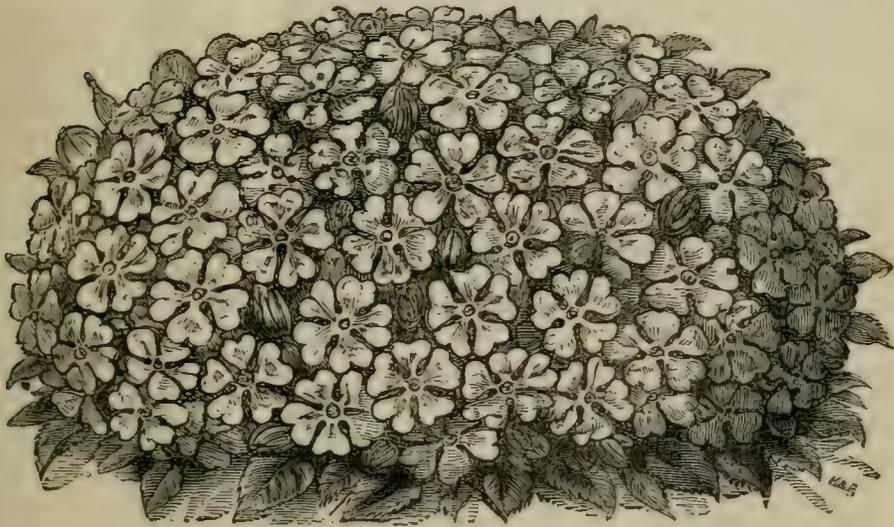
C. Youngi. A fine form, with long spreading leaves, heavily blotched and marked with creamy yellow and deep rose. Under-side deep red.

Those who require more than the number above, may add *C. majesticum* and *C. elegantissima*, both of which are very fine and distinct; but as yet they are scarce.

SILENE PENDULA COMPACTA.



SILENE PENDULA has long been known as one of the most showy of annuals flowering early in the spring, and for some years past it has been grown largely for spring bedding. The variety of which a much reduced illustration accompanies these remarks,



differs from the specific form in being much dwarfer, more compact in habit, and far more effective when in bloom. On suitable soils it blooms so profusely as to form one of the most effective of spring bedders, as the plants present the appearance of dense cushions of the loveliest pink. When the plants are far enough apart to admit of their full development, they attain a diameter of twelve or fifteen inches, and a height of six or eight inches, and become as densely covered with flowers as in the figure.

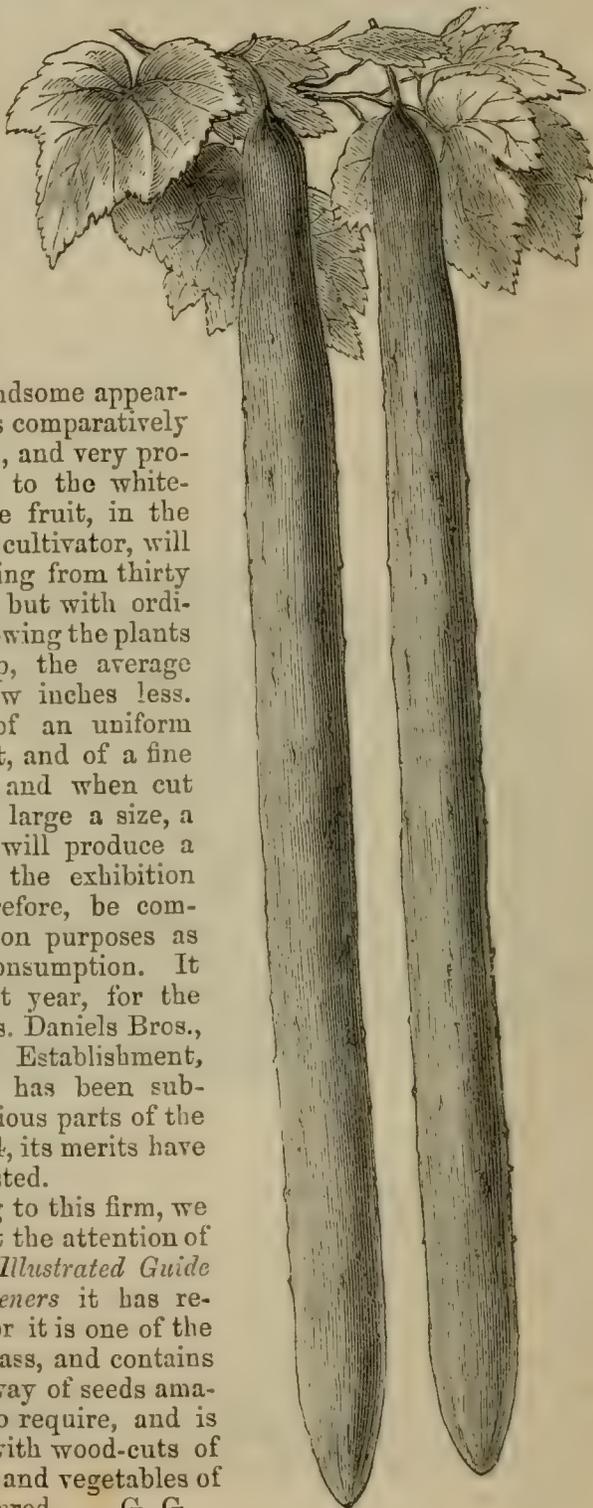
It was raised several years since by Mr. W. Cole, the able chief of the Ealing Park Gardens, and has had a certificate of the first class conferred upon it by the Royal Horticultural Society. Seeds can now be obtained of all the principal seedsmen.

March.

CUCUMBER DUKE OF EDINBURGH.

LARGE cucumbers are not, as a rule, of much value, excepting it be for exhibition purposes; but in the variety to which we now direct the attention of our readers, we have a noteworthy exception. It combines with its large size good flavour, and handsome appearance; and the plant is comparatively hardy in constitution, and very productive. It belongs to the white-spined class, and the fruit, in the hands of a first-class cultivator, will attain a length ranging from thirty to thirty-six inches; but with ordinary culture, and allowing the plants to carry a full crop, the average length will be a few inches less. The fruit is also of an uniform thickness throughout, and of a fine deep green colour, and when cut before attaining too large a size, a well-matched brace will produce a telling effect upon the exhibition table. It can, therefore, be commended for exhibition purposes as well as for home consumption. It was distributed last year, for the first time, by Messrs. Daniels Bros., Royal Norfolk Seed Establishment, Norwich, and as it has been subjected to trial in various parts of the country during 1874, its merits have been thoroughly tested.

Whilst referring to this firm, we feel bound to direct the attention of our readers to the *Illustrated Guide for Amateur Gardeners* it has recently published, for it is one of the best works of its class, and contains everything in the way of seeds amateurs are likely to require, and is freely illustrated with wood-cuts of the leading flowers and vegetables of which seeds are offered. G. G.



HERBACEOUS PÆONIES.

BY THOS. S. WARE,

Hale Farm Nurseries, Tottenham, N.



HERBACEOUS PÆONIES grow so freely and bloom so profusely under the most ordinary conditions, that they well deserve to be planted liberally in all borders devoted to hardy flowers. Furnished as they are with large, ample leafage, and, in their season, with handsome, richly-coloured flowers, they are capable of producing the most striking effect, especially when planted in groups of three or four plants each. I have been induced to say a few words about them, because many people suppose that the old double crimson pæony, so common in cottage and country gardens, and one or two other sorts, are the sole representatives of the family. Instead of this being the case, there are a very considerable number of splendid hybrids; and in my recently issued catalogue of florists' flowers, I have entered nearly twenty as being especially noteworthy. I know that the existence of these hybrids is not well known, because of the surprise expressed by visitors to the nursery when they are in bloom at seeing pæonies with rosy pink, yellow, and white flowers.

As regards cultivation, it is not necessary to say much, as they grow and flower freely in any ordinary good soil. The main point is to plant them in a position where they will receive some shelter from north and easterly winds. They are hardy enough, so far as their capabilities for resisting frost when dormant are concerned, but they commence to grow early; and as the young growth is, during the earliest stages, rather soft and succulent, and it is injured by late spring frosts if the plants are much exposed, they do not, in consequence, bloom so satisfactorily as could be wished. The young leaves are of a rich red colour early in the spring, and large masses have at that stage a very bright and attractive appearance; but as borders devoted to herbaceous plants are mostly sheltered, more or less, by surrounding shrubs and trees, it will not be often necessary to provide shelter expressly for them. They do very well, and produce a good display of flowers, planted along the front of shrubby borders; but they are the most telling when planted in groups of about three plants each, at intervals of eight feet or so, in the second or third row of the border devoted to hardy plants of a similar character. In planting them in this manner, care should of course be taken to arrange the colours so that the light and dark varieties alternate throughout the entire length of the border.

As I have already said, they will grow in any ordinary good soil, but they make more vigorous progress when planted in soil in good heart; and a little manure may be added with the soil at the points where the plants are to be put. This will give them a good start from the first, and help to maintain them in a robust state for

several years. Afterwards a little top dressing every second or third year will suffice to ensure a most luxuriant growth, and a plentiful production of flowers.

The following varieties have been selected from my large collection, as eminently desirable in the smallest of gardens where hardy herbaceous plants are cultivated:—

Archangel.—Rose lake, tipped with white, very double.

Cherub.—Outer petals carmine, centre pure white.

Desdemona.—Clear rose, large and double.

Duchesse d'Orleans.—Outer petals rose lake, centre salmon, fine.

Officinalis rubra-plena.—The old double crimson.

Potsi.—Bright carmine, double, and very fine.

Queen Victoria.—Carmine pink, shading to white, large, and very double.

Umbellata.—Outer petals pale carmine, centre pale primrose.

Victoria Modesta.—Outer petals rose lake, centre pink tipped with white.

Whitleyi.—White, with clear yellow centre.

SHORT NOTES ON USEFUL VEGETABLES.



E now resume our cultural notes on useful vegetables that require immediate attention to ensure good crops, and commence with

BROCCOLI.—This is one of the most important of vegetables, yet owing to the risk of the whole crop being destroyed in severe weather, it is not well adapted for very small gardens, for in these it is of the highest importance to turn every yard of ground to good account. The cultivator should aim at securing a succession from autumn until late in the spring, and to do this it is needful to sow early sorts the first or second week in March; the midseason sorts early in April; and the latest kinds towards the end of the same month. Sow rather thinly in beds or drills in an open position, and select a quarter which has been manured liberally and stirred deeply; and commence to plant out when the plants have acquired sufficient strength. The early sorts should be thirty inches apart each way, and those for late supplies two feet. If the weather is dry at planting time, supply liberally with water until they are established. The caterpillar, which frequently does so much mischief, must be kept under by hand-picking and dustings of soot or lime. Deep cultivation, an abundance of manure, and a warm soil are the main points in the cultivation of Broccolis. For cutting in autumn, the best are *Grainger's Autumn White* and *White Cape*; for midwinter, *Snow's Winter White* and *Sutton's Superb Early White*; for early spring, *Sutton's Perfection*, *Cooling's Matchless*, and *The Leamington*; for late spring, *Lauder's Superb White*, *Cattell's Eclipse*, and *Carter's Summer*.

CELERY.—To produce celery of first-class quality, it must be kept growing freely from the time the plants are up until the earthing-up commences. Sow the seed in shallow pans in March and April, and place in heat for early and late crops respectively. Prick out when large enough to handle, on a bed of rich friable soil made up in a cold frame. Shade during the first few days, and keep rather moist. Then water liberally, and ventilate freely. Prepare the trenches by making them a foot or so deep, and then add six inches of manure. In preparing the trenches, throw out the uncongenial soil from the bottom, and not the well-pulverized stuff from near the surface. Lift the plants carefully, and shade and water moderately until established. Then water liberally, and use liquid manure occasionally, if available. Commence to earth up when nearly full grown, and take advantage of dry weather for the work, and be careful to avoid filling the hearts with soil. The earthing-up of both early and late crops must be completed before severe weather sets in. The very best red celery is *Leicester Red*, and the best white, *Incomparable White*. The first-mentioned is decidedly the best for main crops, as it is perfectly white when prepared for the table.

CARROTS.—A deeply stirred and rather friable soil is one of the chief essentials in the cultivation of carrots. Sow the early sorts, such as the *Short Horn*, on warm borders, and draw for use as they become large enough, and the main-crop kinds in lines twelve inches apart in an open situation. Thin to six inches, and as they become large enough for table, thin to twelve inches apart. By this means, an abundant supply of young carrots will be obtained throughout the summer, without in any way interfering with the crop required for winter use. The *Altringham* and *Long Surrey* are the most profitable for main crops; but for shallow soils, *James' Intermediate* is the most suitable. This will require thinning to nine inches apart only.

GOURDS.—These are useful for planting on sunny banks, and the ripe fruit of the edible kinds is valuable for soups and other purposes during the winter. Sow in pots in March, pot off separately, and plant out towards the end of May on a bed of manure or rich soil. They may also be sown where they are to remain about the middle of May. The vines should not be stopped.

LEEKS.—This vegetable requires much the same cultivation as celery, with the exception that it is not needful to sow in heat, or nurse the young plants under glass. Sow in March, in the open ground, and plant in trenches a foot deep, prepared as for celery, in May and June. When of good size, earth up, and the result will be a fine large and tender leek for stewing. When required for soups, it will suffice to plant in beds six inches apart.

ONION.—In the production of heavy crops of first-class quality, a deep loamy soil is of prime importance. It should be dug over roughly in the autumn, to insure its thorough pulverization, and manured if not already in good heart from the previous crop. Sow in March in drills twelve inches apart in four-foot beds, cover with half an inch of soil, and tread firmly. Thin early and before they suffer from crowding, and regulate the distance according to the sort.

Keep free from weeds during the summer ; and in cold seasons, unfavourable to their ripening, bend down the tops with the back of a rake. For pickling, sow thickly on poor soil in May. To obtain exhibition specimens of the Giant Rocca and other Italian varieties, sow in August, and transplant in the spring to a foot apart. Select rich soil, and supply liberally with liquid manure. *Improved Reading* and *Bedfordshire Champion* are the best for autumn and winter use, and *James' Long Keeping* for spring use ; *Giant Rocca* for mild flavour and for exhibition ; and the *Paris Silver-skinned* and *Early White Nocera* for pickling.

POTATOES.—Almost any soil will produce good crops of potatoes, provided it has been dug over deeply, and liberally manured, unless in good heart from the manure provided for the previous crop. A warm dry soil, fully exposed, is the most suitable for potatoes, and cold, heavy clays the worst. Medium-sized sets should be selected, and a month or so before planting be spread out in a dry room to encourage the production of short purple sprouts. The month of March is the most suitable for planting potatoes, and the rows should for the early sorts be eighteen inches apart, and for the late sorts from three to four feet ; and to avoid any loss of ground, winter greens may be planted between the rows. Plant from twelve to eighteen inches apart in shallow trenches, and cover with six inches of soil, and earth up as required. The names of the best sorts for gardens were given in last issue of the FLORAL WORLD.

PARSLEY.—To insure a liberal supply of this herb, make two sowings, one in March and one in June. Thin to four inches apart, and to make sure of a supply in severe weather, fill a cold frame in September with strong plants from the June sowing. A deep rich soil is the most suitable.

PARSNIPS.—The production of large handsome roots is not difficult, provided the soil has been dressed liberally with manure, trenched over to a depth of eighteen inches, and well broken up. Sow in drifts fifteen inches apart, and thin to nine inches apart. The roots may be lifted in the autumn and stored in dry sand, or left in the bed and taken up as required for use.

RADISH.—The most delicate crops are obtained by sowing in rich, well-pulverized soil. The earliest and latest crops should be sown on warm borders, and the summer crops in rather shady situations. The beds sown in March should be protected at night with mats or long litter. *Wood's Early Frame* is one of the best for sowing early, the *French Breakfast* for successional sowings, and the *White* and *Scarlet Turnip* for heavy summer crops.

SPINACH.—For summer crops, commence sowing early in March, and continue sowing at intervals of three weeks until the beginning of May. For winter and spring use, sow in August and September. The soil for the summer crops must be in good heart, but for the winter crops it should be rather poor, and the beds be raised six or nine inches above the surface. The *Round-seeded* is the best for spring sowing, and the *Prickly* for autumn sowing.

TOMATO.—It is important to put out strong plants early, and to secure these, sow in heat in March, pot off separately when large

enough, and towards the end of April shift into six-inch pots. When all danger from frost is past, plant three feet apart against a south wall. Train regularly, and stop from time to time. After sufficient fruit is set, nip off the young shoots as they make their appearance. A sandy soil is preferable, but they are by no means particular in reference to this point. *Hathaway's Excelsior* is the best for main crops.

TURNIPS.—Small breadths only should be sown early, but towards the end of June and during July large breadths may be sown for use during autumn, winter, and spring. If the fly makes its appearance, dust the beds with soot early in the morning, when the plants are moist with dew. The soil cannot well be too rich, especially for the summer and autumn crops. The drills should be from twelve to eighteen inches apart, and the plants be thinned eight or ten inches apart in the rows, according to the sorts. The *Short-top Six Weeks* is the best for spring sowing, *Veitch's Red Globe* and *White Stone* for summer sowing, and *Green-topped Six Weeks* and *Chirk Castle* for sowing to stand over the autumn.

VEGETABLE MARROW.—To obtain a supply as early as possible, sow in heat early in March, pot off separately into five-inch pots, and plant out towards the end of May on a bed raised a foot or so above the surface, and cover at night, for the first fortnight, with hand-glasses. For a main or later crop, sow in the beds where the plants are to remain, and put two seeds where each plant is to be. *Hibberd's Prolific* and *Short-jointed Long White* are the most useful.

THE GARDEN GUIDE FOR MARCH.

“ Dear children ! when the flowers are full of bees ;
 When the sun-touched blossoms shed their fragrant snow ;
 When song speaks like a spirit, from the trees,
 Whose kindled greenness hath a golden glow ;
 When, clear as music, rill and river flow,
 With trembling hues, all changeful, tinted o'er
 By that bright pencil which good spirits know
 Alike in earth and heaven—'tis sweet once more,
 Above the sky-tinged hills to see the storm-bird soar.

“ 'Tis passing sweet to wander, free as air,
 Blithe truants in the bright and breeze-blessed day,
 Far from the town—where stoop the sons of care
 O'er plains of mischief till their souls turn gray,
 And dry as dust, and dead-alive are they—
 Of all self-buried things the most unblessed ;
 O morn ! to them no blissful tribute pay !
 O night's long-courted slumbers ! bring no rest
 To men who laud man's foes, and deem the basest best.”

EBENEZER ELLIOTT.



ARICULAS are now growing freely, and want frequent supplies of water and abundance of air when there is no frost.

BEDDING PLANTS.—Cuttings put in now will bear more heat than those put in a month ago, as vegetation is more active with the advance of the season. There is plenty of time now to raise stock of *Verbenas*,

Petunias, *Fuchsias*, and *Lobelias*, and they will bear a moist temperature of 75° to advantage.

BOX ENDINGS made now will do far better than in autumn. If the weather is March.

dry after planting, keep newly-planted box well watered, as if a few plants die, the unsightly gaps are not easily mended in the height of summer.

BROCCOLI for autumn use to be sown in small quantities this week and next.

CABBAGE CROPS of all kinds to be cleared off the ground as soon as possible, to make room for spring produce.

CALCEOLARIAS of the shrubby kind to be shifted on as soon as they fill their pots with roots.

CAMELIAS out of bloom to have a higher temperature and a moist atmosphere, to promote the new growth.

CAPSICUMS AND TOMATOES to be potted off and put in a moderate heat, to encourage new roots. Use light rich soil.

CAULIFLOWERS will be growing now that the weather is milder. Give air by tilting the lights, and let them have warm showers.

CELERY sown early will now require to be pricked out into boxes on a slight hotbed.

CHRYSANTHEMUMS to be propagated now in quantity.

CINERARIAS are now coming to their full splendour, and must have constant attention. Use manure-water twice a week. Tie out specimens in good time. Those only just showing their trusses may have a shift, so as to form fine plants late in the season.

CONSERVATORY to be kept moderately close while east winds prevail, or the plants in flower will suffer. No need for fire-heat now unless there are many newly-introduced stove plants. Water the borders liberally; stop climbers.

CUCUMBERS.—Newly-established beds should be carefully aired every morning, to let off rank steam and prevent damping. Stop regularly before the fruit; never allow any runner to go away neglected, or the distribution of the sap will be unequal, and the fruiting unsatisfactory.

FIGS will now require plentiful syringing and liberal waterings. Stop all the shoots at about six inches long, and keep the temperature as steady as possible.

ERICAS require at this season a general repotting and revision. Give them small shifts, using abundance of drainage and a gritty peat full of fibre.

FRENCH BEANS in the forcing-house must be kept very near the light, and have a brisk temperature.

GERANIUMS of the zonal type that have been kept in pits, windows, and cool houses, in a rather dry state, now require pruning and a little water. If they can be put in a warm house, to give them a start, they will bloom earlier. Those that are to be flowered in pots require a shift; those that are to be turned out into beds may remain in pots as they are.

HERBACEOUS PLANTS.—Continue to divide and plant the borders. The early-blooming kinds are now coming into flower, and may be propagated from cuttings as soon as the bloom is over.

ORCHID HOUSE will require an abundance of atmospheric moisture now, and general attention to plants newly potted, and those coming into seasonal growth.

ORCHARD HOUSE.—Trees in bloom to have air in abundance. Some slight agitation among the blossoms will help to set them. Keep the air as dry as possible till the fruit is set, and while stoning be very careful not to let them get either too wet or too dry at the root. Trees swelling their fruit in the early house to be assisted with manure-water.

PANSIES in beds and borders to be spread out, and their long stems covered to within two inches of the point of each.

PEAS AND BEANS to be earthed up as needful. If slugs abound, strew wood-ashes or soot along the rows. Sow again, if required, for succession.

PELARGONIUMS for exhibition require constant attention. Give plenty of air to strong plants and manure-water, rather weak, every five or six days.

POTATOES may be planted for main crops. The sets should be hard, dark green; the sprouts short and purple; the soil in a dry state, and quite pulverulent, and the sets trenched in.

PROPAGATING to be carried on with spirit, that the bedding and other summer stock may be strong when required to be turned out. Sow in heat *Brachycoma*, *Phlox*, *Portulacca*, *Schizanthus*, *Stock*, *Cockscorb*, *Globe Amaranth*, *Balsam*, *Zinnia*, etc. Fine plants for bloom this season may be had by putting in cuttings

now of Fuchsias, Geraniums, Salvias, Heliotropiums, Verbenas and Potunias. Those struck early will now require stopping and shifting.

RHUBARB.—If new plantations are wanted for next season, now is the time to make them. Choose deep rich soil, trench and manure, and plant stout pieces of good varieties, with one plump eye to each.

SPINACH to be sown in successive breadths between rows of peas.

STOVE CLIMBERS must be encouraged to grow fast, and training must be delayed as long as it is safe to do so, as training checks the growth.

STOVE PLANTS must be shifted and repotted as required. Nearly every plant in the house will need some attention of the kind, either to give more root-room or to refresh with new compost.

SUCCULENTS wanting larger pots, they should now be shifted, and the soil used should be a mixture of lime rubbish, broken bricks, turfy loam, and a little cow-dung, with plenty of drainage crocks in the bottoms of the pots. Plenty of light, plenty of water, when in free growth, and a generous temperature, are requisite to produce a good bloom.

WALL FRUITS are now pushing into bloom, and protecting material should be put up at once, if not done already. Beware of coddling the trees by means of shelter; sunshine and air are beneficial—frost and rain do the mischief; a breeze playing among the blossoms helps to set the pollen.

VINES to be thinned of their superfluous bunches as soon as the berries are fairly set, and the thinning to be done with a bold hand. Thin the shoot, always insuring the natural shade of leaves for the bunches. Inside borders to be kept warm, and be liberally watered.

BRITISH WILD FLOWERS,

CONSIDERED IN THEIR RELATION TO INSECTS.

BY SIR JOHN LUBBOCK, BART., M.P., F.R.S.



SPRANGEL, in his book published at the close of the last century, was the first to throw a light upon the connection existing between insects and flowers, and to point out that not only the form, size, and shape of the latter, but the lines and dots upon them, had reference to this connection. This discovery excited but little attention till Darwin took up the subject in his work on orchids, since when much more has been learnt from the investigations of Axel, Delpino, Hildebrandt, Muller, Noble, Bennett, and Dr. Hooker. Sprangel was the first to discover that insects, notably bees, serve to transfer the pollen from the stamens to the pistils. They do not, as a rule, transfer the pollen of the stamen to the stigma of the same flower, but to that of another, and, as any gardener knows, better seed and more of it is to be obtained by this cross fertilization. There are three classes of plants that are not self-fertilizing: the first in which the stamens and pistils are in separate flowers; the second in which they are in the same flower, but do not mature at the same time; and the third in which, although both are contained in the same flower, it is impossible from their position for the pollen to get to the stigma. In flowers that do not fertilize themselves the pollen is chiefly conveyed by the wind or by insects—though water, and even snails, serve in some instances. Plants fertilized by wind are notable for an unusually large discharge of pollen—as in the Scotch fir and the nut tribes—and very prominent pistils. They flower mostly in early spring, when there are no leaves to catch the pollen. In insect-fertilized plants it is clearly shown that the flowers are indebted for size and colour to the insects. The common mallow and the round-leaved mallow are instances of this. They are almost identical in all but size and shape of flower. The former has a large and attractive blossom, but the stigma stands straight up, and the stamens bend down, so that it cannot fertilize itself, and depends upon the insects it attracts. The flower of the

March.

round-leafed mallow is small and unattractive, but the stigma bends down amongst the stamens, and the services of insects are not needed. A similar fact is to be noticed in the various branches of the geranium family. In some of the larger varieties the stamens do not come to maturity till the stigma is shrivelled up; whilst in the smaller the stamens fertilize the stigma themselves. Of the three classes mentioned, the process of fertilization when the stamens and pistils are on different plants, or on different flowers on the same plant, is well known. In those in which the maturity of the stamens and pistils takes place at various times, some of the provisions are very interesting. In the aristolochia, a long, tubular flower, there is a fringe of little hairs, all pointing inwards. Here the pistil matures before the stamens. Flies go inside, and are entrapped by the hairs, which, sloping inwards, prevent their egress till the stamens have matured, and the prisoner is covered with their pollen. Then the hairs shrivel up, and the insect flies off to fertilize other plants. In the arum, the well-known lord and lady, a precisely similar arrangement is observable. In the nasturtium and several other plants, on the other hand, the anthers shed their pollen, and die before the stigma appears. The common heath has a pistil like the clapper of a bell, with a ring of stamens, each anther having a curious process attached to it, filling up the space. A bee thrusting up his proboscis comes in contact with the pistil; and if his proboscis is covered with pollen, fertilizes it. If not, he goes on till he touches the processes which separate the chain of anthers. Each anther has a hole in it, which is blocked up by its neighbour, and when this separation takes place, the pollen runs out of this on to the bee's head. In the common white nettle, and in the salvia, the provisions for fertilization are very striking. The *Umbelliferae*, of which the carrot is an instance, have masses of small flowerets. Here the stamens mature first, and the pollen is rubbed off on to the underside of the bees, and so conveyed to the pistils of neighbouring plants.

The common daisy is an example of the composites. It is a bunch of tiny flowerets, the outer ones red and white, and the inner ones yellow tubes. The anthers are at the top of these tubes, and the pollen falls into them. The pistils then push up in these tubes, and force the pollen out. When the pollen is removed the pistils come out, and divide into two stigmas. In the sweet pea and its kindred flowers with five petals—namely, the standard, the two wings, and the two forming the keel, the pressure of a bee alighting forced out the stamens, and in the early purple orchis a bee's proboscis on going in brings out, attached to it, the two pollen masses, an experiment which can be made with a blade of grass. In the lady's-slipper, an insect on entering finds the outlet closed, and can only make his way out at the top of the flower. Passing by the stigma he gets smeared with a sticky substance, to which the pollen attaches itself, and is borne away to other plants. The cowslip and primrose present the feature of some of the flowers on one plant having pistils at the top and stamens at the bottom, and others the reverse. A bee plunging his proboscis into one of them has one part of it brought into contact with the stamen, and the other with the stigma. In the next flower, perhaps, the part that touched the stamen comes into contact with a stigma, whilst that which touched a stigma gathers a supply of pollen from a stamen. In the lythrum, with its stamens and pistils of different lengths, this is also instanced. It has been proved by Darwin's experiments that a lythrum fertilized by the pollen of flowers of a different arrangement to its own gives better developed seed.

If insects have an influence on flowers, flowers have one on insects, notably on bees. The mouths and legs of bees differ from those of other insects. The lips of bees are greatly modified. A wasp can only get honey from such flowers as that of the ivy, whilst a halictus or a bumble-bee can plunge its proboscis into almost any flower, save such as the honeysuckle, which are for moths and butterflies. Similarly the prosopis has a bare leg, the halictus a hairier leg, and the common hive-bee and bumble-bee very hairy legs, and an arrangement of the thighs for carrying home masses of pollen moistened by honey. The sleep of flowers is another question worth attention. Certain flowers sleep at night, and others only bloom at night. The last are sweet and pale-coloured, so that they might be conspicuous, and are without the spots and stripes that served to attract insects in the day-blooming flowers, but which would not be noticed by night. Other flowers only open at certain hours of the day, when the insects which fer-

tilized them are about. It is true that all flowers do not seem to be benefited by insects, but there is a perpetual change going on, insects and flowers are constantly tending to adapt themselves to one another, and altering as to structure and geographical limits. Many flowers are indebted to insects for their very existence, and honey, scent, and the arrangement of colour, all have reference to their acts.

HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY held its Annual Meeting on the 9th ult., the President, Viscount Bury, in the chair. The report presented to the fellows of the Society was not considered satisfactory, and after a long discussion, on the motion of Mr. Shirley Hibberd, the meeting was adjourned until the 9th inst., to afford the Council an opportunity for reconsidering it. The President, in recommending the adoption of the report, stated that the Council had paid off about £2000 of the debts which had accumulated prior to the present members coming into office, and that they intended to reduce the expenses of the current year by about £2000.

AN EXHIBITION OF POTATOES in the forthcoming autumn is in process of organization, the initiator of the movement being Peter McKinlay, Esq., Woodbine House, Beckenham. Mr. Shirley Hibberd is co-operating with the originator of the movement, and a committee is in course of formation for taking the necessary steps in the matter.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The thirty-second anniversary dinner of this charity will take place at the London Tavern on July 2, under the presidency of Robert Broadwater, Esq., Master of the Worshipful Company of Fruiterers.

MR. PEACOCK, of Sudbury House, Hammersmith, with a view to encourage a more spirited competition amongst amateur growers of succulents, will not, he informs us, compete for any prizes offered for these plants during the current year.

DORMANT VITALITY.—In the last number of the *Revue Horticole*, M. Carrière figures and describes an instance where a bud of *Chionanthus* inserted on *Fraxinus Ornus* had lain dormant for fourteen years. The *Fraxinus* was, it appears, cut down and the stumps left above ground, and from the latter proceeded strong shoots of the *Chionanthus*. If no mistake has been made by M. Carrière in the length of time the buds have been inserted, the case is remarkable in being probably the longest duration of dormant vitality on record.

POTATO PRIZES.—Fifty guineas is offered by Messrs. Hooper and Co., Covent Garden, W.C., in prizes for the largest produce from one pound of seed of Snowflake and Eureka, two new American potatoes now being distributed at 3s. 6d. per pound. The competition is to be limited to European cultivators, and the money is equally divided between the two sorts.

SENECIO MACROGLOSSUS has been recently figured in the *Botanical Magazine*, and is well deserving the notice of cultivators of greenhouse plants. It has glossy leaves, bearing a close resemblance to those of the ivy, and produces in midwinter large bright yellow flowers, which remain a long time in perfection. Dr. Hooker considers it well adapted for cultivation in rooms. It is a native of the Cape, and has been growing in the succulent house at Kew.

STAPHYLEA PINNATA, or Bladder Nut, has been recently sent to Covent Garden as a forced flower. The leaves are coarse, but the pretty white flowers are well adapted for button-hole and other bouquets. The appearance of this old plant as a market flower appears to be of sufficient interest to be placed on record. The flowers remain a long time in perfection, and appear to singular advantage under the influence of artificial light.

WINTER CROCUSES were retarded considerably by the severe weather, and did not come into bloom until nearly the end of January. The first to bloom with us were *C. imperati* and *C. nivalis*, and these were closely followed by *C. chrysanthus*. The first and third of these have rich yellow flowers, and those of the other are of a bright bluish purple. In mild seasons these crocuses present a most cheerful appearance during January, and may with advantage be planted somewhat liberally along the front of borders, within view of the drawing-room windows.

They are as yet rather scarce, and more expensive than the Dutch varieties, now so much employed in spring bedding.

THE CAMELLIA HOUSE in the nursery of Messrs. J. Veitch and Son is now remarkably gay, and forms one of the most attractive features of this justly famous nursery. The house is lofty and of considerable length, and has a broad walk down the centre, with borders on each side. The Camellia bushes are planted in two borders, and as they are in the most luxuriant health, and densely furnished with bloom, they are now wonderfully attractive.

PERSIAN CYCLAMENS have for some years past received special attention in the nurseries of Mr. B. S. Williams, Upper Holloway, and during the last six weeks or so they have presented a most beautiful appearance, and have fully demonstrated the value of these flowers for decorative purposes during the early part of the year. We have recently received from Mr. Williams blooms of a magnificent variety, which he purposes distributing shortly under the name of *Cyclamen persicum giganteum*, a name to which it is well entitled, so large are the flowers.

ORIGIN OF FUCHSIA RICcartoni.—The following particulars of the introduction of this beautiful hardy fuchsia, recently contributed to the *Gardener's Chronicle* by Mr. Tillery, of Welbeck, will probably be of some interest to our readers. Mr. Tillery says:—"When I was a gardener in Ayrshire, a young man of the name of Buchanan came from either the Glasgow or Edinburgh Botanic Garden, to be gardener at Caprington Castle, near Riccarton, Kilmarnock. He brought a plant of a seedling Fuchsia with him under the name of a hardy Fuchsia, from Port Famine, on the Southern American coast of Terra del Fuego. This Fuchsia he told me was raised from seed in the Botanic Garden he came from, and I had a plant of it from him, and when propagated introduced it into the neighbouring island of Arran, where the climate was likely to suit it better in the open air than in Ayrshire. Whether he gave it the name of Riccartoni from the suburb of Riccarton, near the Castle, I know not, but the plant is the same, and in the western isles of Scotland, the south of Ireland, and the southern counties of England and Wales, it is hardy, and forms one of the grandest flowering hardy shrubs or trees that has ever been introduced." There are in the grounds of the Crystal Palace, Sydenham, several large bushes of this Fuchsia quite five feet in height, and these during the summer and autumn are loaded with their brilliant red flowers, and have a splendid appearance.

LAPAGERIAS appear to be much hardier than is generally supposed to be the case. In the gardens of Gunnersbury Park, Acton, the residence of Baron Rothschild, a strong plant of the beautiful *Lapageria alba* is trained over the roof of a low span-roof house. In the course of last year a vigorous shoot thrust its way through an opening in the woodwork, and was nailed to the north side of the house, and although fully exposed to the severe weather in December and January last, does not appear to have suffered in the slightest degree. In the nurseries of Messrs. Lucombe, Pince and Co., at Exeter, *Lapageria rosea* grows freely and blooms profusely trained to an open wall. From this it would appear to be well adapted for planting out of doors in kind climates.

THE COMPETITION FOR THE CARTER CUP, and other prizes offered in the schedules of the Society by Messrs. James Carter and Co., for competition at the Society's Great Provincial Show, has now been arranged to take place on July 7, at the Society's Gardens, South Kensington.

THE AMERICAN POTATO TRIAL.—The *New York Tribune* publishes the results of a competition among potato-growers, originated in the spring of last year by Messrs. B. K. Bliss and Sons, of New York, who offered premiums to a considerable amount, hoping "as much to stimulate interest in improved methods of cultivation as to induce an extended trial of varieties, in the dissemination of which they were interested." The varieties specially selected were Extra Early Vermont, Compton's Surprise, and Brownell's Beauty, the prizes being-awarded to those who raised the largest quantity from 1 lb. of seed, and on a quarter of an acre of ground respectively. The largest quantity obtained from 1 lb. of Extra Early Vermont was 708 lb.; from Compton's Surprise, 900 lb.; and from Brownell's Beauty, 1018 lb. The largest produce of a quarter of an acre of Extra Early Vermont was 6247 lb.; of Compton's Surprise, 7350 lb.; and Brownell's Beauty, 8399 lb. "The Committee, Messrs. G. Thurber, F. M. Hexamer, and P. T. Quinn, assure us that, while abstaining from comment on the 'astounding yields from single pounds,' a

'most careful and scrupulous investigation' has fully satisfied them of 'the correctness of the statements.' Of the merits of the potatoes, as developed under this later and more extended test, it is said that there is general acknowledgment of the superiority of the Vermont as an early variety, both for market and table, in fact, the earliest and best in cultivation; that Compton's has given not less satisfaction as a potato of the highest quality, and that Brownell's beauty, the newest of the three, has made 'a most splendid record,' not only giving 'much the largest returns,' both from the single pound and the quarter acre, but eliciting 'unanimous praise of all cultivators.'

THE NEW FLOWERS OF 1875.—In such a list as we are now remarking upon, certain items are to be regarded as matters of course. There are so many new achimenes, amaryllis, begonias, and so forth, and it is fair to conclude that they have some qualities to recommend them, especially as a considerable proportion of the whole have passed through the ordeal of exhibition, and have been certificated or commended or distinguished by money prizes. But some of the features are especially interesting, as will appear from the facts. There are 30 new azaleas, of which a very large proportion are of the so-called "Ghent," or hardy race. Of chrysanthemums there are 16, which might suggest a revival of bright days within the remembrance of many, but, as only 6 out of the number are worth attention, we may conclude that the workers in this department are very few or very unfortunate. There are but 6 new dahlias, and they are all fine. Of new gladioli there are 54 varieties, of which no less than 18 are offered by Messrs. Kelway and Son, whose seedlings carry us beyond the Continental model, both in size and substance of flower, while the plants have a corresponding vigour of constitution. There are 15 new hyacinths, and only 20 zonals, of which Dr. Denny contributes 17; a very curious contrast with the lists of five to ten years ago. What shall we say of 33 new varieties of polyanthus, of which 14 are of the laced show strain that everybody declared extinct? We can only compare the last number with the preceding to be convinced that it is impossible to predicate the course of events in floriculture — twenty zonals and thirty-three polyanthuses! we can hardly hope to be believed, yet the case is stated in black and white, but whether to edify or mystify we do not know. There are 65 new roses! The true rosarian will respond by declaring the number preposterous, and yet they will all be in demand, in accordance with the ridiculous custom of the trade, and the misdirection of the zeal of amateurs. There are 12 out of the total accredited to English raisers, and these have been frequently exhibited, and seen at home as well; so that there can be but few amongst the many who are interested in new roses without means of estimating their value, and determining without prejudice as to the advisability of purchasing them.

SEEDLINGS IN COMPETITION. — It is one of the curiosities of exhibiting that seedlings are rarely encouraged in a sensible manner. In some cases seedling dahlias are put up with named varieties for schedule prizes, and the competitor in the same class who does not raise seedlings, finds himself at a disadvantage because the competition is on unequal terms. It is the same with carnations, picotees, and a host of florists' flowers: the raiser of seedlings has the start before all. If he has no first-class novelties, he trusts to named sorts, and has no advantage, but must win or lose on equal terms with the rest. But he may have half-a-dozen new flowers that distance everything in their class, and as the sole possessor of these he is bound to win over everybody's head, provided the rest of his staff is of average merit. On the other hand, there is rarely any definite and substantial recognition of seedling florists' flowers offered for the encouragement of raisers, and in consequence of the deficiency of schedules, it is the rule of experienced judges to have a final look round for such things, and they make awards without direction, and outside the whole of the schedule scheme. Nevertheless seedlings can be best judged at a schedule competition, for there we have numbers of samples of established varieties to compare them with; in fact, they cannot be fairly judged, except by the aid of such comparisons, and hence a comprehensive exhibition should include classes for new varieties of all the more important florist's flowers consistently with the season, and other circumstances. Good money prizes would bring forward many an interesting group to the advantage of a provincial exhibition, and the value to amateurs of their presentation would be immense. We have but one generally recognized court of award for such things

at present—the Floral Committee at South Kensington. It is a good court, and its work, all things considered, is well done. Considering how numerous are the so-called “floricultural” societies, it is really astonishing how little is attempted for the real advance of floriculture.—*Gardener's Magazine*.

TO CORRESPONDENTS.

PLANTING FLOWER BEDS.—*H. M.*—The four corner beds may be planted in accordance with your wishes, but to produce a good effect the dark-leaved plants must be put in the centre of the two beds, and the golden-leaved bedders round the outside, as the former will grow much too tall for the latter. *Coleus Verschaffelti*, *Amaranthus melancholicus ruber*, *Iresine Lindenii*, and *Perilla nanhinensis* are all free growing dark-leaved bedders. The *Coleus* will require as much warmth during the winter as the *Alternantheras*, but as they are of larger growth they may be planted farther apart. The *Amaranthus* is readily raised from seed sown in the spring, and as it is exceedingly bright and effective it may be employed with considerable advantage, provided the situation is not bleak, nor the soil cold and heavy. The *Iresine* is rich in colour and hardier in constitution than either of the four plants mentioned, the *Perilla* alone excepted; but it is rather tall in growth, and unless it is planted in a slanting direction, and the leading shoots pegged down, there is some difficulty in keeping it down to a height less than twelve inches. It will stand severe pinching, but it is so long-jointed that there is some difficulty in keeping them down sufficiently. The most satisfactory results are obtained by pegging the principal shoots down, and then pinching the side shoots as may be required. The *Perilla* may be raised in quantities very readily, and pinched to keep it down to the required height. It is coarse in appearance, as compared with the other three things. Either golden-leaved *Geraniums* or *Golden Feather* will do for the formation of the outer band, and you might edge one of the beds with *Geraniums* and the other with the *Golden Feather*. This would give a greater variety, and at the same time maintain a balance of colour. You may also fill one of the beds with *Coleus* and the other with *Amaranthus*; or you may, in fact, employ any two of the four plants enumerated. The outer band should be from six to nine inches in width. The other two beds will have the most effective appearance if they have a thin line of *Cerastium tomentosum* next the grass, then a single row of *Blue Lobelias*, and the centre filled with *Centaurea ragusina*. The two best *Lobelias* for the purpose are *Blue Stone* and *Lustrous*, and they are here placed in their order of merit. The centre of both beds may be filled with a good variegated *Geranium* if there is any difficulty in procuring a sufficient stock of *Centaureas*. The best variety for the purpose is *Miss Kingsbury*, but *Flower of Spring*, *Princess Alexandra*, or *Queen of Queens* would also be suitable. The flowers should be removed. *Echeveria secunda glauca* may be substituted for the *Cerastium*. The finest effect would certainly be produced by panel bedding, but as you are unable to provide a stock of suitable plants it is useless to refer to it. The following arrangement would most probably be suitable for the borders:—*Cerastium tomentosum*, first row; *Lobelia speciosa* or *Lobelia Blue Stone*, second row; Variegated *Geranium* (either of the varieties mentioned above), third row; *Geranium Mrs. Upton*, *G. Hibberd's Feast of Roses*, or any other first-class pink flowered varieties, fourth row; *Geranium Bonfire*, *G. David Garrick*, *G. Duke of Devonshire*, or other good scarlet-flowered variety of rather robust habit, for the fifth or back row. In planting ribbon borders much, however, depends upon their length, position, and surroundings.

ORANGE TREES.—*Flora*.—Orange trees do not require any pruning at all so long as they remain in good health, excepting it be the shortening back of a branch growing more vigorously than the others, and likely to spoil the contour of the tree. But if the tree is unhealthy and nearly leafless, it may be pruned to advantage, and it should be done at once. If repotting is necessary, it should be done in the spring, and in the case of those pruned when the young growth is an inch or so in length. The seeds of the hardy shrubs mentioned in your letter may be sown some time during the month of March.



BERBERIDOPSIS CORALLINA.

(With Coloured Illustration.)



THE beautiful shrub here figured escaped our attention, when, in 1873, we were discussing the merits of "beautiful trees for kind climates." It was mentioned by Mr. Bell, writing from Kew Gardens, in the FLORAL WORLD for May, 1873, as a plant likely to prove hardy in the neighbourhood of London, and as thriving on the dry sandy soil of Kew. But in the interesting communication from Lieut.-General Sir Horatio Shirley, C.B., which appeared in the December number of the same year, no reference was made to it, although the list supplied of tender trees and shrubs thriving at Weymouth, comprised five-and-twenty of the most beautiful plants known. In the paper in which we broached the subject, published in March of that year, we made no mention of it, and yet we have been interested in it many years, and have flowered it finely in a cool house with the equally tender *Berberis Nepalensis*, the *Pittosporum*, and the *Desfontainia*.

It is a question of some importance, however, how far this plant may be considered hardy. We have the assurance of Mr. Bell, as referred to above, that it is hardy at Kew. But it may be peculiarly circumstanced in respect of shelter in the royal gardens, and certainly it has the advantage there of a dry soil. On our cold clay at Stoke Newington, it is incapable of enduring the trial of a severe winter, and consequently we have never been able to keep an out-door plant for any length of time, for the first severe winter that occurs after planting it out, cuts it down, and it does not recover by throwing up from the root. As a cool-house plant we value it highly, but its free habit of growth, and fitness for the decoration of walls and trellises, render it admirably adapted for planting in the open garden wherever the climate is kind enough to spare it, when these isles are visited with real winter weather.

In the FLORAL WORLD for August, 1862, appeared an article on berberries, in which we described the species we had found most useful on our cold soil. Since then, we have, of course, added to their number, and have found much to interest us in collecting and cultivating these plants. We find that the growth of London on the north, and the consequent increase of smoke in our Stoke Newington atmosphere, tells against the berberries very decisively. The very common and peculiarly useful *B. aquifolium* endures the assaults of smoke the best of any, and the very large angular-leaved kinds, of which *B. Japonica* is the representative, suffer most of all. The most useful after *B. aquifolium*, which in its way is as valuable as the holly, are *B. Jamesoni* (syn. *B. Hookeri*), *B. fuscicularis*, and *B. glumacea*. These are thoroughly handsome and distinct, and occasion no trouble, for they grow equally well in clay, loam, or peat. We are, of course, as much as ever enamoured

of *B. Darwini*, but it is decidedly impatient of smoke, and never looks so well here as in the country, while, on the other hand, *B. dulcis*, which is nearly as good as *B. Darwini*, appears not to suffer from smoke in the least. It grows freely, flowers freely, and always looks well. *B. Fortunei* is not quite as tender as *B. Nepalensis*, for the hardest winter does not kill it, but it has never flowered in the open ground here, and it always looks miserable until about Midsummer-day; whereas when grown under glass it is bright and handsome, and flowers most abundantly.

Of the species of *Berberis* that are least to be desired for ornamental purposes, special mention must be made of *B. aristata*, *B. Newmani*, and *B. vulgaris*. The last should be planted by those who intend to make barberry wine, or use the berries for any other purpose, but it is not worth a place in a garden devoted to really beautiful shrubs.

As we have got upon this subject of beautiful trees for kind climates, it would be a matter for thankfulness if some of our readers would furnish us with particulars of the existence anywhere as an out-door plant, and in a thriving state, of *Berberis Nepalensis*.

S. H.

SPECIMEN FUCHSIAS.

BY HENRY CANNELL, F.R.H.S.,

The Nurseries, Woolwich, and Swanley, Kent.



FUCHSIAS are appreciated so much for the beauty of their flowers and the elegance of their habit, that a few remarks on their cultivation will probably be acceptable to many readers of the FLORAL WORLD. The present moment is most favourable for alluding to them, because for the next two months they require rather careful handling; and, moreover, nicely-rooted plants taken in hand now will, under favourable circumstances, make good specimens by the middle of the summer; and from that period, until quite late in the autumn, they will produce their beautiful flowers freely, and contribute materially to the embellishment of the conservatory. It is from the middle of the summer, onwards, that fuchsias are of the most service; for during the latter part of the spring, and the early part of the summer, there is an abundance of other flowers, for the azaleas, the show and fancy pelargoniums, and a host of other good things, are then at their best. The amateur who has made up a bed for propagating cucumbers or melons, may make a good beginning with rooted cuttings; but those who have only a greenhouse or cold frame, will do better with young plants nicely established in small pots. I am now alluding to those who have no stock plants from which to obtain cuttings, or are anxious to add other varieties to their collections. The rooted cuttings, when received from the nursery, require much the same treatment as those taken direct from the cutting pot. They must be unpacked as soon as they arrive, and

be put singly in small pots, and then placed in a shady corner of the pit or a close corner of the greenhouse. When started in the last-mentioned structure, they should be placed underneath a hand-glass, as they can then be kept close and shaded until they are established without in any way interfering with the other plants in the house. A nice light mixture of leaf-mould, friable loam, and silver sand will be the most suitable at this stage. Put a few small pieces of crock in the bottom, then a layer of the roughest part of the compost, and half fill the pot with the mixture. Place the plant upon this, and in the centre of the pot, and after sprinkling a little dry sand over the roots, fill the pot, and press the soil rather firm, taking care, of course, to avoid injuring the tender stems. A fortnight's careful nursing is usually sufficient to enable them to become established, and this consists in keeping them close, sprinkling them overhead once or twice a day, as the weather may happen to be cool or hot, and shading them from bright sunshine. Their commencing to grow freely is a good sign of their having become established; and to prevent their being drawn up in a weakly manner, let them enjoy a free circulation of air and full exposure to the light, with a thin shade during periods of brilliant sunshine.

I have entered rather fully into the details of management at this stage, because long experience has convinced me that unless they make a vigorous start at the first, they do not usually make so free a growth afterwards as could be desired. They must receive no check at this stage, and immediately they are well established and the roots run freely round the outside of the ball of soil, shift them into five-inch pots. The compost must be rougher than that advised for cuttings, and after trying many preparations, I am convinced that a compost prepared with one part of yellow turfy loam, one part of leaf-mould, one part of peat, taken from the surface of heath-land, one part of horse droppings that have been dried under cover sufficiently to admit of their being readily broken up, and about one-third of a part of sharp silver sand, is unequalled. That it is in every way suitable for fuchsias, there can be no doubt, and I may say in confirmation of this, that the collection I exhibited at the great International Exhibition in 1866, and with which I was, as will be remembered, placed at the head of the prize list, was grown in a compost prepared as here advised; as also were the collections with which I for years was successful in taking the first prizes at the principal metropolitan exhibitions. The pots must be thoroughly clean, and well drained, and the soil be pressed rather firm. After they are repotted, keep them close for a week or ten days, and then increase the ventilation. When these pots are filled with roots, they may again be shifted, and the most suitable pots will be those eight inches in diameter; and after this no further repotting will be required the first season.

Fuchsias require an abundance of moisture at the roots when growing freely, and after they have had their last shift for the season, and have filled the pots with roots, weak liquid manure used alternately with clear water will afford them much assistance. One of the best liquid manures I have used is prepared by steeping a

bushel of horse droppings in a large tub of water, and allowing it to stand until quite clear. Liquid manure and clear water must be of the same temperature as the house, for when the water is colder, the plants receive a check from which, if it is severe, they are some time in recovering. Light sprinklings overhead are frequently advised by writers on fuchsia-growing, but they do more harm than good, and I would recommend my readers to syringe the plants heavily, when syringing is necessary, or to well drench them with a watering-can to which a rather fine rose has been affixed. In warm, dry weather, a drenching of this kind towards the evening will clear the foliage of dust, and be otherwise most beneficial to them. A moist atmosphere is also conducive to a healthy growth, and this can be secured by pouring water on the floor of the house two or three times a day.

The temperature most suitable for fuchsias now requires consideration, and I will at once say that a top-heat of sixty-five degrees by day and fifty-five by night will suffice to maintain a most vigorous growth. When first potted off, the temperature may be five degrees higher, and if the pots are at that stage plunged in a hot-bed, the bottom-heat should be about seventy-five degrees. Fuchsias require more warmth and atmospheric moisture than most greenhouse plants, and, if possible, they should be grown in a little house or pit by themselves until they are coming into bloom. It will also be well to caution my readers against exposing the plants to cold draughts when growing freely.

The stopping and training are by no means difficult, for fuchsias require to be grown in a natural manner to produce a good effect. They must not be pinched severely, or the growth will be weak and the flowers poor, and, if trained too hard, they will lack that elegance of outline so essential in a first-class specimen. In the case of spring-struck cuttings, they will not require stopping until they are put in the five-inch pots, and are eight or nine inches in height. They may then have the points nipped out, and one of the shoots which push from the top buds trained up to take its place. This will require stopping when it has attained a length of six inches, and, at the same time, pinch the shoots back to about four inches from the stem. This pinching must be repeated twice or three times if the plants were started early and are growing vigorously; but for later plants, and those making slow progress, one more stopping will suffice. In the latter case, they must not be put in pots exceeding seven inches in diameter. Plants trained in the manner here advised will, by the time they come into bloom, form handsome pyramids, ranging from two to three feet in height, and be of a proportionate diameter at the base, and the only support required will be a neat stake to support the main stem.

For the information of those who have old plants to deal with, I will now proceed to give directions for the management of the plants the second year. In pruning them, if they have been grown in the form of pyramids, prune the side shoots to the second or third joints from the base, and remove all small shoots altogether; but those in the form of bushes should be cut down to within six

inches or so of the base. Bush specimens are remarkably handsome, and several of the most important prizes that have been awarded to me have been gained by them. When pruned hard back, they push up strong shoots, and if these are stopped once or twice, large, handsome bushes are the result. The pyramids will require the shoots to be pinched back twice or three times, the last stopping to be done about a month before they are wanted in bloom. If the shoots are overcrowded in any part, thin them moderately to afford those remaining sufficient space for development. The old plants must, when the young shoots are an inch or so in length, be taken out of the pots, and all the soil removed from about the roots. The latter should then be washed, drawn through a little dry sand, and be put in pots of the same size, or one size larger than those previously occupied, the compost, of course, to be the same as recommended for the small plants.

Although my collection includes over one hundred and fifty varieties, and is probably the largest in the country, I should advise the amateur not to grow a very large number unless he makes a hobby of fuchsias. Twenty sorts will be enough to begin with, and these should consist of the undermentioned, which I have arranged according to the classification that for some years past has been adopted in my *Floral Guide* :—

Scarlet tubes and sepals, and dark corollas.—Hercules, Crown Prince of Prussia, Enoch Arden, Killiecrankie, and Wave of Life.

Scarlet tubes and sepals, with rose or lavender corollas.—Right Hon. J. Bright, Father Ignatius, King of Fuchsias, and Roderick Dhu.

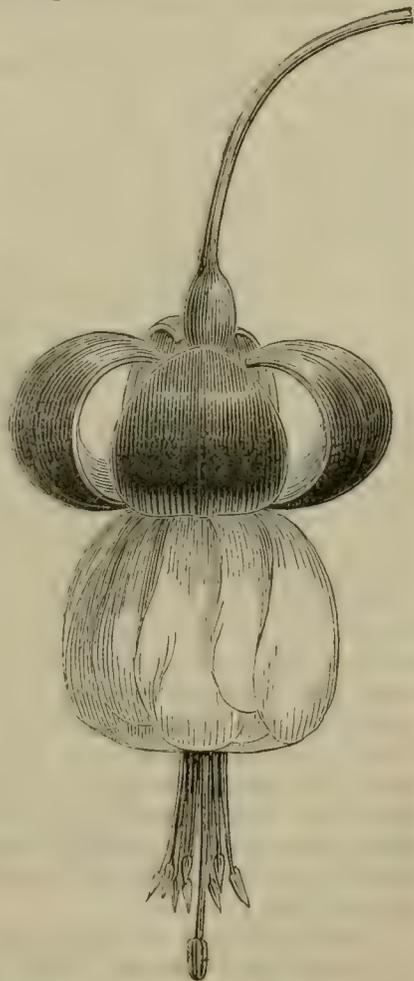
White tubes and sepals, with pink or scarlet corollas.—Our Future Queen, Baroness Burdett Coutts, Arabella, and Mrs. J. Lye.

Scarlet tubes and sepals, white corollas.—Conspicua, Cannell's Gem, and Mrs. E. Bennett.

Scarlet tubes and sepals, with double dark corolla.—Avalanche (Henderson), Champion of the World, Harry Williams, and Exquisite.

Scarlet tubes and sepals, with white corollas.—Mrs. H. Cannell is,

April.



MRS. H. CANNELL.

undoubtedly, the finest of the varieties with double white corollas, and the accompanying figure of a bloom from a plant grown in my nursery, shows how much superior it is to other varieties. It should, therefore, be grown in preference to all others in the same class.

SHORT NOTES ON USEFUL VEGETABLES.



THE following notes are continued from page 89. The very short note on the cultivation of the leek appears not to have satisfied some of our readers, so we have treated the subject at greater length.

THE LEEK obtains special attention in Wales and Scotland, but is regarded as a comparatively unimportant vegetable in England. It is a thrifty plant, needing but little care to insure a useful crop; but, like many more good things, it makes a great return for first-rate treatment. Any good kitchen garden soil will suit it, and where only a few are likely to be wanted for winter soups, a row or so may be sown in March or April, and as soon as large enough may be thinned to two inches apart, and be left to their fate, provided, of course, that they are kept clear of weeds, and have a little earth drawn to them occasionally as they advance, so as to cover their necks to a depth of two or three inches. We have had them extremely crowded, and quite neglected, and yet in winter have supplied the house with plenty, the roots being half-an-inch or more thick, and as good for soups as the handsomest samples.

TO GROW LARGE LEEKS a little extra care must be taken. Make up a good seed-bed, the soil light and rich, and rather fine on the surface. In February sow in drills, six inches asunder. As soon as they are large enough to draw, thin them to three inches apart, and plant out the thinnings. The ground for these should be well dug and heavily manured, and the plants must be put in rows two feet apart, and nine inches asunder in the rows. They must be planted deep with a dibber, and be closed in carefully, and have a good watering, so as to suffer the least possible check; continue to water twice a week, using weak manure water if convenient, and a week after the planting cut off the tops of the leaves. Continue the watering, and in three weeks cut off the tops of the leaves again. From time to time draw a little earth to them, as you would to celery, to blanch the neck. The result will be a splendid growth of fat roots, as white and bright as silver, and of the finest quality for any purpose, and especially for stewing in the fine old fashion of the north country. Those left in the seed-bed will make a useful crop for ordinary purposes.

A SUCCESSION OF LEEKS may be secured from August to May by sowing in February, March, April, and the first week of May, and transplanting as directed above for the November sowing. They may be left in the ground to be drawn during winter as wanted, but as it is not an easy matter to draw them when the

ground is frozen, a few should be taken up in time and stored in earth, to be handy for use. But as they soon deteriorate when removed from the ground, it would be imprudent at any time to take up many.

LEEK BULBS are unknown, but any one who is partial to the flavour of this fine vegetable may be recommended to grow leek bulbs. When left in the ground the leek runs to seed the second season; if bulbs are wanted the growth of seed must not be allowed. As fast as the pointed flower-stems rise cut them off; not one must be developed, and it is well if they are pinched out as soon as they are visible. The plant being unable to produce seed, will produce bulbs instead. They are of the same shape and size as a large tulip bulb, and of a silvery white colour. The withering of the leaves is the sign for removing them. When stewed in gravy and served hot with butter, these bulbs make one of the most delicious *bou-bouches* imaginable. How and when the leek became the badge of the Welsh is unknown, but it appears to be generally agreed that its use as a symbol dates from Druidic times, and that it represents Cuedven, the British Ceres. The association of the leek with the memory of St. David is understood to date from a victory gained by the Welsh in one of their many conflicts with the Saxons, when, under the advice of St. David, they wore their ancient badge. One of their poets sings:—

“ I love the leek above all herbs and flowers ;
 When first we wore the leek the field was ours ;
 The leek is white and green, whereby is meant
 That Britons are both stout and eminent :
 Next to the lion and the unicorn,
 The leek's the fairest emblem that is worn.”

THE SHALLOT.—There are two sorts of shallots, the red and the white, the last named being not white, but straw-yellow. The red is the best for keeping. To grow shallots is so easy a matter that a very few words on the subject will suffice. They should be well grown, or not grown at all, for small shallots are such a plague to the cook, that a considerable proportion are likely to be wasted; therefore let the ground be well dug and liberally manured some time in advance of the planting. On warm dry soils the bulbs may be planted in October and November; but on damp cold soils March and April are the times to plant. The warmer the climate the finer the growth, but a rich soil will in any case tell with effect upon them. The best way of managing, if a large supply is required, is to mark out the ground into four-foot beds, throwing the earth from the alleys over the beds, and finishing the latter in a nice workmanlike way to a neatly-rounded surface. This will throw off water, and catch more than an average of sunshine, and very much advantage the crop.

The bulbs must be divided into separate cloves in planting. The rows may be nine to twelve inches apart, according to the strength of the ground, but, as a rule, nine inches will be the right measure, and the cloves may be six inches apart in the rows. Put

down the line, and press the cloves into their places, and so leave them. You need do nothing more than keep the beds carefully hoed and cleaned of weeds until the time arrives to take up the crop, which should be stored in *small* lots in large mesh-nets hung from the ceiling of an airy shed, or any dry cool outhouse.

SHALLOTS FROM SEED are handsomer and larger than from cloves or bulbs; the question is, how is seed to be obtained? It has been our good fortune to discover a certain method of obtaining seed, and we have supplied the seed trade with large quantities—indeed, the raising of shallots from seed was a thing unknown until we started it. Once upon a time we had planted our shallots as usual by simply pressing the bulbs into their places. Soon afterwards we found them dragged out and scattered all over the place, as if a lot of mischievous boys had been indulging a mad freak. As we have any number of water-rats, water-shrews, and red field-mice, we did not trouble to ask “Who did it?” but went to work at once, and replanted the shallots three or four inches deep, and trod them firmly, so that no “small deer” should have a chance of uprooting them. Strange to say, they all put up flower-heads and seeded freely, and we supplied the trade with the seed, and obtained a good price for it; and for some years afterwards, wonderful shallots were seen at exhibitions, the produce of seed we secured by planting the cloves deeply. Having neither time nor inclination for seed-growing as a matter of business, we discontinued the practice of planting shallots deeply, when fully convinced of the result of so doing. Henceforth, those who want seed know how to secure it.

GARLIC.—The finest garlic is the product of a sunny clime, hence home-grown samples are seldom so plump and silvery as those imported from the Continent for our markets; but home-grown garlic is as well flavoured, and every way as useful, as the product of Italy or Portugal. A piece of old garden-ground, well manured, will suit garlic better than heavy newly-broken land; and in any case the soil should be rich and light. The best time to plant is as early in March as the weather will allow. Put down the line, the ground being ready and tolerably smooth, and taking a single clove between finger and thumb, thrust it into the soil an inch deep. In this way plant them four inches apart in the row, and the rows six to eight inches apart. Keep them clean, and towards the end of June tie the grass in knots to prevent flowering. When ripe take them up and dry them, and tie them in bundles, reserving a portion of the stem for this purpose.

The judicious use of garlic is certainly one secret of the superiority of Continental cookery. Anyone unaccustomed to the use of garlic, but willing to give it a trial, may be recommended to proceed as follows: When there is a ragout or stew preparing, with which a trial of garlic may be made, let the cooking be completed in the usual way, and the dish quite ready to serve. Now mince very fine one clove, or even half a clove, of garlic, throw it in and let the soup simmer a few seconds only, and then serve. This slight quick cooking extracts from the garlic a fine welcome flavour, but much cooking renders it offensive.

CHIVES.—This pretty plant, resembling in both leaf and flower the seaside thrift, is prized by many as an ingredient in spring salads, being milder and differing slightly in flavour from the onion. It may also be used to flavour soups. Any good garden soil will produce chives, but a fine sample can only be obtained by planting on ground well manured for the purpose. Plant in clumps of a dozen or so, a foot apart every way, and take up and store in autumn if the roots are required. As a rule, the green tops only are used, and these are obtained by cutting close over as many as are wanted. It is a good plan to plant a few chives, with mint and marjoram, on a sunny border, next a wall facing south, for in such a situation these plants make a free growth as early as February and afford useful supplies a month or so in advance of other parts of the garden.

ROCAMBOLE.—This is sometimes used in place of garlic, being similar in flavour, but milder. It may be grown in precisely the same way as garlic. As it produces bulbs above ground as well as below, in the same way as the last-mentioned vegetable, the ground bulbs alone should be planted, for the others do not produce a satisfactory crop.

SPANISH ONIONS.—The so-called “Spanish onions” of the grocers’ shops are products of Portuguese industry. The system of cultivation is very simple, and may be carried out in an English garden without difficulty. A warm situation is selected for the seed-bed, which is made of a body of half-exhausted fermenting material, constituting what gardeners understand by a “mild hot-bed.” Three inches of fine rich earth is spread over, and the seed sown rather thickly. This is done about the middle of November, but a good crop may be secured by sowing in December. During frosty weather the young plants are protected by rough frames and mats, which are removed whenever the weather is mild enough to permit of the plants enjoying light and air. In April they are carefully transplanted into rich, deep, light soil, and thenceforward must have good cultivation. By this method large and handsome bulbs may be grown in this country, but they are never so mild as those imported, owing to the difference in the climate.

ALPHAND'S “PARKS AND PROMENADES OF PARIS.”



AHIS magnificent work has not as yet found its way into many English libraries, but it is so necessary an accompaniment of the works of art proper to a country house, that we direct the attention of our readers to it, with this word of advice, that those who want it should quickly make sure of it, for the day is not far off when it will become a rarity, and will realize considerably more than the price now charged for it, which is only £15. The author, M. Alphand,

had charge of the immense works of improvement and embellishment



ILE DE LA FOLLE, BOIS DE BOULOGNE,
From Alphand's "Parks and Promenades of Paris,"

in which the late Emperor Napoleon III. engaged with so much

earnestness, and for the most part saw completed in accordance with his heart's desire. The remodelling of the Bois de Boulogne, the Bois de Vincennes, and the numerous squares of the city of Paris,



CUPRESSUS LAWSONIANA.

From Alphand's "Parks and Promenades of Paris."

were great undertakings, the practical part of which fell into the able hands of M. Alphand, and there are but few of our readers unacquainted with the marvellous changes that were wrought by his

April.

transforming hand, backed by the Emperor's public spirit, and in no small degree aided by the administration of M. Haussman. It



ARAUCARIA IMBRICATA.

[From Alphand's "Parks and Promenades of Paris."]

was a happy thought of M. Alphand to write a book descriptive of his embellishments of Paris; but, alas! the Franco-German war,

the civil war, and the collapse for a season of the prosperity of the gay city, were grievous impediments to his work, some of which was actually destroyed by the fires that told of the despair of the promoters of the Commune. But the great engineer, architect, and planter was not to be beaten by war, revolution, or incendiarism, and here is his book, a mighty folio measuring twenty-seven by nineteen inches, weighing nearly three-quarters of a hundredweight, a perfect piece of luxury, with grand letterpress, sumptuous pictures, and myriads of plans, sections, and other working details of inestimable value, and calculated to afford instruction and entertainment to its possessor far beyond the capabilities of any similar work of our time. It contains a carefully written and richly-illustrated history of gardening, with a critical analysis of styles, founded, of course, on the relations of gardening to architecture. Then follow descriptions of the parks, boulevards, fountains, and squares of Paris, with the most minute particulars of the improvements effected, copious lists of the trees and shrubs employed in the plantations, and a wonderful series of exquisite steel plates, chromo-lithographs, and wood engravings illustrative of the interesting text. To a lover of books this must prove a bounteous feast of reason, and if kept in a series of portfolios, to be handy for spreading out, the plates will prove to be a grand gallery of pictures.

To enter into any analysis of the contents is simply impossible with the limited space at our command, but this brief notice may be useful in persuading many of our readers to secure a copy while a few still remain, for the present price is only about half the original figure, and it is not likely that so costly a book will be reprinted. The publisher in Paris is M. Rothschild, of 13, Rue des Saints-Peres. The publishers in London are Messrs. Barthes and Lowell, Great Marlborough Street; and Messrs. Asher and Co., Bedford Street, Covent Garden.

ANNUAL FLOWERS FOR SUMMER BEDDING.

BY JOHN WALSH.



BEDDING annuals comprise a class of plants of the utmost value to the amateur with limited resources, because of the facility with which large stocks may be raised in the spring, and the effective appearance they present throughout the summer. By far the largest proportion of annual flowers are comparatively worthless, except for the mixed borders. Large numbers are very weedy in character, whilst many others are too ephemeral, lasting a few weeks only in bloom. Some there are which have a neat habit, are very showy and attractive, and, under proper management, continue in bloom throughout the season; and it is to these I am now desirous of directing the attention of readers of the *FLORAL WORLD*. I am anxious not to overpraise them, or to imply, by what may be said, that they are

superior to the ordinary bedders, such as geraniums, verbenas, and the leaf-plants usually increased by means of cuttings. They are useful in supplementing ordinary bedders, and in combination with the latter a splendid display may be produced with considerably less labour and expense than would be possible with plants that require comfortable accommodation under glass during the winter season. The work of propagating the ordinary bedders must be commenced in the autumn, and the stock preserved in light airy pits or houses during the winter, and to do this much labour and a considerable expenditure of fuel are necessary. But in the case of annuals, you have only to sow the seed in spring, prick off the plants into boxes, or to put them singly in small pots, and then carefully harden them to bear the exposure to the weather, and they are ready for planting out.

All the annuals and other bedding plants which may be raised from seed in a similar manner require much the same management, and a few remarks on sowing the seed and other details will probably add to the value of this communication.

As there is now no time to be lost, those who intend to raise a portion of their stock of bedders in the manner here suggested must make up their minds quickly. The first step will be to order the seed, and as an ordinary trade packet will furnish sufficient plants for a bed about eight feet square, the quantity of seed required may be readily determined. A temperature rather higher than that of an ordinary greenhouse will be necessary to start the seeds, and nothing better could be devised than a mild hotbed. This can be prepared by forming a bed of fermenting materials, such as stable manure which has been turned over two or three times to sweeten, or leaves gathered up in the autumn; or, if more convenient, the leaves and manure may be mixed together with any littery straw that may be at hand. The bed should be about two feet longer and wider than the frame to be placed upon it. It may be from two to four feet deep, according to the quantity of materials available. Beds of the greater depth are to a certain extent the best, as they retain their heat the longest, and by a little freshening up with new materials after the frame is no longer required for the seeds, it may be turned to good account in the production of a summer crop of cucumbers. After the frame has been made up a few days, cover the surface with a layer of coal-ashes, and proceed to sow the seeds. Either shallow boxes or pans may be used, and in either case a moderate layer of rather small crocks must be spread over the bottom. Fill with rather light sandy soil, and sow thinly, to afford the young plants an opportunity to acquire strength before it becomes necessary to prick or pot them off. Very fine soil is the best for covering the seeds; and in the case of those of small size, the covering must be light, for few seeds germinate so rapidly when deeply buried. Until the seeds begin to make their appearance above the surface, maintain the soil in a moderately moist condition, and keep the frame rather close, as no ventilation beyond that for allowing the exhalations from the fermenting materials to escape will be required. But as the plants come up freely, the ventilation must be increased to

promote a firm, stocky growth. When the seedlings are about two inches high, preparations must be made for putting them in pots or in boxes; and unless they can be placed where they will enjoy the temperature similar to that of the frames, after they have been removed from the seed-pans, the best course will be to remove to a cold frame, and in a week or ten days afterwards commence to pot off. If, on the other hand, they can be kept in a warm pit or house for a fortnight, it will be more advantageous to transplant, and defer the removal to the cold pit until they have become re-established; but it will not do to allow them to remain in the warm frame until they are removed from the seed-pan, and then place them in a cold pit, as the two changes at the same time would be too much of a check for them. They can be put singly in small pots, or several together in boxes. Those in boxes should be from two to three inches apart each way; and if the space can be afforded, they should be allowed three inches each way. They must be kept rather close and shaded until sufficiently established to bear full exposure to the sunshine, and a free circulation of air without flagging, and they may then be gradually hardened off; but there need be no hurry in doing this, as a fortnight's exposure, in the day, to the weather, with protection from night frosts, will suffice to prepare them for planting in the beds towards the end of May.

The following are the most valuable of the annuals adapted for bedding purposes:—

Ageratum.—Of these, the best for beds is *A. Imperial Dwarf*, which is one of the finest light blue bedding plants we have; and the best for back rows is *A. Mexicanum*, which, although good in its way, is less compact than the former.

Amaranthus.—The finest for bedding is *A. melancholicus ruber*, which is one of the finest dark-leaved bedders in cultivation, as it forms dense masses of foliage of a rich port-wine colour, and may be kept to any desired height by pinching.

A. tricolor varies so much in colour and character as to render it suitable only for mixed borders.

Convolvulus.—The pretty *C. minor* is useful for beds, and also for forming large masses in borders. All the varieties are pretty, but the most decisive in colour are *C. unicaulis*, purple, and *C. sub-cærulens*, light blue. Sow three seeds in each five-inch pot, and plant out without disturbing the plants. As these flowers turn to the light, they are seen to advantage when growing on the north side of the dwelling-house.

Gillardia.—These produce large showy flowers, and have a very effective appearance. *G. picta*, scarlet and yellow; *G. hybrida grandiflora*, red and yellow; and *G. coccinea*, scarlet, are all suitable.

Golden Feather.—This well-known yellow-leaved plant is still one of the best for marginal bands and divisional lines. It should be pricked off into boxes, and planted out thickly.

Jacobæus.—These are better known as American groundsels. They are very compact, and bloom freely throughout the season. The *crimson*, *purple*, and *rose* are the most effective colours.

Lobelias.—These well-known and effective bedders can be readily

raised from seed, and although seedlings are never so regular in growth as plants from cuttings, they form excellent lines and beds, provided the seed has been saved from a good strain. The two best forms of which seed may be most easily obtained are *L. speciosa* and *L. pumila grandiflora*.

Marigold.—The finest of all the marigolds for bedding is a strain which originated with Mr. R. Dean, of Ealing, and is known as *Aurea floribunda* in the trade. It is about eight inches in height, produces large yellow flowers, and is very effective throughout the season. The *Dwarf French* varieties are also most effective.

Perilla.—The robust *P. nankinensis* is most useful for back rows and large beds; it is very hardy, and can be kept down by pinching, if required.

Petunias are extravagantly showy, and plants raised from seeds sown in spring begin to bloom early. Mixed beds are very attractive, and as the varieties cannot be depended upon from seed, a good mixture of colours is preferable. They are of especial value for broad borders.

Phlox.—The varieties of *P. Drummondii* are wonderfully showy, and when planted in good soil, remain in full bloom throughout the season. The self colours are, perhaps, the most showy for small beds, but large beds filled with mixed colours are very attractive.

Saponaria.—The pretty *S. calabrica* is useful for bedding on cool moist soils in the North of England, but too short-lived on dry soils, in the southern counties, to admit of its being recommended as a bedder.

Tagetes.—The dwarf-growing *T. signata pumila* is one of the most showy of yellow bedders, and as it is not at all particular as to the soil in which it is planted it succeeds where yellow calceolarias will hardly live. It is the best substitute for the latter we have.

Tropaeolum.—The varieties *T. Lobbianum* are very showy, and on rather poor soil make excellent beds. *T. Crystal Palace Scarlet* is also very attractive. The *Tom Thumb* varieties make brilliant beds, provided they have a warm sunny situation. The seeds should, as in the case of the convolvulus, be sown in five-inch pots, and the plants be put out in the beds without being disturbed at the roots.

VARIEGATED GARDENING FOR EVERYBODY.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex, W.



O the FLORAL WORLD for February last I had the pleasure of contributing a selection of geraniums grown for their flowers, especially adapted to the requirements of amateurs, who do not want to be burdened with a large number, and I now propose to give a similar selection of varieties grown for their leaves. I am all the more anxious to do this because several amateurs who appear to have found the list

of service have expressed a wish for a similar selection of tricolors and others grown for the beauty of their foliage. The selection will be as brief as possible, and amongst the names of those recommended for bedding purposes, will be found many that are now well-known, for some of those first introduced are still unsurpassed by the best of the varieties distributed more recently. There is, for example, *Mrs. Pollock*, which was the first of the golden zonals raised, and it may be safely said that it is still one of the best.

In the trial of geraniums in the Chiswick gardens of the Royal Horticultural Society, in 1873, which included several hundred varieties, it was considered by the committee to be one of the very best of its class. I have, in fact, been careful to include the newer varieties only which supersede those of anterior date. For the convenience of the reader I have grouped the several varieties according to their class.

GOLDEN ZONALS.—These are not of so much value in the flower garden, as the varieties in the bronze zonal and golden-leaved section, for when seen from a little distance, the colours are so blended that they lack decisiveness; several of these are very beautiful when grown in pots, but there is such a great sameness, that it is most difficult to select a few that are really distinct. In selecting six for pots, I should recommend *Edward Richard Benyon*, *Gem of Tricolors*, *Peter Grieve*, *John Downie*, *Mr. Rutter*, and *Macbeth*. For bedding, the last mentioned varieties, *Louisa Smith*, *Victoria Regina*, and *Mrs. Pollock* are the best.

SILVER ZONALS, when nicely grown, are very pretty in pots, but they are of very little value for the flower garden. Six are quite sufficient for pot culture, and those should be *Mrs. Laing*, *Lass O'Gowrie*, *Princess Beatrice*, *Miss Burdett Coutts*, *Charming Bride*, and *Lady B. Brydges*. For bedding, the only varieties required are *Italia Unita* and *Mabel Morris*.

BRONZE ZONALS are, when properly coloured, most effective in pots, and for bedding are invaluable. The best six for pots are *Prince Arthur*, *Mrs. Harrison Weir*, *Maréchal MacMahon*, *Reine Victoria*, *Impératrice Eugénie*, and *Princess of Wales*. For bedding I should recommend *Golden Harry Hicover*, *Sybil*, and *The Moor* for small beds for edging purposes; and *Kentish Hero*, *Waltham Bronze*, and *Beauty of Caulderdale* for large beds and borders. The varieties belonging to this class, whether in pots or planted out, must have full exposure, or the leaves will soon become quite green, marked with a dull, brownish zone.

GOLDEN-LEAVED.—These are adapted for bedding purposes only, and in their way are quite unsurpassed in effectiveness. The best are *Crystal Palace Gem* (there are two varieties under this name, one with plain leaves, and the other with green leaves margined with yellow, and the plain leaved form is the best of these), *Golden Fleece*, *Creed's Seedling*, and *Robert Fish*. The last two are dwarf and most useful for edging purposes.

SILVER-EDGED.—The best of this class are *Miss Kingsbury*, *Princess Alexandra*, *Queen of Queens*, *Pearl*, and *Flower of Spring*, which are here placed in their order of merit.

TUBEROUS ROOTED BEGONIAS FOR THE FLOWER GARDEN.

BY W. BRADBURY.



TUBEROUS rooted Begonias, of which there are now a large number in cultivation, constitute an elegant and most valuable class of summer flowering plants. They are all of free growth, very distinct in character, and under favourable conditions flower very freely. Until some five or six years since, when *Begonia boliviensis* was introduced, there were but few kinds with tuberous roots, and these were of but little value from a decorative point of view, but since that time, thanks to the enterprise of the collector and the skill of the hybridist, an immense number all possessing more or less merit have been introduced. It was not, however, until after the introduction of the two comparatively hardy species, *B. Veitchi* and *B. rosæflora*, that they received the attention they so well deserve, for these were so distinct in character, that they made a lasting impression, and owing to their comparative hardiness received something more than an ordinary degree of attention from cultivators of all classes. Since these fine species were distributed, their pollen has been freely used in the fertilization of the more tender kinds from warmer latitudes, and the result is a race of varieties of great beauty, and much hardier than the begonias to which we had previously been accustomed. Indeed, begonias have so long been regarded as stove plants, that no little difficulty has been experienced in convincing cultivators that they succeed most satisfactorily not only in the greenhouse but in the flower garden also. It is to the latter point that I am now most anxious to direct the attention of my readers, for although they do not produce a blaze of colour like geraniums, verbenas, or the more brightly-coloured leaved plants, they are, from their distinctiveness and beauty, well suited for choice beds in rather secluded situations.

The tuberous begonias are beginning to make new growth, and the present moment is favourable for purchasing. They will doubtless come to hand in small pots, and as it is important to give them every possible encouragement, place when received in a cool pit or frame near the glass, and as soon as the pots are well filled with roots, shift into five or six-inch pots according to the size and vigour of the plants. After they are shifted they must be still kept in the pit, for if placed in a high temperature the growth will be wanting in firmness, and the plants will be unfit for the flower garden; for if drawn up in heat the least unfavourable weather is sufficient to spoil their appearance for a considerable time. When they are repotted, use a rather rich compost, such as a mixture of turfy loam, leaf-mould, and silver sand, and as soon as they are nicely established supply them liberally with water.

A rather shady situation should be selected for the bed, as they grow more freely in a partial shade than when fully exposed to the sun throughout the day. But beds under trees must not be filled

with them, because in such situations they soon become drawn up and cease to bloom satisfactorily. They are not very particular as to soil, provided it is not too heavy and close, but any addition to the beds in the shape of well-rotted manure or leaf-mould, will aid materially in promoting a healthy development of foliage and plenty of flowers. Watering the bed thoroughly in dry weather will also be of immense assistance to the plants. They will not require much attention during the summer season, for unlike many other things they must not be pinched back. In the autumn, before the frost is severe enough to injure the tubers, lift them, and after they have been laid out in a dry room long enough to become nicely dry, store in pots filled with dry sand, and keep in a cool place where the frost cannot reach them. The following are the best of those for the flower garden, now procurable at a moderate price:—

B. boliviensis, a fine upright-growing species, with drooping flowers of a rich red colour.

B. intermedia, a fine upright-growing hybrid, attaining a height of eighteen inches, and producing large, brilliant scarlet flowers.

B. Martiniana, a pretty, neat-growing species, with bright, rose-coloured flowers; suitable for the outside of beds.

B. Stella, a beautiful hybrid with dark foliage and brilliant crimson flowers.

B. Vesuvius, a fine hybrid; bushy in habit, and producing a profusion of large, richly-coloured flowers.

B. Veitchi, a robust yet dwarf-growing species, bearing large, brilliant, red flowers, one of the hardiest of the section.

There are several others that will do well in the flower-garden, but they are as yet too expensive to be purchased for out-door culture. Amateurs who may not feel disposed to purchase a sufficient stock to plant out this year may buy one plant of each of the foregoing, grow them in pots in the conservatory, and strike several batches of cuttings, with a view to raise a stock for next year's planting. The smaller side-shoots strike freely at any time during the summer. *B. Veitchi* cannot be propagated readily in this way. Seed of this class of begonias can be purchased and sown at once. The seedlings will mostly bloom, and those which do not attain a size sufficient for them to flower will form tubers large enough to produce strong plants next year.

HARDY BEDDING PLANTS.

BY GEORGE SMITH.



AS the production of a stock of bedding plants sufficient to fill a flower garden, of even a moderate size, is a heavy task for the amateur, I have prepared a list of hardy plants that are well adapted for bedding purposes, with a view to lessen the labour and difficulties incidental to the preparation of the stock of bedders. Several of the

hardy bedders, although not grown extensively, are amongst the finest in the respective classes, and by growing a fair proportion of these, there will be less labour in propagating tender things, and as less space under glass will be taken up, more room will be afforded for plants required for the decoration of the conservatory. They do not supersede the best of the tender bedders, and none of them can equal in colouring such things as the alternantheras and coleus, but they will be found of immense value in helping to eke these things out, and in combination with some of the best annuals most sumptuous leaf-beds may be formed without the assistance of a single plant kept in the greenhouse through the winter.

It will not be practicable to work up a sufficient stock of many of the plants that will be enumerated, to admit of their being planted in the flower garden in the forthcoming summer; but I would strongly advise my readers to purchase a few examples of the plants likely to be useful to them, and to put them out in an open position in the reserve ground or kitchen garden, to afford them an opportunity to become acquainted with their characteristics in the course of the season, and then propagate a stock sufficient for next season's work. In giving the names of those of the highest value I shall append a few remarks to assist the amateur in selecting and increasing the stock of those purchased.

HARDY BEDDERS WITH DARK FOLIAGE.—*Ajuga reptans purpurea*, a dense free-growing plant with deep bronzy leaves, usually attaining a height of four or five inches. It is readily increased by division, and strong plants purchased now may be broken up into as many portions as there are separate crowns. These can be planted out in rows in the reserve ground, and in the spring may be again divided and planted in the beds six inches apart. It is useful for second lines and panels. It must have a sunny position to bring out the full colour.

Beets.—The beets are hardly entitled to a place here; but they are so effective in large beds, and in third or fourth rows in borders, that it may be well to mention them.

Belvoir Castle is the highest coloured beet for bedding, and seed may be sown about the middle of the month, where the plants are to remain, and may then be thinned to a distance of six inches apart.

Oxalis corniculata rubra.—A very pretty little plant for carpet work; the foliage is small and of deep bronzy colour. It may be used with good effect in second rows, and in small patterns, provided it is kept within bounds. It can be increased by breaking up the established plants.

HARDY BEDDERS WITH SILVERY LEAFAGE.—*Achillea umbellata* is a pretty white-leaved plant, forming a dense band about three inches in width, and six inches high. It is very difficult of propagation, and therefore not well adapted for amateurs.

Antennaria tomentosum, a very dwarf plant, growing close upon the surface, and forming a silvery carpet. It is only suitable for nice friable soils, as on sandy soils it dies in patches in the summer, and on those of cold tenacious character perishes in winter. It is

most useful for edging raised beds, and for forming a carpet underneath strong-growing succulents. It can be increased by division.

Cerastium tomentosum.—This is one of the best of the white-leaved plants for edging purposes. It can be increased by cuttings, or by pulling the old plants to pieces. In the latter case it should be planted rather thickly in a small trench, and then be cut over to make it level. If clipped two or three times in the season, it forms beautiful silvery bands.

Cineraria maritima is hardy on dry warm soils, as also are its numerous varieties. When kept to a height of about nine inches, it is very effective, and may be employed wherever a silvery-leaved plant would be appropriate. It can be propagated either by cuttings or seed, which should be struck or sown, as the case may be, some time during the summer.

Veronica incana.—A close growing plant attaining a height of about four inches. It is very compact, and when divided and replanted in the spring it requires no attention during the summer. It is well adapted for edgings and divisional lines.

HARDY BEDDERS WITH GOLDEN LEAFAGE.—*Arabis alpina variegata*, a useful hardy plant, with creamy variegation. It is compact in growth, and readily propagated by division, and is especially good for spring bedding. It is only suitable for dry, warm situations, as it usually perishes during the winter on heavy and wet soils.

Pyrethrum Golden Feather.—This famous bedder still holds its own for usefulness and effectiveness. It is often met with in an unsatisfactory condition, because of large plants being put out thinly, instead of small ones thickly. The best effect is produced by those between one and two inches in height put three inches apart each way. They soon cover the ground, and the necessary stoppings can be commenced early. Divided plants and seedlings raised last autumn should not be employed, because of their tendency to produce flowers.

Lonicera aurea reticulata.—This climber, well known as the Japanese honeysuckle, is useful for forming marginal bands to large beds. It must have a sunny situation to bring out the golden colour, and the shoots require pegging down regularly.

Stellaria graminea aurea.—The golden chickweed is an important addition to the list of hardy bedders. If strong tufts are planted rather close together, and the pinching commenced soon after they begin to grow freely, it forms dense bands of golden colour, quite surpassing in richness the Golden Feather. It is not, however, so generally useful as the latter, as it must have a sunny situation and a nice friable soil, for on both heavy and light soils it is apt to die off in patches, and leave most ugly blanks in the lines. It can be propagated by cuttings or by division.

Golden Thymes.—There are two golden Thymes that may be turned to good account in planting the flower garden. One is known in the catalogues as *Thymus citriodorus aureus marginatus*, and the other, as the *Golden Fleece Thyme*. The first-mentioned, commonly known as the Golden Thyme, forms dense lines about five inches in height, and the same in width, and if it is not watered overhead it

is very effective. The Golden Fleece, which is a sport from the other, is dwarfer and rather richer in colour. They are both readily increased by cuttings, or by dividing the old plants, and are the most highly coloured when they have the advantage of a warm, sunny situation.

Sedum acre elegans.—This form of the common stone-crop is of a creamy colour, and as it forms a dense band of any desired width, about two inches in height, it will, in many cases, be found very useful. It can be multiplied by division, and is quite hardy, excepting on cold, wet soils.

NOTES ON ABUTILONS,

FOR THE GREENHOUSE AND FLOWER GARDEN.

BY GEORGE GORDON.



ABUTILONS, of which several species have long been known in English gardens as robust-growing greenhouse plants, have, of late years, acquired increased importance because of the decorative value of the recently introduced kinds. The species with which gardeners of the old school are best acquainted are *A. striatum* and *A. venosum*, which produce large, bell-shaped flowers of a reddish-orange, veined with yellow, and have large, handsome foliage. But these grow so rapidly and produce such long-jointed shoots, that they soon reach the top of a lofty conservatory, and are practically worthless for small houses, and consequently they are seldom seen, excepting it be in large structures. The new kinds differ from these in the character of the growth, as well as in the leaf-colouring, and in the more plentiful production of flowers.

One of the first of these which may be characterized as of recent introduction is, *A. Thompsoni*, which has acquired a certain degree of fame as a golden bedder. Its large leaves are profusely blotched and marked with bright yellow when fully exposed to the sun, and masses of it enclosed with a band of some dark-leaved plant, the coleus, for example, produce a striking effect, and form a charming relief from the yellow-leaved geraniums and other golden bedders now so common. In Hyde Park, for several years past, some of the largest beds of coleus have had plants of this Abutilon dotted over them at a distance of fifteen inches apart, and the effect has been wonderfully good. The plants have had abundant space for the development of the foliage, and the rich golden variegation, in combination with a groundwork of dark foliage, has been very effective. The best results are obtained by putting out spring-struck plants, strong and well established in five-inch pots, and about eight inches in height.

The variegated variety of *A. vexillarium*, known to those well acquainted with greenhouse plants, is very dwarf and slender in

growth. The leaves are small, and richly marked with yellow. This, also, has proved a most valuable bedder, as by putting out strong plants, and pegging down the shoots, it forms excellent marginal lines, and if the situation is open, the foliage has a very rich appearance. It is, perhaps, one of the finest of golden edging plants, and although there is more difficulty in working up a stock than of the golden feather or the golden-leaved geraniums, it can be heartily recommended for the more prominent beds. It is also admirably adapted for planting round the outside of vases or baskets, either in the conservatory or out of doors, and also for baskets suspended in the conservatory.

There is yet another variegated form, namely, *A. sellowiana marmoratum*, which was distributed last year. This, like the first mentioned, is of upright growth, but it is more robust, and the leaves are larger, but they do not appear to be quite so richly coloured; but in the latter respect it will probably improve considerably when subjected to a fair trial out of doors. It is a good plant for conservatory specimens, and it will most likely be also of considerable value for the flower garden.

The white-flowered *Abutilon*, raised in America a few years since, and now quite common in English nurseries, under the designation of *A. Boule de Neige*, has proved of far greater value than was at first anticipated. It is of compact growth, commences to bloom whilst in a small state, and continues to produce its white flowers profusely and continuously throughout the season. The flower-stems are more rigid than those of *striatum*, and others, and they consequently stand well out from the foliage, and appear to greater advantage. Planted out in the flower garden, it grows freely, and blooms in the most profuse manner throughout the summer.

At the February meeting of the Royal Horticultural Society, Messrs. Veitch and Sons, of Chelsea, exhibited, under the name of *A. Darwini*, a very compact and free flowering kind, with elegant foliage, and bright orange and red flowers. This is, perhaps, the most free flowering kind yet introduced, for although the plants were only eighteen inches or so in height, they were loaded with flowers. Examples of it were planted out last year in the Glasnevin Botanic Gardens, and nothing could have proved more satisfactory, for they continued to produce flowers in abundance until quite late in the autumn, and when lifted, put in pots, and placed in the greenhouse, they soon recovered from the check, and commenced to flower again. It is not yet in commerce, but it will very likely be offered in the course of the season, and is well worthy of a place in the smallest collection of greenhouse plants.

Abutilons are so easily grown as to require very few remarks bearing on the cultural details. They may all be readily propagated by means of cuttings of small side-shoots taken off in the spring or early part of the summer. Cuttings obtained from plants that have been started in a gentle heat strike the most readily when they can be placed in a propagating pit. If there is a greenhouse only available for the work, cuttings that have become rather firm will be the

most suitable, as they will not be so likely to damp off. They succeed admirably in good, turfy loam, leaf-mould, and a small proportion of sand. A light, airy position is the most conducive to a firm, short-jointed growth, and an abundant bloom.

When growing freely, plentiful supplies of soft water will be required, but in the winter the soil should be kept just moist only. In the spring, prune the shoots back to two or three joints from the base, and when they begin to make new growth, turn them out of the pots, reduce the ball of soil slightly, and put in one or two sizes larger; no further repotting or stopping will be required throughout the season. Those intended for the flower garden must be hardened off, and planted out towards the end of May, and they should have a sunny situation. If it is intended to keep them over the winter, lift at the end of September, put in the smallest pots possible, winter in the greenhouse, and prune them back in the spring.

FORMATION OF THE KITCHEN GARDEN.



So extremely simple are the first principles to be observed in the laying out of a kitchen garden, that they may be disposed of, as principles, in a few words. The ground should be rectangular, and slightly sloping to the south, divided into convenient-sized plots, with good walks of sufficient width between; it should be effectually drained; the soil should be a deep fertile loam; there should be sheltering plantations on the north and east, substantial boundary walls on all four sides, and a suitable extent should be screened by means of hedges or walls, to serve as frame ground and compost and rubbish yard. Finally, there must be an abundant water supply, and the climate must be genial, and characterized by an equable temperature, never very cold in winter, not subject to severe frosts in the later days of spring, and exempt from the trying times of excessive heat and drought by which the summer is occasionally characterized in many parts of Great Britain, which may be described as less than perfect for horticultural purposes.

The amateur need not take alarm at this brief sketch of essential primary principles. Vegetables and fruit are produced in plenty where none of them can be fully realized, and, from first to last, gardening in this country is a continuous conflict with difficulties. We look out of window on one of our own kitchen plots, which in shape approximates to a very long wedge, or a cross between a parabola and an isosceles triangle. From another window we view another plot which is of no shape at all, but comes nearest to a rhomboid out of joint, the sides and angles violently unequal, so that symmetrical division is impossible. The first piece is embellished with a brook that overflows half the ground when extra heavy rains occur, and is as dry as dust in a droughty summer. The other piece consists of untamed clay, with water at a depth of

eighteen inches six months out of twelve, and the whole exposed to the bitterest east wind that ever blew in any part of the home counties. We have other pieces much more favourably situated, but we are bound to say of these adjuncts to the home garden that we obtain from them a great variety and an abundance of vegetables and fruits of the finest quality, the result simply of suitable management. In what the suitable management consists will be explained as we proceed; our object in referring to these gardens is simply to indicate at starting that we do not for our own use possess gardens representative of the essential primary principles. In all practical matters there is a compromise of some sort to be accomplished, and hence in working out a theory or a scheme, allowance must be made for friction, the defects of material, and human fallibility.

It is well, however, to keep in mind all that is required, for much may be done by the exercise of skill and patience to remove or modify the various impediments to success that will have to be encountered as we go on. Whatever the soil or situation, the "laying out" should be a very simple matter. It may be prudent to plant a shrubbery, and intersect it with winding walks and flower borders, on one or on all sides of the kitchen garden. But whatever the kind of boundary taste or convenience may suggest, we must have rectangular plots, and symmetrical angular divisions, where the work of the kitchen garden is to be carried on; and the amateur who enters upon the business with no experience to fall back upon, may be content for a time with grass walks, or narrow ways marked with a few inches of coal ashes, and by the aid of these carry on the work until a definite idea is arrived at as to the most convenient and serviceable method of settling the configuration of the ground. In taking an old garden, you take the system with it, and, generally speaking, it will be well to adapt operations to that system, even if it be a bad one, rather than to attempt a revolution, for that is sure to prove a costly business. Before altering an old garden, a prudent man will consider the cost, and the probability that it is better adapted to the locality and to the circumstances of its owner than at first appears. At all events, our advice to the amateur who takes a garden ready made is make the best of it as it is, and be in no haste to make important alterations, for they will cost money and interrupt the work of production, and when accomplished may prove to be alterations only, and not improvements.

In breaking up a piece of grass land, you have at least the advantage of your ideas as to what a kitchen garden should be. You can make your boundaries and walks, and the forms and sizes of the several plots and plantations in accordance with your own theory of a perfect garden, so far, at least, as the extent of the ground, the nature of the soil, and other inevitable conditions will allow. Now in this case, the two matters of vital importance are the boundaries and the drainage. In making the boundaries, it will be well to consider, in the very first start, to what extent will shelter be needful, and of what should it consist? A broad belt of wood or coppice affords the best of shelter against the keen east winds that in many parts make havoc of our gardens in the months of March and April.

If a site can be selected on the west or south of a sheltering hill or wood, the gain will be great in those seasons when "winter lingers in the lap of spring." But it may be that the land is exposed to all the winds of heaven, and in that case shelter will be of the utmost value. Dwarf walls and close-boarded fences are generally considered valuable for the purposes of shelter, but in truth their value is but slight. It is well to count the cost and probable efficiency of a "cheap" wall before determining on its adoption. To grow fruit satisfactorily is impossible on walls of four or five feet, and a boarded fence is of less value than a dwarf brick wall for fruit growing. But a cheap wall is a screen to shut out curious eyes, and it constitutes a moral if not a material barrier against thieves, who will often hesitate to get over a wall when they would not hesitate to mount a rough open fence, or even, with the help of sacks, over-top a hedge of holly. He who encloses his own land, and has in view to grow good fruit, will be wise to build a wall ten to fourteen feet high, the material stone or brick, with strengthening pillars, and a coping of six to eight inches. The minimum height for a wall to be of any use in fruit growing is eight feet. Such a wall should be nine inches thick, and have a coping projecting forwards. If from eight to fourteen feet, the thickness should be thirteen and a half inches, and the coping six to eight inches. If from fourteen to twenty feet, the thickness must be eighteen inches, and the coping should project at least a foot. Hollow walls are formed by placing the bricks on edge, alternately with their faces and ends outside, so that every second brick is a tie, and every course alternates in the order of facing, so that every end comes over and under a full face. By this means a nine-inch wall of great strength is obtained, and a considerable saving of bricks is effected.

When a live fence is preferred to a wall, the question will arise, What shall it be? Thorn is the quickest and cheapest, and if well managed makes an effectual fence; but it is not well adapted for a garden. Common privet soon makes a dense evergreen boundary, useful alike for shelter and to impose a check on thieves, especially when it attains a height of six or seven feet. The beautiful large-leaved privet, *Ligustrum ovalifolium*, is as fast-growing and handsome a plant as can be used for a garden fence, and will cost but little more than the common privet. Everybody knows that holly is the finest of all boundary plants, but it should never be planted by a tenant-at-will unless the landlord is willing to pay for it, and in any case it will require the growth of years to thicken into a barrier and make a fair return for the capital and labour invested in it. For general purposes, common privet is the very best of boundary plants for enclosing a garden, for it is not only evergreen and grows as close as a mat if planted thick enough, but it soon gets up to a useful height, so that no one can see through or over it. One of our pieces, which abuts on a road on one side and an open meadow on the other, is fenced in as follows: next the road, an "unclimbable" iron fence and two rows of privet, with Lombardy poplars twenty feet apart, and standard *Ligustrum ovalifolium* between the poplars. On the opposite side, next the meadow, a strong five-feet

fence of oak posts and rails, leaning over towards the meadow, and rendered additionally difficult of access by a deep ditch on that side. Within the fence, two rows of common privet, and Lombardy poplars twenty feet apart. On this side there are no standard privets, as we desire as free a range as possible for the eye over the open country. On the third side, which is seen from the house, and abuts only on a field path, there is a fence of posts and rails, poplars at twenty feet, two rows of holly next the rails, and one row of evergreen berberry, *Berberis aquifolium*, inside the hollies, forming a dense screen. On the fourth side is a mixed shrubbery, forming the boundary that way of the pleasure garden.

The boundaries being defined, we proceed to consider how far drainage is needed. It matters not what the staple may be, if it is water-logged periodically, and retains water for any length of time, drainage will not only improve it, but operate like magic in increasing its productiveness and rendering it suitable for many forms of vegetation that will not thrive on cold damp land. If it be possible, the whole of the drains should be carried under walks, and if necessary they should be taken direct, or as direct as possible, to the natural outfall. In most cases, a main drain formed of a pipe six inches in diameter should be laid along the lower side of the ground opening to the outfall, and the other drains communicating with it should be formed of half-pipe and sole, or three-inch whole pipe, with sole attached, and all connections should be made by turning the pipe slightly in the direction of the flow in the main, because water does not easily turn at a right angle, and a quick removal without conflict is required. The depth of the drains will depend upon the set of the land and the nature of the outfall, but a depth of two feet is better than a depth of one foot, and a depth of three feet better still. The result will be the more satisfactory if the channels are cut with a firm bottom by an experienced workman, and filled in over the pipes with chalk, or limestone, or shale, or brickbats. If you cannot command hard stuff for the purpose, use brushwood, for when covered with earth and left undisturbed, it is scarcely to be spoken of as a perishable substance, and it greatly facilitates the downward passage of water to the pipes. In heavy low-lying clay lands where moles abound, it is often necessary to lay shallow drains, because of the small fall obtainable. In such a case, pipes of one inch bore are to be preferred, and the distance may range from twelve to twenty feet. In lighter soils, in which deeper drains may be laid, they may be thirty to sixty feet apart, and the last-named measure answers well for dividing walks, so that walks and drains may go together, leaving sixty-foot plots between, which may be again divided into beds and quarters. S.H.

THE METROPOLITAN FLORAL SOCIETY will hold an exhibition of Dahlias, Gladioli, and other autumn flowers, at the Alexandra Palace, Muswell Hill, on Tuesday and Wednesday, August 24 and 25.

L. C., Ireland.—Seeds of the Egg-plants, reported on in April, 1874, were obtained from Mr. Bull, New Plant Merchant, King's Road, Chelsea, London.

April.

APPLES FOR THE MILLION.



THE high prices of first-class market fruits at the present time appear to be scarcely consistent with the fact that nearly all kinds of fruits were produced in unusual plenty in the past season. The *Gardener's Magazine* explains the paradox by the allegation that in middle-class gardens, fruits and vegetables obtain less attention than formerly, in consequence of the misdirection of the energies of gardeners in favour of vegetable-tinsel in the shape of weedy stove plants, and the meretricious magnificence of the latest styles of bedding. Consistently with this view of the case, our contemporary supplies from the pen of Mr. John Scott, of the Merriott Nurseries, Crewkerne, Somerset, a peculiarly useful article on the apple-tree. It appears that Mr. Scott has been called on to advise a clergyman who desires to provide his poorer parishioners with the best kind of apple trees and other useful things for their gardens, and gives publicity to his counsels in the hope that they may prove extensively useful. He says the apple will thrive in a greater variety of soils than any other fruit tree, and as it flowers late, it often escapes injury from spring frosts that cripple all other kinds of hardy fruits. But the conditions that suit the apple best are a deep moist loam and a warm moist climate—hence the productiveness of the orchards of the west of England. In respect to the form of the tree, Mr. Scott votes for the old-fashioned standard, with its noble growth and abundant production, as the most profitable tree of any kind that can be planted. But where there is not room for standard apple trees, dwarf bushes grafted on the true Paradise stock are much to be desired in the interests of the household, for though small trees cannot produce the bushels that may be gathered from great old orchard trees, the bushes, if well made in the nursery, become fruitful soon after planting, and while they give good crops commensurate with their size, the many varieties that may be grown on a small plot of ground render them more useful than a great tree giving a glut of one kind, the season of which perhaps may be restricted. In selecting the best sorts, preference should be given, we are told, to handsome fruit of good quality and long keeping. It is for the amateur pomologist to grow the finer dessert kinds, which are for the most part tender in constitution, and of little use in the kitchen—the apples that are most in demand everywhere being such as look well, cook well, and keep well, and, given these qualities, the more fruitful the trees are the better. Mr. Scott selects the *Cellini* as the best of all apples, and the sort which should be planted where there is room for only one tree. It is of good size and pleasing colour, deep yellow streaked with red, and equally useful for cooking or the dessert. It is in season from September to Christmas. The best six selected from 1200 sorts grown in the Merriott Nurseries are *Stirling Castle*, *Keswick Codlin*, *Hawthornden*, *Forge*, *Alfriston* or *Shepherd's Fame*, and the *Dutch Mignonne*. These we are advised to rely upon for an abundance of the finest apples from August to May, and all of them are culinary fruit save the last, which is equally good for cooking or the dessert. If these seven sorts are not enough we are offered twenty-four in addition, the names of which are *Devonshire Quarrenden*, *Red Astrachan*, *Lord Suffield*, *Pott's Seedling*, *Jolly Beggar*, *London Pippin*, *Nelson Codlin*, *Rymer*, *Cox's Orange*, *Beauty of Kent*, *Hoary Morning*, *Mère de Menage*, *Cockpit*, *Blenheim Pippin*, *Barcelona*, *Pearmain*, *Brabant Bellefleur*, *Court Pendu Plat*, *Royal Russet*, *Fearn's Pippin*, *Aromatic Russet*, *Braddich's Nonpareil*, *Winter Pearmain* *Costard*. The final advice as to pruning is very brief and simple. Mr. Scott says the trees should not be pruned or pinched at all, for pruning and pinching defer the date of fruit production and seriously diminish the health and vigour of the tree. Every tree tends naturally to reproduce its kind, and the surest way to insure a crop is to interfere with nature as little as possible.

THE WEST OF ENGLAND ROSE SHOW will be held on Tuesday, June 29, in the Shire Hall, Hereford.

AN INTERNATIONAL HORTICULTURAL EXHIBITION will be held at Amsterdam in the spring of 1876, and as it has the support of all the leading horticulturists and public men in the Netherlands, it will probably be a grand affair.

THE GARDEN GUIDE FOR APRIL.

AWAY to that snug nook ; for the thick shower
 Rushes on stridingly. Ay, now it comes,
 Glancing about the leaves with its first drips,
 Like snatches of faint music. Joyous thrush,
 It mingles with thy song, and beats soft time
 To thy bubbling shrillness. Now it louder falls,
 Pattering, like the far voice of leaping rills ;
 And now it breaks upon the shrinking clumps
 With a crush of many sounds—the thrush is still.
 There are sweet scents about us : the violet hides
 On that green bank ; the primrose sparkles there ;
 The earth is grateful to the teeming clouds,
 And yields a sudden freshness to their kisses.
 But now the shower slopes to the warm west,
 Leaving a dewy track ; and, see, the big drops,
 Like falling pearls, glisten in the sunny mist.
 The air is clear again, and the far woods
 Shine out in their early green. Let's onward then,
 For the first blossoms peep about our path,
 The lambs are nibbling the short dripping grass,
 And the birds are on the bushes.



ANNUALS will require thinning out, and the straggling kinds will be the better for topping.

AZALEAS AND CAMELLIAS should be shaded while making their new growth, and syringe frequently.

BEDDING PLANTS to be got from under glass as fast as possible, to harden off in the open air. Never plant immediately after removing from warm pit or greenhouse ; but let them have at least a fortnight in the open air, kept rather dry, and with some protection at night, in case of frost.

CALCEOLARIAS in pots must now have abundance of water, and be shaded during midday ; as the trusses rise give liquid manure twice a week. Keep the plants cool and airy, and tie in time to keep them from getting out of shape.

CELERY.—Prick out young plants into boxes or on a slight hotbed, and at all favourable opportunities give air as soon as they have established themselves.

CHRYSANTHEMUMS struck from cuttings now will make fine plants, and growers are advised to prepare at once for raising the whole of the stock required for the conservatory and other purposes.

CONSERVATORY.—The surface of the bed should be stirred, and some fresh soil added, in order to maintain the plants in a vigorous condition. Shoots that are rambling and unsightly should be pinched back promptly. Plants placed in the house during their period of blooming should be carefully attended to, and should not have too much water, or they may become diseased. Azaleas, however, require liberal supplies of water while in bloom, but water must not be permitted to fall upon the flowers, and the atmosphere should be kept moderately dry.

CUCUMBERS IN FRUIT may be kept going now by linings of grass mowings, if stable manure is scarce.

CUCUMBERS FOR RIDGES to be kept as hardy as possible, but not to be checked. Give them a shift if they require it, and frequently sprinkle over the foliage.

EVERGREENS.—This is a capital time to move them, and to plant beds, borders, and edges. If the weather is dry, water freely, or, better still, mulch heavily.

FERNS in pots require either a shift or a renewal of the soil. In either case turn them out, and break away some of the old stuff from the outside of the roots and repot either in the same or larger pots, using good turfy loam for all strong growing kinds, and those that must have peat, to have best peat in rough lumps. Ferns are too often starved, owing to the common but erroneous notion that a poor sandy peat is sufficient for them, which is a mistake.

FUCHSIAS not yet repotted must be attended to quickly. Large shifts suit them admirably.

GRASS TURF must have every necessary attention now, or the consequences will be a burnt-up lawn by July, and the predominance of coarse grasses.

HEATHS and other hard-wooded plants coming into bloom should have plenty of air.

HOLLYHOCKS planted now will bloom well this season, so there is still time for those who have not yet made up their selections.

KITCHEN GARDEN.—There cannot be too much vigilance now in keeping down weeds, hoeing between crops, earthing up peas and beans, and promoting growth by any other means that suggest themselves, such as top-dressings of soot and guano.

KIDNEY BEANS may be sown in the open ground now; sow also a few in pots, to make good any that miss in the rows. Sow also in pots or pans sufficient seeds of scarlet-runners for a first planting, to give an early supply.

MELONS to be kept regular in growth, and the vines some distance apart, to ensure a healthy leaf development. Plenty of sun and moderate watering are essentials of success in the early growth; and syringing early in the morning, will be found advantageous. As soon as a crop is set, soak the bed with tepid water, and continue syringing until the fruit is fully formed; then discontinue it.

ORCHID HOUSE.—Shade during bright weather with tiffany, or some other suitable material, removing it early in the afternoon. Plants requiring repotting must be attended to as soon as they are fairly in a growing state. Keep up the moisture in the atmosphere by sprinkling the paths, and shut up early in the afternoon.

PELARGONIUMS required for late blooming should be stopped now, and in such a manner as to make well-shaped plants.

PINES showing fruit to have clear liquid manure given warm and weak. Syringe to be used before shutting up. Succession plants to be kept liberally ventilated, to induce a robust growth.

PINKS AND PANSIES should have a rich top-dressing now, taking care to stir the surface of the beds before it is applied.

POTATOES.—Protect the shoots of potatoes which have made their appearance above ground by drawing earth over them, and continue planting for the main crop.

ROSES under glass, if plagued with fly, must be fumigated. Most of the good perpetuals and teas are now in full bloom in unheated houses. This is a good time to plant out roses in conservatory borders, and to prepare beds for turning out plants from small pots in May.

SEAKALE AND RHUBARB.—Where fresh beds are wanted, they should now be made.

Sow turnip radishes for succession, scorzonera and salsafy in drills one foot apart, purslane on a warm sunny border; savoys and Scotch kale for supplying the table in early winter, carrots for main crop. Brussels sprouts for early winter, cabbage, cauliflowers, and lettuces.

STOVE PLANTS recently potted be kept on a good bottom-heat. Shift gesneras, gloxinias, clerodendrons, and other fast-growing plants. Justicias out of bloom to be potted in peat, rotten dung, and loamy turf, equal parts. As fast as plants come into bloom, remove them to a cooler atmosphere.

STRAWBERRIES that have been forced require to be carefully hardened off before removing them from the protection of the glass.

VEGETABLE MARROW sown now will produce almost as early as those sown a month since. It is best to get the plants on singly in pots, as they are shorter and stronger when turned out than if grown several in a pot and allowed to sprawl about and spindle away their strength.

VINES from eyes this season should be shifted on as fast as they fill their pots with roots. They may have large shifts now, and be kept constantly syringed, to ensure a growth of strong rods. Vines with fruit beginning to colour to have plenty of air when weather permits, and especially for a short time before the sun gets on the house, so that the first vapours that rise may be carried off at once. All outside borders that are covered now are the worse for the covering. Remove it, to allow the sun to warm the roots.

WINTER GREENS to be sown now in large breadths for the main crop, especially Brussels sprouts, collards, Scotch kale, and savoy.

HORTICULTURAL AFFAIRS.



ROYAL HORTICULTURAL SOCIETY'S adjourned annual general meeting was held on the 9th ult., Viscount Bury, President of the Society, in the chair. The President, in recommending the adoption of the amended report, stated that Her Majesty's Commissioners had at last acknowledged the legality of the Council, and the two bodies were now on the most friendly terms. After a long discussion and several amendments had been proposed and rejected, the report was unanimously adopted.

ROYAL HORTICULTURAL SOCIETY'S Exhibition of Hyacinths and other spring flowers, on the 17th inst., was attended with a large measure of success. It was in some respects better than was generally anticipated, for the prizes were reduced considerably in value, and it was feared the competition would not be so spirited as at previous exhibitions. Hyacinths, of course, constituted the chief feature of the exhibition. Tulips and narcissus were exceedingly well represented, and there was a grand display of cyclamens, and miscellaneous subjects were especially attractive.

THE INTERNATIONAL EXHIBITION OF FRUIT AND FLOWERS to be held at Edinburgh in September next, promises to be most successful in every respect. It will be held under the auspices of the Royal Caledonian Horticultural Society, and as the management has been ably supported by the inhabitants, it has been possible to issue a very liberal schedule of prizes.

THE NATIONAL HORTICULTURAL EXHIBITION held annually at Old Trafford, under the auspices of the Manchester Botanical and Horticultural Society, is to be on the same grand scale as in previous years. £1000 is offered in prizes. It commences May 14, and continues open until the Thursday in Whitsun week.

MESSRS. HOOPER AND Co., Covent Garden Market, W.C., offer prizes amounting in the aggregate to £52 10s., for the produce of two new American potatoes grown from one pound of sets. The conditions of competition will be furnished by the firm.

THE KUMQUAT ORANGE (*Citrus Japonica*) is one of the most ornamental of the family when well grown, but unfortunately it is most difficult of cultivation. It is seldom seen in collections, and it is worthy of notice that at the meeting of the Floral Committee of the Royal Horticultural, on the 3rd of March, Mr. Sherratt, of Knypersley, Cheshire, exhibited a branch bearing upwards of fifty fruits. The fruit is of a rich golden yellow, oval, rather smaller than a pigeon's egg, and delicately perfumed. Although it may be raised from seed, it must, to insure plentiful production of fruit, be grafted on *Limonia trifoliata*. It has been suggested that it would succeed out of doors in sheltered situations in the west of England, but it is not likely that it will produce its fruit without the protection of a greenhouse when in bloom. When furnished with fruit as in the case of the specimen referred to, it is one of the finest of ornamental plants for the conservatory, especially during the winter season.

MR. A. MCKENZIE, OF ALEXANDRA PALACE AND PARK, having well-nigh completed the outdoor works and glass structures there, is prepared to take commissions in landscape gardening and the improvement of landed estates. We trust that Mr. McKenzie's engagements on private properties will not deprive us of his services in a public capacity, for his admirable work on the Thames Embankment, in Finsbury Park, and elsewhere, constitutes him an important benefactor. It is satisfactory to learn that, although now enabled to enlarge his sphere of operations, he will continue on the official staff of the Alexandra Palace Company.

TO CORRESPONDENTS.

WORMS IN FERN CASE.—*J. C. J.*—Lime water is the best for dislodging the worms. It is prepared by putting a quarter of a peck of unslaked lime into a gallon of water. It must stand until quite clear, and then be poured off carefully so as to avoid disturbing the lime in the bottom of the vessel. The case should be watered two or three times with an interval of three or four days between each. If the ferns are not thoroughly established in the case, the best course will be to take them out and renew the soil, for if the bed is full of worms the drainage is

most probably choked up, and the soil in consequence likely to become sour. The principal bulk of the soil should be removed from about the roots of the plants, and a sharp look-out kept for worms to prevent any of them being returned to the case. The ferns will experience no material check. Larger quantities of lime water may be made in the same proportions.

CYCLAMEN SEED.—*E. P. S.*—The leading cultivators of cyclamens fertilize the flowers from which they are desirous of obtaining seed, with pollen obtained from the flowers of another plant. Care is taken to select plants with the finest flowers only for seed raising, and to take the pollen from flowers equally good. Cyclamens, however, usually produce sufficient seed without artificial fertilization, but the seedlings do not, as a rule, produce flowers of so good a quality as those raised from seeds saved from others that have been fertilized artificially. The plants require no special management to enable them to bring the seed to maturity. They require a rather shady position in the greenhouse or in a pit, from the time they go out of bloom until the seed is ripe, and moderate supplies of water. After the seed is ripe they should be kept rather dry at the roots for a period of six weeks or so, and then be turned out of the pots, the soil removed from about the roots, and be repotted in clean pots, and a fresh compost, and afterwards be placed in a cold frame, until the autumn, when they must be removed to the greenhouse.

ROSE SEED.—*Violet.*—The best course will be to allow the seed-pod to remain until quite red, and when gathered place it in a seed drawer for two or three weeks. The seed may then be sown thinly in a pan or box, covered lightly with fine soil, and placed in a cold frame. The soil must be maintained in a moderately moist condition only, until the young plants make their appearance, because of the risk of the seed decaying from excess of moisture. It will be found a very easy matter to open the pod and separate the seed. The latter will be in no way injured if allowed to remain on the plant some weeks after perfectly ripe.

SLOW COMBUSTION BOILER.—*Omega.*—Probably the small boiler made by Messrs. Deards, of Harlow, Essex, would suit you. We do not expect you will be able to obtain a boiler as small as you appear to require. We should have thought gas would have been the best for so small a structure, because of the little attention required to keep the heat up. Of course, the water in the pipes will freeze if an ordinary boiler is employed, in precisely the same manner as it did when heated by gas, if the fire is not started early enough. Possibly you refer to the freezing of the water in the meter, and not in the hotwater pipes. Messrs. Deards will doubtless afford you the fullest particulars in reference to the prices and sizes of their slow combustion boilers.

CAMELLIAS.—*C. H. R.*—There is no quick way of getting rid of the insects with which the camellias are infested, and we can only advise you to examine the plants carefully and remove all the insects visible with a piece of pointed stick, and then thoroughly wash the plants, leaves and stems, with a sponge and warm water. A little soft-soap or Gishurst compound should be at hand, and the sponge dipped into it as the washing proceeds, but neither of those must be used too freely, because of the risk of injuring the young growths. It is a tedious task, but there is no other really effectual way of cleaning the plants.

BEDDING GERANIUMS NOT FLOWERING.—*Amateur.*—Bedding geraniums usually bloom most satisfactorily when planted in a sunny situation, and in warm, well-drained soil. On cold, heavy soils it is desirable to dress the beds liberally with light sandy stuff, and to raise them six inches or so above the general level of the garden. The sloping sides of the beds can be covered with succulents such as *Echeverias*, *Sempervivums*, *Mesembryanthemums*, *Euonymus radicans variegata*, or any of the ivy-leaved geraniums—green or variegated leaved. If there is an objection to raise the beds as here suggested, the plants may be plunged in the pots, the rims of the latter to be just covered with the soil. In moderately light and well-drained soils the plants will, of course, bloom freely, whether the beds are raised or on the level. Strong well-hardened plants struck in the autumn are decidedly preferable, especially for cold soils, as they come into bloom much earlier than those struck in the spring. When it is intended to plunge the plants they should, if the time can be spared, be shifted into five or six-inch pots, a few weeks beforehand. Geraniums after they are well established should not be watered, for artificial waterings encourage an excessive luxuriance, and the plants produce but few flowers in consequence.



ARENARIA PEDITIDA ANULOSA

ALPINE PLANTS FOR COMMON BORDERS.

(With Coloured Illustration of *Hepatica angulosa*.)



ALPINE plants are understood to be peculiar in their requirements, and therefore difficult to cultivate. In a very general way this is true; but the exceptions are so numerous, and the term "Alpine" is so widely comprehensive, that when the most careful and costly arrangements have been made to suit the family, it will be found that very many of them need no such arrangements at all, for they thrive as well in the common border as on the best of rockeries ever constructed in a garden. It happens, too, that a considerable proportion of those Alpine plants that are not at all fastidious as to the conditions of their existence, are extremely beautiful and interesting, and it follows, therefore, that those who do not make special provision for these plants may, to some extent, enjoy their bright presence in an ordinary garden. The lovely plant here figured is an example of the fact. It is a true Alpine, it is a scarce plant in gardens, and almost unknown to the nursery trade. But it will thrive gloriously in a common garden border, if managed as we shall presently advise—the main feature of the management consisting, as we may as well announce at once, in leaving it undisturbed to take care of itself. We may find dozens, hundreds of plants equally desirable, by selecting from such genera as *epimedium*, *iberis*, *saponaria*, *saxifraga*, *campanula*, *iris*, and others that will be named presently.

In our heavy clay land many first-class Alpines thrive without any special aid in the way of rockery or drainage, they thrive as common border plants. One of the very best is *Phlox subulata*, a lovely early flowering tufted plant, that in our borders spreads like chickweed, and flowers even more freely. We name this as an example merely of an extreme case, but we do not advise that Alpine plants should be extensively planted in common borders without some previous consideration of their constitutional requirements. It should be observed, in the first place, that these plants are, with very few exceptions, so hardy that they do not require any kind of shelter, and for the most part a bleak north or east exposure is good for them. But some of them, though hardy at home, are tender abroad; in other words, the bursts of warm weather that occur early in the year in lowland districts urge them into growth too soon, and they suffer afterwards through the return of winter weather. But as a garden is for beauty and pleasure, we must associate with true Alpines some plants that are not Alpines, and that perhaps are more in need of shelter in spring, than those that properly belong to high altitudes. Thus we come to the use of sheltered borders. Now it will be obvious that for a thorough enjoyment of Alpine plants and their proper associates, several aspects, and as we may say, several local climates are required, and it is easy enough to institute these accommodations in any garden that is not already

fully occupied and beyond improvement. Sheltered borders and borders facing north and east are all to be desired, but there are two conditions essential in every case, and they are, first, that they should be thoroughly well drained; and, secondly, somewhat removed from the roots and overhanging boughs of large trees. As for the soil, a deep sandy loam, or a somewhat loamy sand, will suit the greater number of plants it might be thought desirable to introduce, but it must be remembered that stations may be made for the plants, so as to provide every clump with the soil known to be the best adapted for its full development. As to this station making, let none of our readers be uneasy. We repeat that sandy loam, or a loamy sand will suit a majority of the best of the Alpine plants that are adapted for borders, and an admixture of lime rubbish or chalk will improve such a soil for some plants, while sandy peat will improve it for others. The case is by no means complicated; it is, in fact, very simple. But a word of advice must be offered in reference to the preparing of stations. A spoonful of prepared soil will be no use. You must take out half a barrow-load at least of the staple, and fill up the hole with the necessary compost. As a rule, a good barrow-load will be none too much for one clump, and the station should, as a rule, be deep rather than broad, for these plants do not make much root near the surface, but go down in search of nourishment, and to escape the distressing effects of summer drought and winter cold. Most Alpine plants root deep, and that is one of the secrets of their strong vitality in the midst of conditions which appear inimical to vegetable life.

For the embellishment of an exposed border, the following are most beautiful Alpine plants, that require only a well-drained, sandy soil:—*Ethionema cordifolium*, *Anemone alba*, *A. (Hepatica) angulosa*, *A. stellata*, *A. fulgens*, *A. nemorosa*, fl. pl., *Arabis blepharophylla*, *A. petraea*, *Adonis vernalis*, *Anthyllis montana*, *Achillea aurea*, *A. tomentosa*, *Androsace ciliata*, *Armeria cephalotes*, *Antirrhinum rupestre*, *Asana microphylla*, *Aubrietia Campbelli*, *Acantholimon glumaceum*, *Aster alpinus*, *Campanula carpatica*, *C. cæspitosa*, *C. muralis*, *C. garganica*, *C. turbinata*, *Coronilla varia*, *C. minima*, *Dianthus alpinus*, *D. deltoides*, *Draba aizoides*, *D. cuspidata*, *Dondia epipactis*, *Erinus alpinus*, *Erodium manescavi*, *E. macradenium*, *E. petraeum*, *Erysimum ochroleucum*, *Funkia albomarginata*, *F. grandiflora*, *Gentiana acaulis*, *Genista sagittalis*, *Geranium argenteum*, *G. sanguineum*, *G. lancastriense*, *Gypsophila prostrata*, *G. repens*, *Iberis sempervirens*, *I. corifolia*, *Iris pumila*, *I. cristata*, *Linaria alpina*, *Linum alpinum*, *Lychnis alpina*, *L. lagascea*, *Myosotis sylvatica*, *M. dissitiflora*, *Narcissus juncifolius*, *Omphalodes verna*, *Phlox reptans*, *P. subulata*, *Potentilla verna*, *Primula acaulis* in variety, the most desirable being single crimson, double crimson, double lilac, double white; *Pulmonaria virginica*, *Ranunculus alpestris*, *Sanguinaria canadensis*, *Saxifraga hypnoides*, *S. cæspitosa*, *S. pulchella*, *Smilacina bifolia*, *Savonaria cymoides*, *Silene alpestris*, *S. shafta*, *Triteleia uniflora*, *Veronica candida*, *V. saxatilis*, *Viola lutea*.

The following require shelter such as a thick hedge or shrubbery would afford, but must not be overshadowed by trees:—*Aquilegia*

cœrulea, *A. alpina*, *A. glandulosa*, *Begonia Veitchi*, *Calandrinia umbellata*, *Cypripedium spectabile* (peat soil), *Dielytra eximia*, *D. spectabilis*, *Epimedium pinnatum*, *E. macranthum* (peat soil), *Epipactis palustris* (chalk), *Gentiana asclepiadea*, *Gentiana bavarica*, *Gymnadenia conopsea* (peat), *Iris reticulata*, *I. nudicaulis*, *Linum narbonense*, *Lilium tenuifolium*, *L. longiflora*, *Lithospermum prostratum*, *Myosotis azorica*, *Malva campanulata*, *Orchis foliosa* (chalk), *O. latifolia* (peat), *Pyrola rotundifolia*, *Polemonium cœruleum variegatum*, *Ranunculus parnassifolius*, *Rexia virginica*, *Sisyrinchium inceps*, *S. grandiflorum*, *Trillium grandiflorum*, *T. cœrueum*, *T. erectum* (peat, shade, damp), *Viola pedata*, *Wulfenia carinthiaca*, *Zapania nodiflora*, *Zauschneria californica*.

When all the foregoing have been secured there remain hundreds more of first-class excellence. It will be observed that we have not included any sedums, or sempervivums, and very few saxifrages. The purport of this article is to bring a few of the very finest Alpines into every garden, and in view of that object we can afford to leave many good plants for the present unprovided for.

S. H.

CONSERVATORY AND DRAWING-ROOM PALMS.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex, W.



PALMS hardy enough to be grown in the conservatory and greenhouse throughout the year, are now plentiful, and as they may be obtained at prices which place them within the reach of those amateurs who are able to bear the expense incidental to the management of a conservatory, I shall, perhaps, be doing good service by pointing out a few of the best, and giving a brief outline of their management. The value of palms for decorative purposes has been pointed out on more than one occasion in the pages of the *FLORAL WORLD*, and it is not, therefore, necessary to say much in praise of them; but I would remark, in passing, that no plants with ornamental leafage can be more easily grown, or are more capable of withstanding the effects of rough treatment. They are unsurpassed in elegance and usefulness, whether for the embellishment of the dinner-table, or the drawing-room, or for the decoration of the conservatory or vestibule. Moreover, unless shifted on freely, and placed in a high temperature, they do not soon outgrow the structure in which they are placed, and, unlike numerous other plants, they require no training or other attention, beyond repotting them every second or third year, and supplying them with water.

To cultivate Palms successfully is a very easy task, even to the amateur, with a very slight acquaintance with horticultural matters, and in the way of compost they simply require a mixture of fibrous peat and loam broken up rather roughly, and well incorporated

together, in the proportion of one part of the former to two of the latter; and then a small quantity of sharp silver-sand added. The pots must be cleaned and efficiently drained by placing a few crocks regularly in the bottom, and then covering them with a layer of rough material. Until the plants are of large size, pots two sizes larger than those previously occupied should, as a rule, be employed, for palms are most impatient of having their roots disturbed, and,



RHAPIS FLABELLIFORMIS.

by using pots of the size here mentioned, they will only require repotting every second or third year. In transferring them to larger pots, the crocks at the bottom of the ball of soil may be removed, but the roots must not be disturbed in any other way, or the plants will receive a check from which they will be a long time in recovering. The soil must be pressed firm between the sides of the pot and the ball, and sufficient space left on the surface for

them to receive liberal supplies of water without difficulty. From early in the spring until the autumn, the supplies of soft water must be most liberal, but not excessive; and, during the remaining part of the year, the soil should be maintained in a moderately moist state. During the growing season, an occasional syringing, or a washing with a watering can, to which a rose has been affixed, will materially assist in keeping the foliage clean, and in maintaining the plants in health. Palms kept in the drawing-room, or other indoor apartment, should be taken outside once a week, and have the leaves sponged to remove the dust from them. Here we grow a large collection of both stove and greenhouse kinds, and from the latter I have selected the undermentioned as being specially suited to the requirements of amateurs:—

Areca aurea, an elegant species, with graceful pinnate leaves and yellow stems; first class for the dinner-table.

A. rubra, similar to the preceding, but more robust, and with purplish stems.

Chamærops Fortunei, a handsome fan palm, of rather dwarf growth, very cheap and very hardy.

C. humilis, similar in character to the preceding species, but smaller and of dwarfer growth, neat and useful, also cheap.

Corypha australis, one of the smallest of fan palms, handsome and useful for windows.

Kentia australis, a handsome species, with bold pinnate leaves, very handsome and desirable.

Latania borbonica, one of the most ornamental and best known of fan palms; it is very cheap, and should be one of the first purchased.

Phoenix dactylifera. This is the Date Palm, and is well worth a place for the interest attached to it, as well as for its distinctness and beauty. With the aid of a cucumber frame a stock of plants can be readily raised from the stones of the dates purchased at the shops, and small plants may be obtained at a low rate.

Rhapis flabelliformis, a beautiful palm, small in growth and distinct. It produces a large number of stems averaging an inch in diameter, as shown in the accompanying illustration, and these are furnished with small palmate leaves. Small plants with a single stem, are very pretty, and well suited for jardinetts and windows.

Seaforthia elegans, a robust and very elegant palm, with bold, graceful pinnate leaves.

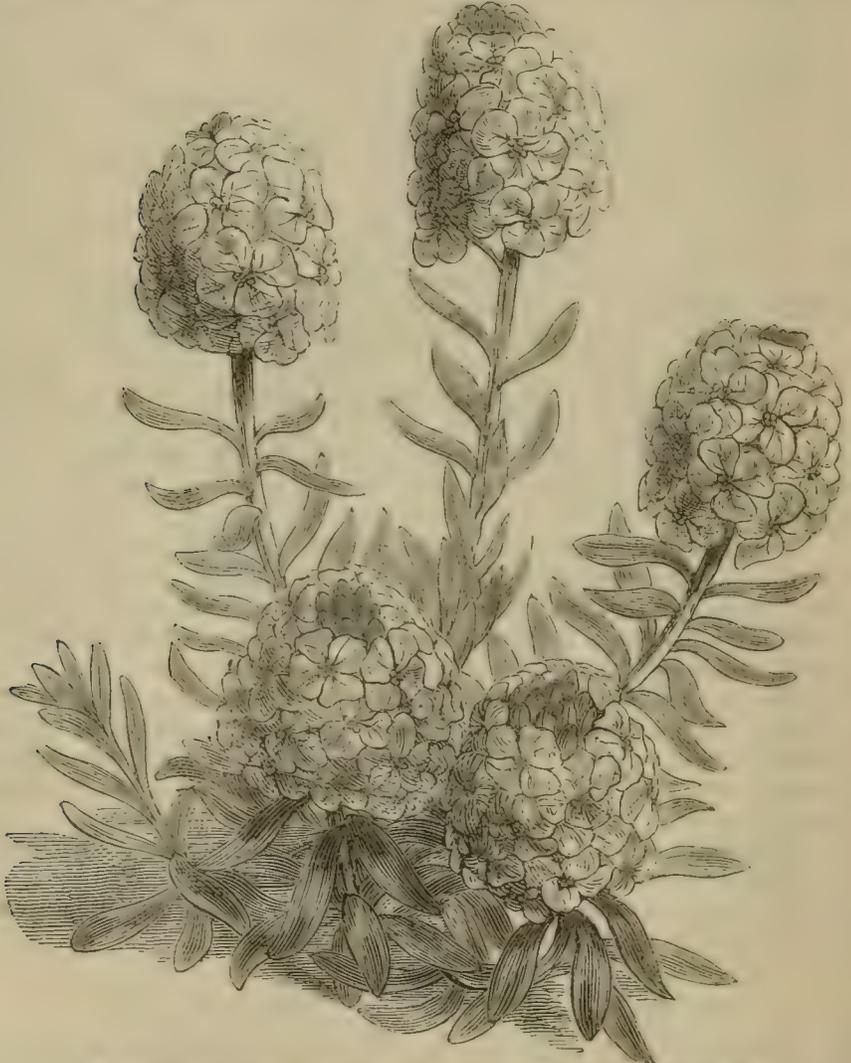
Thrinax parviflora, one of the most elegant of fan palms, and worthy of a place in the smallest collection.

ELECTRO-PLATING NATURAL FLOWERS.—An ingenious application of electro-metallurgy has recently been brought before the notice of the Society of Arts. It consists in the application of a coat of silver, by means of electro-deposition, on natural leaves and flowers. By this means very delicate ornaments are produced, since the precise form and texture of the natural leaf is preserved under the thin silver film. The special process by which these results are attained is the invention of Mr. Denton.

MOUNT LEBANON CANDYTUFT.



HE charming plant here figured is a close ally of the well-known iberis of our garden, and nearly resembles the pretty *Iberidifolia rotundifolia*, which, like it, is a native of the East. The Lebanon candytuft, *Ethionema coridifolium*, is a cruciferous plant, originally met with by Labillardiere on Mount Lebanon, whence it has lately been obtained for cultivation in this country. Messrs. Backhouse and Son, of York, have secured it through the aid of the Botanic



MOUNT LEBANON CANDYTUFT (*ETHIONEMA CORIDIFOLIUM*).

Garden at Vienna, and it now has a place in their catalogue. It is a genuine alpine, quite hardy in English gardens, growing in neat, dark green tufts, and producing handsome heads of rosy-purple flowers. A dry position is essential for its preservation, but it can endure any amount of cold.

THE PREPARATION OF BEDDING PLANTS.

BY JOHN WALSH.



IN our uncertain climate there is much risk in filling the flower beds with their summer occupants until quite the end of May, for until after the third week of the month, we are not sure whether they will be exposed to a frost of sufficient severity to blacken them terribly or not. We can hardly feel safe even after the last week in the month, for it is only a year or two ago that we had a frost in the early part of June, which did much mischief to tender things; and twelve years since, the country was visited by a sharp frost in July, which, in some parts, did considerable damage to coleus, dahlias, late planted potatoes, and other tender things. There is hardly a day in the whole year in which we may not have a frost, but, practically, there is not much danger after the 20th inst.; and as it is important to plant the beds as early as it can be done with safety, the work should be commenced by the foregoing date, and pressed on as briskly as possible afterwards.

During the three weeks we have before us, there is much to be done; the beds have to be cleared of the spring-flowering plants, which, by the way, should not be done until the last moment, for it is better to delay the planting for a week or ten days than to break up the bed whilst it is at its best; and the plants have to be hardened and prepared for the beds—a task by no means light. The spring bedders are later than usual this year, and as the beds should not be disturbed until the plants are past their best, but few beds will be available for planting before quite the end of the month. In preparing the beds intended for plants which succeed best in rich soils, apply, if available, a dressing of thoroughly decayed manure, vegetable refuse, or leaf-mould. The soil should, in all cases, be stirred to a depth of twelve inches or so, but in no case must uncongenial soil be brought up from below. The autumn is the time for stirring the subsoil, if it is desired to increase the depth, as, during the winter, it will be pulverized thoroughly and be in capital condition for planting; but now it will become dry and hard, and the plants will not, in consequence, take kindly to it.

The preparation of the bedders is by far the most important matter now, and I will at once proceed to deal with it. The hardier kinds of bedders, such as the zonal geraniums, verbenas, lobelias, calecolarias, and the various succulents should have been placed in the frames quite a month ago, and be now sufficiently hardened to be placed out of doors to make way for the more tender bedders, comprising the coleus and alternantheras. If, in any case, those belonging to the first-mentioned section are still in a rather warm house, let them be removed at once to a pit, keep rather close for a fortnight, and then expose freely during the day by drawing the

lights entirely off. Supposing them to be at present in the frame, prepare, in a convenient place, and on a hard bottom, beds of ashes about four feet in width, the length to be regulated by the size of the plot, and the number, by the space required by the plants. Three inches of ashes will suffice to keep the worms out of the pots. Along the centre of the ash-bed, drive into the ground small uprights, standing about two feet above the level, and to these nail strips of wood, to form a continuous line down the bed. These are required for the purpose of laying mats, or other covering across, in case of frost.

Plants in small pots standing out of doors at this season, require watering twice a day, morning and evening, or the soil becomes dry, the plants suffer, and the growth is stunted. Even if the soil appears in a nice moist state in the morning, they should have their usual watering, for long before the evening the moisture will be dried up, and it is not good for them to be watered overhead in midday, excepting in dull weather.

The more tender bedders should be removed to the frames as fast as space can be found for them, and then gradually prepared for full exposure to the weather. For the first week or so, keep the frames rather close, and then commence to ventilate freely; and for a week or so previous to planting, draw the lights off during the day, and also leave them uncovered during the night if the weather is mild. They may, if more convenient, be removed from the frames and be protected with mats at nights, if needful.

Seedlings of all kinds, including half-hardy annuals, such as stocks and asters, still in the seed-pans, may be made short work of by pricking them out on a shallow bed of soil made upon a hard bottom. The common practice is to prick out on beds of considerable depth, and, in consequence, the plants produce long and fleshy roots; and when transplanted to their summer quarters, they suffer severely from the check received. The beds should not be more than two inches deep, and the bottom so hard that the roots cannot penetrate it. In a bed of this kind, they will produce an abundance of fibrous roots, which, in a comparatively short space of time, will form a mat, as it were, on the hard bottom, and with but little difficulty it will be possible to lift them with good balls of soil. Geraniums, verbenas, and bedding plants generally, do exceedingly well in beds prepared as here advised, and move without suffering materially.

None of the bedders should be allowed to produce flowers until after they are planted out, and the buds should be removed as fast as they make their appearance. Leaf-bedders that require stopping should have the points of the shoots nipped out about a fortnight before planting, and by the time they are put out they will be bristling with young growth, and, in a very short time, will commence to grow freely, and quickly cover the bed. It is of special importance to remove the flowers from lobelias, as, when planted out in bloom, they usually commence to produce seed, and are frequently a long time before they take hold of the soil and begin to grow freely.

GARDEN GAMES.



T does not fall within the province of the **FLORAL WORLD** to provide rules for the various games that are played in gardens, but some of the provisions needed for the enjoyment of those games are in our department, and should have some amount of attention. Considering the brevity and precariousness of the summer in these islands, we are bound to turn to the utmost account the few fine days that occur in the course of a year. Garden games are of the utmost value for the promotion of health and cheerfulness in connection with the average domestic life of our people, and are equally adapted for those who are engaged in studious occupations at home, and those who pass many hours in the midst of the bustle of city business. Every taste must be gratified of course, and it is not for us to dictate. But I must remark here, that it is always matter for regret when a garden is so planned and planted that there is no open space left for a game at bowls or croquet, or for a wild romp with the children, or even for a picturesque assemblage on the occasion of a lawn party, or a strawberry feast.

A short time since I was roaming over a garden, the owner of which was proud to have utilized every inch of space, so that a once open lawn was now dotted all over with pyramid pear trees, and he asked me if I did not think a few more trees might be squeezed in to advantage. I replied that they might indeed be squeezed in, and there was room enough for them to thrive; but the place was, in my opinion, overdone with trees already, and there was no playground for the pretty nephews and nieces I saw walking about solemnly, instead of enjoying a game as they ought to be able to do, in such a spacious garden. My friend took the hint, and before the winter passed lifted a lot of trees, and made a nice clear space, and when the pleasant croquet weather comes once more, I hope to see the young visitors "to advantage" there, and the sight will gratify me more than any number of pyramid pear trees.

The very first essential for the promotion of garden games is a good lawn, smooth as a mahogany table, with a close soft turf always in the best of keeping. Two lawns are better than one, and three are better than two; but as we must cut our coat according to our cloth, so every separate case must be determined on its merits. Perhaps I may speak of my own arrangements for garden games without incurring displeasure. I will premise that I have no children, and that I never have taken part in any garden games whatever. But I find immense pleasure in an occasional assemblage of young people, and I grow strawberries in excess of my own requirements, in order to add to the joyousness of our gatherings of juveniles. In the first place, there is a nice croquet ground, measuring thirty-five yards by twenty-five yards, and this affords ample room for two parties, when divided down the centre by means of a strip of wire netting eighteen inches wide, on which little

flags are fixed at intervals to prevent accidents, as the wire is scarcely visible. At the head of this lawn is a raised bank, or ramp running right across it, close under the window of the dining-room, and access is obtained to the dining-room by means of a staircase and gallery fixed outside the house. From this gallery we get a good view of the games. Close by rise some tall trees, between two of which hangs a good swing, and beneath the swing is a concrete pavement, which can be improved by spreading on it cocoa-nut matting; and a little further on, in the same direction, and facing the swing is a rustic pavilion, entirely open on the north side, affording room for a score of people to sit sheltered from sun and rain, yet quite in the open air. At the other end of the lawn is a small piece of water, obtained by damming a brook, and on this floats a punt of very humble construction. On gala days the punt is constantly occupied, and our young folks find great delight in being taken by its means a few yards into the comparative darkness of the overhanging trees, and most charming pictures we obtain by its aid. These arrangements are all of the humblest description, but they bring forth much joy, and tell us that the promotion of the more active of garden recreations might advantageously obtain more general attention. In a very small space we have room for croquet, tea-drinking, boating, swinging, conversation, and other amusements. The outside gallery and staircase are of immense value for the necessary traffic to and from the house, and serve as the rendezvous for the lookers-on and idlers of the party.

As remarked above, the spacious lawn, with not a tree or interruption of any kind, is the very first necessity for the promotion of garden games. My croquet lawn would accommodate one hundred pyramid pear trees, and thus profitably occupied would make me miserable. Its nice green carpet gives me a twofold pleasure—as grass turf it is beautiful in all seasons, as a play-ground it is the scene of joyous assemblages in the pleasant days of summer.

Now there is a mode of extending the idea that I commend to the consideration of all whom it may concern. It is to fashion a lawn so that it will be a play-ground in *winter* as well as in summer. The young people delight in skating; at all events, the boys do. Now, we will leave those who know how to skate to take care of themselves; though we cannot forget that sad accidents occur at times, when thin ice on deep water is loaded beyond its weight. We might even instance the lamentable death of Mr. Walter on the lake at Bearwood, as an argument for the kind of skating rink we have in mind at this moment. However, it is sufficient that a great point would be gained by instituting in the garden a skating school, for it would promote out-door exercise without danger in the most enjoyable of winter weather, and the owner would be well repaid for the trifling cost incurred in the formation of a rink, in the picturesque groups that would delight him when the young people assembled for their skating. We want a suitable supply of water and a suitable extent of turf. The ground must have a slight—very slight fall to the outlet, amounting to not more than one or two inches. The amount of the fall must in part be determined by the size of the rink, but

practically it must be very nearly indeed a dead level. Let it be made on a solid substratum of clay, and enclosed with a low ramp of one to two feet of slope. The rest of the work is for the engineers and plumbers to manage, and in any case it is extremely simple. A service of water will be brought in by pipes at one end, and at the other end will be fitted pipes to take the water away when done with. All the summer long this is a croquet ground or bowling green, a place for lawn billiards, and many more good games. Very early in the winter it becomes a skating rink, when the weathercock veers to some point of north you turn on the water and flood the ground, and next morning there is good skating ice for your money. You rejoice in your possession, and you score its face with your elegant evolutions, and when dusk stops your sport, you flood the ground again, and next morning you have a new surface, smooth as glass, and so safe that it will be quite a delight to fall on it. Now having found the thing perfect, send for the young people, and give them *carte blanche* to come whenever they see hoar frost on the grass in the morning, for a few degrees of frost will make ice of your two or three inches of water, and you can put a new face on it daily as long as the weather favours the undertaking. It is a rare event to have more than a week of good skating on the rivers and ponds, but on this garden rink you will have skating, if you choose to profit by your advantage, the greater part of the winter, and certainly at those times of clear brisk frost when every one blessed with health longs to be out of doors, in the enjoyment of merry activity.

You will have remarked above the advice that the ground must have a clay substratum. Where clay is the natural subsoil, there is simply nothing to be done but to lay down the turf upon it, with a suitable supply of fine stuff to finish the work neatly. But if the subsoil is such that there is a probability that water would not stay, it would be necessary to lay down clay, and puddle it as in making a pond. It follows that the cost would, in many instances, be too great to come into the category of reasonable expenditure; hence occupants of chalky and sandy soils may find discretion the better part of valour, and most properly refrain from indulging in the luxury of a skating rink. No one could establish such a thing more cheaply than myself, for I am located on clay of any depth, and we could flood the rink without any help from engineers or plumbers, having peculiar "water privileges" that need not be described. As a matter of course, no general advice will suit every particular circumstance and locality. It may, however, be proper to remark that a pavement of cement would answer perfectly, but would be less agreeable than turf in the summer.

The keeping of croquet lawns is a matter of the utmost importance. It is quite a common occurrence to find them worn out before the summer is half gone, and this invariably happens if there is frequent play on an old lawn in the immediate vicinity of large trees. Now the proper way to renew the turf of these lawns is very rarely resorted to, and, in many cases, the proper way may be objectionable, because it renders the lawn unsightly for a time. However, it is just such a matter as this that especially concerns us, and the

proper way is now to be described. Early in the autumn, as early indeed as possession of the turf can be obtained without imposing any check on garden games, the lawn should be covered with a mixture of fine earth and guano, and at once sown with a mixture of seeds of the finest lawn grasses. Any kind of earth will do if fine, and guano should be in the proportion of four or five pounds to the square rod. In the absence of guano, Amies's patent manure will answer admirably. If there is plenty of rotten hotbed manure to spare, it may be used instead of the mixture recommended above, but it will be more unsightly. Generally speaking, families leave home in the autumn, and that is the time to top-dress the croquet lawn. In many gardens, worn-out turf is dressed with grass seeds and fine earth in spring, and the result is that improvement is scarcely discernible. The time for such work is the autumn, and it should always be accompanied with manurial matters of some kind or other, for the *exhaustion of the soil* is quite as much the cause of the perishing of the grass as the traffic of little feet upon it.

But we want water on those lawns that are hard-worked all the summer. On Saturday night a heavy flood should be turned on, and by Monday the ground would be dry again for the play. A lawn made with ramps and water-pipe, as advised for a skating rink, might be flooded regularly all the summer, and by this kept as green as emerald, and as soft to the foot as a Persian carpet.

S. H.

NEW BEDDING LOBELIAS.

BY J. E. SAUNDERS, ESQ.



LOBELIAS of the *Speciosa* and *Pumila* types are of such immense value in the embellishment of the flower garden, that really meritorious novelties are well deserving all the attention it is possible to give them.

Within the past two or three years some really fine varieties have been introduced; and as I have grown them all, with but two exceptions, I will, with the permission of the Editor, point out the newer sorts, which are well deserving of the most extended cultivation. I do so now because the plants may be obtained at a cheap rate, and a few of each planted in good soil will, provided they have the flowers removed early in August, supply sufficient cuttings for raising a stock for next year.

Abundant opportunities will also be enjoyed for becoming acquainted with the style of growth and the colour of the flowers of each, and it will be possible to employ them with better effect than would be the case were they to be purchased just before they are required for the flower garden. The saving in the cost of the plants will of course be immense.

A most valuable addition to the *Speciosa* section has been made in *Blue Stone*, which has a neater habit, and flowers of a much deeper colour than *Speciosa*. The flowers are produced in such pro-

fusion as to form dense masses throughout the season, and are of a fine deep Oxford blue, and produce an exceedingly rich effect, quite superseding all the others of a similar character. *Blue King* is like the preceding, remarkable for its neatness and floriferous character, and the flowers are of a pleasing Cambridge blue, thus forming an excellent companion to it. These are unquestionably the two best blue Lobelias of their class in existence. *Mazarine Gem* differs from the foregoing, in being more vigorous in growth, and in its adaptability for large beds. The flowers are large and of rich marine blue, with white eye; and in masses or broad belts, the effect is exceedingly good. *Nivea* is a white variety, so thoroughly good that it quite supersedes Purity, White Perfection, and all the other white Lobelias.

In the *Pumila* section we have two most valuable acquisitions in *Pumila magnifica*, and *Duchess of Edinburgh*. The first is one of the finest lobelias ever raised; for as described in the "Garden Oracle" for the current year, it combines "the vigour, size of bloom, and the richness of colouring of the finer forms of *Speciosa* with the compact habit of *Pumila*." The plants, when they have sufficient room for their development, attain a height and diameter of six inches, and are quite solid with bloom of the richest indigo blue. The flowers, unlike those of the majority of lobelias, have no white eye. The second is an excellent white variety, which will be found most valuable for planting in beds where a dwarf white flowering plant will be appropriate. Both are valuable additions, and cannot be too strongly recommended; as they are now being sent out for the first time, they will cost half-a-crown or so per plant, and the others may be had for sixpence or so.

NOTES ON THE NEW ROSES OF 1875.

BY GEORGE GORDON.



KNOWING that a very numerous body of the readers of the *FLORAL WORLD* take a deep interest in Roses, I have prepared a few notes on the new varieties now being distributed for the first time, or which will shortly be offered for sale. The number of new roses is this season unusually large, there being about fifty French varieties, of which at present but little is known in this country, and ten English varieties, all of which have been exhibited at the leading exhibitions in the metropolis and elsewhere. That a very large proportion of the continental roses should be either worthless or second-rate, is simply a matter of course, for the raisers do not set up a very high standard in selecting seedlings, and the nurserymen on this side of the Channel mostly purchase all that are offered in the French lists, propagate freely, and offer them to their customers with the raiser's descriptions. The amateur rosarian, anxious to keep well abreast

of the times, selects a dozen or so, and it is quite a chance whether any of them are worth growing. In the fifty offered this season, it is not likely that more than half-a-dozen will be worth growing, and of these but few will supersede those we already have of a similar colour. Therefore those amateurs who have no ambition to obtain honours at the rose shows should be in no hurry to buy new kinds. I would indeed advise them to wait until they have had a thorough trial in English gardens, and have been reported on by competent critics. As regards the English raised roses, no such caution in purchasing is needed, for all the varieties now offered have been exhibited several times, and, with but one or two exceptions, have had certificates of the first class conferred upon them by the censors of the exhibitions at which they were staged, and, consequently, there can be no question as to their respective merits.

Mr. Charles Turner, of the Royal Nurseries, Slough, has of late years paid considerable attention to the raising of seedling roses, and as in the case of raising other florists' flowers he has been remarkably successful, and the four varieties which he will distribute next month are of the highest excellence. They are as follows:—

John Stuart Mill, H.P.—A magnificent variety; the flowers are globular, very large, and exceedingly full; colour, bright red crimson. It is most valuable for exhibition, and as it has a robust constitution, and blooms freely unto quite the end of the season, it is admirably adapted for garden decoration.

Miss Hassard, H.P.—A beautiful light rose, the flowers large, globular, full, and of a clear pinkish flesh; it is in the way of *La France*, but it surpasses that beautiful rose in vigour of growth, and in blooming freely during the autumn; it is also remarkable for its sweetness.

Rev. J. B. M. Camm, H. P.—An exceedingly fine rose, the flowers of large size, full, and perfectly globular; the colour deep rose-pink; a grand show flower, and excellent for the garden.

Royal Standard, H.P., a very distinct variety; the flowers rather above medium size, very full, and of the most perfect form; it is, perhaps, rather too full and regularly formed for the garden; but for competitive purposes it is exceptionally good. The colour soft, satiny rose; very effective, and in every way first-class.

Mr. W. Paul, of Waltham Cross, who is one of the foremost of English raisers of roses, offers two new varieties this season, and these are—

Queen of Waltham, H.P.—A beautiful variety; the flowers large, full, and of superb form; colour, bright cherry red, the outer petals changing to a deeper red; very bright and effective, and valuable for the exhibition table or the garden.

Star of Waltham, H.P.—A splendid rose of the highest quality; the flowers large, full, and of the most beautiful form; colour bright carmine crimson. One of the finest roses of the year, whether for garden decoration or exhibition; it is also well adapted for pot culture, for the plants in pots exhibited at the first spring show of the Royal Botanic Society were in fine condition, both as regards foliage and flowers.

Mr. Cranston, of Hereford, a well-known grower, exhibited several remarkably fine and new varieties last season, which are especially deserving of attention. These are—

Climbing Jules Margottin.—A free-growing variety of our old friend *Jules Margottin*, well adapted for training over trellises and up pillars. The flowers are precisely the same in colour and form as the variety from which it has originated.

Crimson Bedder, H.P.—A brightly-coloured and continuously-flowering variety, well adapted for bedding purposes. The flowers are of a brilliant crimson colour, and produced freely throughout the summer and the early part of the autumn. The growth is short-jointed, and the foliage ample and glossy.

Sir Garnet Wolseley, H.P.—A grand exhibition rose; the flowers of large size, globular, and of superb form; colour brilliant carmine crimson; one of the finest of the season.

In selecting the Continental novelties, we are bound to depend very much upon the names of the raisers, for, whilst several send us the veriest rubbish, some, let it be said to their honour, are very careful in distributing none but really good varieties, and therefore some reliance may be placed upon their description. After a careful scrutiny of the lists, and taking into consideration the merits of the varieties the several raisers have sent us, I have selected the under-mentioned twelve as most likely to give satisfaction, viz. :—

Aline Sisley.—Tea-scented, flowers of medium size, varying from deep rose-purple to dark red, a quite new colour in the tea-scented section.

Antoine Mouton, H.P.—A desirable variety; the flowers very large, resembling in size and build *Paul Neron*, but fuller; colour bright rose, reverse of petals, delicate pink, a fine garden rose.

Bernard Verlot, H.P.—A showy rose, in the way of *Lord Raglan*, flowers globular, larger, and said to be full.

Colonel de Sansal, H.P.—A promising variety; flowers of good size, form, and substance; colour, bright carmine, red shading to shaded velvety crimson.

Comtesse de Serenye, H.P.—A beautiful rose; flowers very large, full, and of good form; colour, delicate rose pink, as exhibited at the first spring show of the Royal Botanic Society, it appeared to be full of promise.

Hippolyte Jumain, H.P.—A fine rose, the flowers extra large, very full, and of a rich rosy carmine colour. This was exhibited at South Kensington in March last, when it had a first-class certificate conferred upon it; the foliage is good, and it is said to be very free in growth.

La Rosier, H.P.—Distinct in colour; the flowers are said to be extra large, and of fine form; colour amaranth, shaded blackish crimson; it is described as very vigorous and free.

Madame Lefebvre de St. Ouen, H.P.—Flowers bright cerise red; large, full, and freely produced; very sweet.

Madlle. Nona d'Adorjan, H.P.—Flowers above medium size, and full; colour, pale rose; reverse of petals, silvery.

Marie Cordier, H.P.—Flowers large, of good shape, and full, deep carmine, shaded fiery red; very vigorous.

Marie Guillot.—Tea-scented.—A beautiful variety, the flowers large, full, and very double, white, faintly tinted yellow. I had an opportunity of seeing this the other day, and was struck with it as being a most useful variety, and valuable for its distinctness.

Shirley Hibberd.—Tea-scented.—A very distinct variety; the flowers of medium size, beautifully tipped, and of a bright nankeen colour. This was awarded a first class certificate at the Lyons Congress, and is described as a most valuable addition to its class.

The new roses are sent out at this season of the year nicely established in small pots. If it is intended to plant them out, a rather sheltered situation should be selected for the bed. Where the time can be spared for giving them the requisite attention, it is better to keep them in pots during the summer, and to plant in the autumn. In any case they should be kept in a cold frame, with abundant ventilation for a fortnight after they are received. Those planted out should have a little nice friable and rather rich soil placed about the roots to enable them to make a good start, and be well supplied with water during the summer. Those to be kept in pots will require shifting into five or six-inch pots, according to their strength, and a compost consisting of three parts turfy loam, and one part of well-decayed hotbed manure used. They may be kept rather close for ten days or so after they are potted, and afterwards be placed in an open position out of doors. Provided they have proper attention, they will make a good growth during the summer, and bloom abundantly next year.

WHAT TO DO WITH SPRING BEDDERS.

BY WILLIAM GARDINER.



N this communication it is not my intention to touch upon the great question of spring bedding, for the subject has already received ample attention in past issues of the *FLORAL WORLD*, but simply to offer a few hints on the management of the plants during the summer season. I am induced to do this because of the losses some amateurs suffer through putting the plants, when removed from the flower-beds, in positions altogether unsuitable to them; some plants which thrive in a moist and shady situation are planted in hot, sunny positions, and others which enjoy the sunshine are planted in the shade. There are others again which produce the best effect when raised from seed annually, and require to be placed in a situation favourable to the quick maturation of the seed.

The spring bedders may for the present purpose be divided into classes: the first to comprise those which require shade during the summer, and the other those which enjoy a certain amount of sun-

shine. In the first we have the Primroses, Polyanthuses, Violas, Daisies, Pansies, and several other things; and in the second, Arabis, Aubrietias, Wallflowers, Sedums, Cerastium, and other subjects which are known to bear the fullest exposure possible without injury.

For those requiring shade, a border on the north side of a hedge or wall is necessary, and if there is no such border available, a shady border may be readily extemporized. A hedge is much better than a wall, for there is at all times a free current of air passing through it, and this, it is hardly necessary to say, is most beneficial to the plants; especially is it good for Violas and Pansies, which when on the north side of a wall make a soft, long-jointed growth. The formation of a shady border without the aid of either hedge or wall is a very simple matter; select a convenient situation in one of the quarters in the kitchen garden, and mark out a bed about eight feet wide, running east and west, and at the proper moment sow on the south side Scarlet Runners and put tall stakes to them. In due time they will form an admirable shade, and afford efficient protection to the plants. A strip of ground running north and south may be converted into a suitable situation for these things by having rows of Runners sown across them, at a distance of eight feet apart. To encourage the plants to root freely, the border should, if the soil is at all close and heavy, have a liberal dressing of some light stuff, such as road drift, or the sweepings of the potting shed, and after this has been applied prick the surface over, and make it rather fine.

In removing the plants from the beds, lift them carefully with a fork, to preserve the roots from injury, but it is not necessary to keep much soil about them, and to prevent the latter being dried over much they should be replanted as quickly as possible. The Violas and Pansies should have all the straggling shoots removed; for they are of no use, and the old leaves soon become infested with mildew, which in time spreads over the whole plant. Besides, by cutting them back the production of a crop of young shoots is encouraged, and a plentiful supply of cuttings is obtained. Plants raised from cuttings are much better than those obtained by division, but when dividing them is resorted to, the best plants will be obtained from those well furnished with new growth. The Daisies, Primroses, and Polyanthuses simply require the old flower stalks removed, and to be divided into two or three pieces, if in large tufts, for the greater convenience of planting. They should then be planted rather close together in small trenches, from twelve to fifteen inches apart. In filling in the trenches tread the soil firmly with the foot, and as fast as a few rows are planted, give a good soaking of water to settle it about them.

If the planting is followed by a period of dry weather, water them liberally once or twice a-week, and take advantage of the evening for the work. Beyond a few applications of water, keeping them free from weeds, will constitute the chief attention they require until the autumn.

The subjects requiring a sunny situation must be planted in rows in a similar manner to the others, but the position must be open. The Aubrietias are of a straggling habit, and require to be

cut rather hard back to keep them compact. The pieces taken from the plants may be laid in very thickly in trenches, and if supplied with water the greater portion of the cuttings will take root, and next spring bloom freely. The Arabis should be trimmed in much the same manner, and the cuttings laid in trenches with the leaves just above the surface, as they strike freely and soon form good tufts. On the other hand, if they are not cut back they soon become so ungainly as to be most difficult to plant neatly. The *Cerastium* should have a few of the longest shoots removed, and in a month or so after it has been planted, cut it nearly level with the ground, and in a short time it will break freely and form dense tufts by the autumn. Wallflowers must be pruned moderately, and planted about eight inches apart in lines, quite fifteen inches from each other, and by the autumn they may be expected to form nice bushes. The soil should be rather poor, as it promotes the production of firm, short-jointed wood, which is better able to withstand the adverse influences of a severe winter, than soft shoots full of sap. It is not a good practice to keep for bedding purposes Wallflowers that are of too great age, but when from two to three years old they produce a finer and more regular display of flowers, than those raised from seed sown the previous summer.

Silenes, Forget-me-nots, and Wallflowers from which it is desired to save seed, should be lifted with as little disturbance as possible, and be planted in an open situation. When the seed is ripe and gathered pull them up, and remove to the rubbish heap.

ORCHIDS FOR EVERYBODY.

BY W. GEDNEY,

Gardener to J. Day, Esq., Tottenham.



IN previous communications I have directed the attention of the readers of the *FLORAL WORLD* to a few special classes of orchidaceous plants, and I now intend to make a selection of a few species that should be grown in all gardens in which the conveniences exist for their cultivation. In this selection I shall include none but those which are free-flowering, attractive, not difficult of cultivation, and, moreover, are comparatively cheap. The selection may be improved somewhat by including a few of the more expensive kinds; but as those for whom this is written will not be disposed to expend ten or twenty guineas in the purchase of a single plant, I shall not say anything about them; indeed, I should not advise anyone to purchase the expensive kinds until they are tolerably well acquainted with the principles of orchid culture, some of the cheapest are, however, the most beautiful, and I have no hesitation in saying that in the immense collection now under my charge, comprising hundreds

of kinds and thousands of plants, there is hardly one that can surpass in attractiveness the beautiful *Dendrobium nobile*, which may now be purchased for a few shillings.

I will now give the names of a few of those which every amateur with a little stove should grow, and if he can afford room for them I should advise him to grow two or three plants of each. These are—

Calanthe Veitchi.—A strong-growing hybrid, producing bright rose-pink flowers on tall spikes; blooms in winter, and is exceedingly beautiful.

C. vestita.—A distinct free-growing species, producing its flowers in winter on rather long spikes; there are two varieties, both have white flowers, and those of *C. v. luteo-oculata* have a yellow blotch in the centre, and those of *C. v. rubro-oculata* a crimson blotch. The calanthes should be grown in a mixture of turfy loam, leaf-mould, well decayed manure, and silver sand, and be potted in precisely the same manner as ordinary stove plants.

Cattleya mossiæ.—A free summer flowering species. The flowers large and of a beautiful rose colour; the labellum painted with crimson.

Cattleya Trianae.—This resembles the preceding in general character, and produces its flowers in winter. The latter are of a delicate blush colour, the labellum painted with yellow, orange, and purple. The Cattleyas may be grown in fibrous peat broken into large lumps, and potted so that the base of the plant is a few inches above the rim of the pot; the latter should be half filled with crocks.

Cypripedium barbatum purpureum.—A free-growing and profuse blooming Lady's Slipper, usually at its best early in the summer.

C. insigne.—An old but very attractive species, flowering in winter. The Cypripediums may be grown in either peat or sphagnum moss, and be potted in the manner advised for the Cattleyas.

Dendrobium chrysanthum.—A beautiful species, with long, pendulous pseudo-bulbs, and well adapted for baskets. The flowers, which are produced at various seasons of the year, are of a bright, golden yellow, with rich red blotch on the labellum.

D. densiflorum.—A robust species, attaining a height of about twelve inches, and producing from April to June magnificent racemes of deep yellow flowers, very distinct and good.

D. nobile.—One of the finest of the whole genus, and as remarkable for easy culture as it is for its great beauty. It may be had in bloom from the early part of March until May, by retarding a few of the plants, and this may be readily done by placing them in a lower temperature, and keeping them rather dry at the roots; but where there are only two or three plants, the best course is to allow them to bloom naturally. The plants may be grown in a mixture of peat and sphagnum moss, or in either of these separately. They require well-drained pots, and to be raised just above the level of the rim.

Epidendrum vitellinum.—A dwarf and rather small grower, producing neat spikes of brilliant orange scarlet flowers; some of the plants bloom in summer and others in the winter. One of the very

best of the genus. It should be potted in much the same way as the Cattleyas.

Lælia purpurata.—A strong growing species, similar in character to the Cattleyas, and attains a height of about eighteen inches or two feet; the flowers are also similar in shape to those of the Cattleya, and are of a pure white or pale rose, with purple crimson labellum. It usually blooms in summer, and requires precisely the same management as the members of the genus to which it bears a close resemblance.

Lycaste Skinneri.—A beautiful species of neat growth; the flowers are very large and waxy in texture, and mostly delicate blush; the labellum rose, marked with crimson. It flowers freely during the winter, and is one of the most attractive orchids grown. It grows freely in a mixture of peat and moss, and requires liberal supplies of water when growing freely, and moderately moist at other times.

Odontoglossum Alexandræ.—A lovely orchid, producing rather long spikes of delicate rose-coloured flowers of rather large size. The sepals and petals are mostly white; the labellum more or less spotted with reddish-brown; some of the varieties have rose-tinted flowers. It blooms early in the spring.

O. citrosimum roseum.—A lovely species, with rose-tinted flowers, which are produced in long drooping spikes.

O. gloriosum.—A beautiful species, the flowers yellowish, spotted with purple; large, highly fragrant, and produced in long branched spikes.

O. grande.—A compact-growing orchid, with large flowers, barred with brown on a yellow ground. It blooms in autumn, and is very beautiful.

O. Inslayi.—This is similar in growth to the preceding, and bears large flowers, marked with brown on a yellow and orange ground.

O. Pescatorei.—A fine species, producing in April and May fine spikes of delicately-tinted white flowers, the labellum beautifully marked with rose and yellow.

O. triumphans.—A strong-growing species, with large yellow flowers, beautifully spotted with cinnamon-brown, very fine and distinct. All the Odontoglossums do well in pots in a mixture of peat and sphagnum moss, and in a temperature ranging from 45° to 55°. They require liberal supplies of water when growing freely, and to be kept moderately moist at other times.

Oncidium flexuosum.—A showy species of free growth. The flowers are of a bright yellow colour, and very attractive.

O. leucochilum.—A robust-growing species, with branched spikes several feet in length. The flowers are greenish-yellow, and rather small; but as they are produced in such wonderful profusion, they are very effective.

O. sphacelatum.—A free-flowering species, with yellow flowers barred with dark brown.

The *Oncidiums* here mentioned should be potted in much the same manner as the *Dendrobiums*. They are all of free growth, and require rather liberal supplies of water during the season of growth,

and to be kept moderately dry when at rest during the winter season.

Sophronites grandiflora.—A dwarf-growing orchid, with flowers of the most brilliant crimson-scarlet. It should be grown on a block of wood suspended from the roof.

Trichopilia suavis.—A beautiful species; the flowers are bluish, richly spotted with deep rose. They are produced in clusters at the base of the pseudo-bulb, and the plants, to show them off to advantage, should be potted about three inches above the level of the pot.

All the sorts here mentioned may be grown in an ordinary stove, without any special difficulty; and as they bloom at various seasons of the year, and the flowers remain so long in perfection, there will not be many days in the year in which one or other of them will not be in bloom.

NEW INVENTIONS.



SELF-ACTING SEED DRILL.—This implement is remarkable for the simplicity of its construction, and will be found of considerable service to adepts in seed sowing, as well as to those amateurs who have but little practice in work of this kind. By its use the seed is deposited in the drill with the greatest degree of regularity, and a saving ranging from twenty-five to fifty per cent. is effected. The seed is deposited in the hopper, and by pushing the drill along by the side of a line laid down as a guide, the travelling



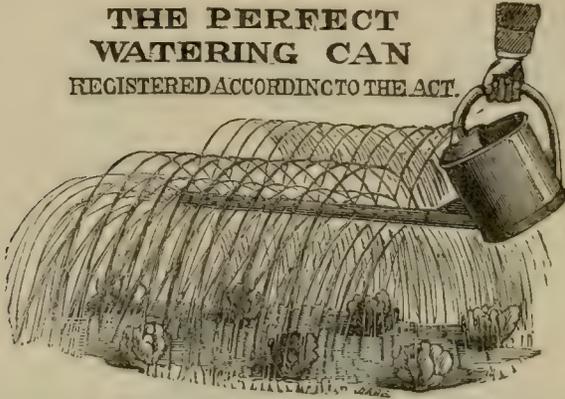
wheel gives motion to a slide at the bottom of the hopper, and the seed at once falls through a tube behind the coulter and drops into the soil. A lady or boy may work it with ease, and drill the seeds of the kitchen garden crops with the same facility as an experienced hand. It can be altered, by simply turning a screw, to sow all kinds of seeds. It is manufactured by Mr. Josiah Le Butt, Bury St. Edmunds, Suffolk.

THE SPENCER POULTRY AND PHEASANT FEEDER.—In this invention the corn, whilst always visible to the poultry, is most effectually protected from the wet and vermin. The corn is placed in troughs, and these are provided with framed glass covers, which immediately the poultry step on to a platform running along the side of the trough, the cover lifts up and the birds are able to reach the

corn. The covers remain up so long as a bird stands on the platform, but immediately the last bird steps off the platform the cover shuts down. The "Feeders" have a trough on both sides, at each of which half a dozen birds may feed at one time, and hold about a bushel and a half each, and the troughs are self-filling. It is manufactured by Mr. Josiah Le Butt.

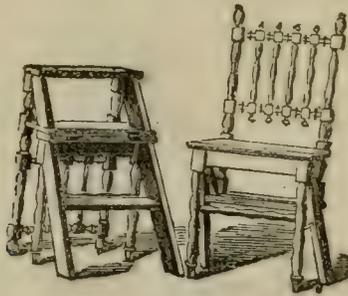
THE REGISTERED PERFECT WATERING-CAN has been designed by Mr. Le Butt to facilitate the work of watering seed beds and plants growing in open borders. As the watering can be done expeditiously and without lifting the can to an extra

**THE PERFECT
WATERING CAN**
REGISTERED ACCORDING TO THE ACT.



height, a given space can be watered with much less fatigue than with the ordinary watering-pot. Moreover, owing to the shape of the rose, the small holes do not readily become stopped if the water should not be perfectly clean.

THE ABERCORN CHAIR is a most useful invention for conservatories and libraries. It consists of a handsome chair possessing considerable strength, which, by the most simple movement possible, can be converted into a pair of steps. It



will be found of considerable value wherever a pair of steps are occasionally required, as, for example, in cutting flowers from tall plants, and for taking down books from shelves otherwise beyond the reach. This also is one of Mr. Le Butt's inventions.

COX'S REGISTERING THERMOMETERS, WITH PATENT SCALES.—These thermometers differ from those in general use in having the scales enclosed in a flat glass tube, which is hermetically sealed, and most effectually protects the index from atmospheric influences. The scales are made of ivory, and the divisions most distinctly engraved thereon, so that they are as remarkable for clearness as they are for durability. As is well known to our readers, the scales of thermometers of the usual construction become illegible after exposure to the weather, or to the heat and moisture of a plant-stove or forcing-house for a comparatively brief period,

and the instrument is rendered worthless. But in the case of those with an ivory scale enclosed in a glass tube, they remain perfectly legible for an indefinite period, even if exposed to the most unfavourable influences. As the cost is only slightly in excess of the common kinds, we feel assured they will at once commend themselves to the notice of our readers. They are manufactured by Mr. F. J. Cox, 26, Ludgate Hill, London.

NEW BUDDING KNIFE.—Messrs. Dick Radclyffe and Co., 129, High Holborn, have recently introduced a budding knife, which will doubtless be found useful to amateurs who have to bud large numbers of roses. The back part of the blade,



towards the top, is prepared for lifting up the bark, instead of having to use the handle, as in the ordinary knife, and by this arrangement the work can be effected in the most expeditious manner possible. The knife is shorter, and can be carried in the pocket more conveniently than the budding knives with long handles.

BOYLE'S SELF-ACTING ORCHID AND PLANT CASE.—This case has been designed for the cultivation of the smaller growing orchids, stove plants, and ferns in indoor apartments, and so far appears likely to do its work well. Its chief peculiarity consists in its being provided with a regulator, which most effectually keeps the heat steady at the desired point, consequently, however much the pressure of gas or of hot water may alter, the temperature of the case will, the manufacturers state, undergo no material change. This improvement, we imagine, will be found of considerable service to those who have not much time to attend to plant cases, as it prevents the possibility of the plants being injured by a temperature in excess of their requirements. The manufacturers are Messrs. Dick Radclyffe and Co.

GALVANIZED WROUGHT IRON WALL FITTINGS FOR WIRING WALLS, as manufactured by Messrs. Barnard, Bishops, and Barnards, of the Norfolk Iron Works, Norwich, are of the highest value for wiring garden walls, and also for the walls of dwelling houses, against which it is intended to train fruit trees, or flowering plants of a scandent habit. The fittings are comparatively inexpensive, and a large extent of wall surface can be fitted with wires for a trifling outlay. The walls of many of the largest gardens in the country are now wired, because of the saving of time effected in training the trees, the neater appearance, and the avoidance of the injury done to the walls by the use of nails and shreds. They are of especial value for the walls of dwelling houses, for when the latter are once fitted up, the climbers planted against them will take hold of the wires, and require very little attention indeed to keep them in order. Any handy man can fit up the walls, and as prices and all particulars can be readily obtained on application to the firm, there will be no difficulty in forming an estimate for covering a given space.

NEW PATENT GREENHOUSES.—We have recently received from Messrs. Boulton and Paul, horticultural builders, Norwich, designs of several new greenhouses that have been arranged more especially to meet the requirements of amateur cultivators. Not the least interesting of the designs are those of the tenant's fixtures, which are built on wood foundations, and may at the expiration of the tenancy be removed by the tenant. These are the best forms of tenant's fixtures that have yet come under our notice, and as we, from personal observation in various parts of the country, know the work of this firm to be thoroughly substantial, we have no hesitation in recommending these designs to the notice of our readers. The prices of staging, as well as of the houses, are given, and as they are delivered carriage free, the precise cost can be at once determined. The tenant's fixtures require no brickwork. The Patent Plant Preservers manufactured by this firm have been considerably improved of late, and are now made large enough to form pits with walks and staging inside. The large sizes are of special value for wintering bedding plants, the cultivation of cucumbers and melons, and the preparation of soft-wooded and other plants for the conservatory.

G. G.

THE GARDEN GUIDE FOR MAY.

Sweetly breathing Vernal Air,
 That with kind warmth dost repair
 Winter's ruins, from whose breast
 All the gums and spice of th' east
 Borrow their perfumes; whose eye
 Gilds the morn, and clears the sky;
 Whose dishevell'd tresses shed
 Pearls upon the violet bed;
 On whose brow, with calm smiles drest,
 The halcyon sits, and builds her nest;
 Beauty, youth, and endless spring,
 Dwell upon thy rosy wing!

Thou, if stormy Boreas throws
 Down whole forests when he blows,
 With a pregnant flowery birth
 Canst refresh the teeming earth.
 If he nip the early bud,
 If he blast what's fair or good,
 If he scatter our choice flowers,
 If he shake our hall or bowers,
 If his rude breath threaten us,
 Thou canst stroke great Æolus,
 And from him the grave obtain
 To bind him in an iron chain.

THOMAS CAREW.



CHIMENES, GLOXINIAS, AND GESNERAS will rejoice in a moist atmosphere with a generous temperature. They must have some shade. Train out betimes, and give air to keep the growth robust.

ASTERS, STOCKS, AND BALSAMS for decorations to be shifted frequently as required; give them plenty of air and water, or they will be eaten up with fly. The hot weather will throw balsams into bloom if they are at all pot-bound or dry at the root; and those not yet sufficiently grown, and which are showing bloom, should have the buds nipped out as fast as they show, and be shifted in rich compost to the next size, to encourage growth.

AZALEAS which bloom naturally and are now making their new growth, to have abundance of water, and to be kept in a close pit, shaded; and water to be frequently sprinkled about, to cause a moist atmosphere.

BALSAMS AND COCKSCOMBS for exhibition to have a good shift in rich light soil, and a little extra heat to promote new roots. They must have abundance of water to prevent green-fly, which are sure to attack them if they are starved.

BEDDING-OUT.—Dull weather is the best for this work, and if it can be done just before rain, much labour of watering will be saved. But when the ground is absolutely wet, bedding cannot be done properly, and had best be deferred a few days. When the plants are counted off and sorted for their places, let them go moderately dry; they will then turn out better than if the balls are wet. Plants that have not quite filled their pots with roots, turn out in complete balls, remove the crocks, and close in without breaking the balls; but those that are absolutely pot-bound must have the ball slightly loosened, to enable the roots to push out easily into the free soil.

BROCCOLI AND CAULIFLOWER to be sown for succession, choosing both early and late sorts, the first for use in the coming autumn, and the others for supply in the spring.

CAMELLIAS that have finished growing for the season to have less water and more air. They must not go absolutely dry, because that would punish them severely. It is too soon to put them out yet, so give them airy positions in the house.

CHRYSANTHEMUMS lately struck to be potted off, and to be returned to the pot for a week or ten days, and after that to be plunged in beds of coal-ashes or cocoa-nut waste.

CINERARIAS that are thoroughly good to have a little sandy compost placed around the stool, into which the suckers will throw roots, so that when taken off

they may be put into thumbs singly at once, which is a gain of time and strength to the plant.

EPACRISES that have flowered must now be repotted, the soil to be sandy fibry peat. The strong-growing kinds must have a large shift. Use plenty of drainage carefully packed, and place the plants in a turf-pit for the summer, and shade during midday.

FRUIT RIPENING under glass must have a comparatively dry air and plenty of ventilation, or they will lack colour and flavour.

HARDY HERBACEOUS PLANTS that have bloomed should now be propagated. Take cuttings of Double Wallflowers, Alyssum, Arabis, and Iberis sempervirens, the latter is perhaps the best of all the white-flowering plants for early bloom out of doors.

MELONS in fruit to have less water as soon as the fruit begins to ripen. Let them have the full sun, no matter how it may roast them; shut up early with a good heat, and sprinkle the leaves at the same time.

ORCHARD HOUSE TREES are now swelling their fruit, and need the help of liquid manure. Use it rather weak at first, for fear of causing stone fruit to fall. After two or three doses, alternating with plain waterings, increase its strength. Stone fruits not yet beginning to swell should be kept without it for the present.

ORCHIDS.—Most of the Indian species will now require an abundance of water and a moist atmosphere. It is their heyday, and if they do not thrive now they never will. Stanhopeas, Dendrobiums, *Erides*, *Saccolabiums*, and *Vandas* are now especially thirsty, and their wants must be supplied by dipping or watering.

PANSIES.—This is a good time to strike cuttings for a good autumn bloom, and to secure pot plants of choice kinds to keep over winter for spring cuttings. The side-shoots and very young tops of the leaders root quickest, and make the best plants.

PEACHES ripening to have a liberal supply of air during the day and a little during the night. Keep the atmosphere pretty dry, but the border must be moist while the trees are still growing. As soon as the trees show that they have made sufficient growth, assist them to ripen the wood by letting the border get rather dry, and the more the sun roasts the wood the better.

PELARGONIUMS now require much attention. See that stakes and ties are in order to keep the plants in the required form as they come into bloom. Judicious stopping, plenty of light and air, and a sound compost, are points of great importance towards growing plants that will not need scaffolding. Give shade as the plants show flower, and keep the whole stock as cool and airy as possible, avoiding damp and cold draughts.

PETUNIAS left over from the bedding, and double varieties struck in spring, will now want shifting, to make specimen plants for autumn bloom in the conservatory. The same with all other soft-wooded summer-flowering plants. A little timely care will now put value into every scrap that has a leaf and a root.

PHLOXES.—Strong stools in the border will need thinning, to reduce the number of shoots to a few manageable leaders, which are to be staked neatly and separately.

ROCKERIES may be brightened up now by turning out in suitable places such plants as Saxifrages, Phlox subulata, Dianthus fragrans, Antirrhinums, Columbines, *Festuca glauca*, *Elymus glauca*, Crimson Thrift, *Campanula garganica*, and *rotundifolia*, *Potentillas*, etc., etc.

STOVE.—This is the best time to propagate a supply of Begonias, Euphorbias, *Justicias*, *Poinsettias*, and other quick-growing soft-wooded plants for display during winter. Specimen plants to be assisted with liquid manure, and the shoots to be stopped of all shrubby and branching kinds. *Justicias* especially should be freely grown now, to get the wood well ripened for a good bloom at the turn of the year. Sow for succession beans, marrow peas, lettuce, cabbage, cauliflowers, Walcheren broccoli, Stone turnip, and turnip radishes.

THIN every kind of crop where there is anything like crowding. Spinach, beet, turnip, parsley, etc., etc., will be the worse for remaining thick.

VEGETABLE MARROWS and **RIDGE CUCUMBERS** to be planted out under hand-glasses on moderately warm beds.

VINES to be again thinned in cool houses, and the operation accomplished without handling the berries. Crops ripening to be kept rather dry, and with a temperature not less than 90° with sun heat, and 65° by night.

WALL-TREES to be nailed in, and the shoots thinned as they grow, that there

may be no crowding of unnecessary wood. Shoots that run away with undue vigour to be cut clean out to the base, unless in positions where much needed, in which case shorten them back.

WINTER GREENS to be planted out in showery weather at every opportunity. If only one row can be got out at a time, it is a benefit to the seed-bed in giving the seedlings more room, and a benefit to the plants in preventing their getting drawn.

HORTICULTURAL AFFAIRS.



ROYAL HORTICULTURAL SOCIETY.—At the meetings of the Floral and Fruit Committees, held during the past month, several meritorious novelties have been exhibited. Foremost amongst these are *Croton Disraeli*, a distinct form, with three lobed leaves marked with yellow on a green ground; *Drosera spathulata*, an interesting sundew; *Hyacinth Etna*, a beautiful variety, with semi-double flowers of a bright rose-crimson colour; and *Croton appendiculatum*, one of the most remarkable of the forms yet introduced. The leaves are narrow, and four or five inches from the base of the leaf. The midrib is continued in a thread like form for several inches, and at the end of this is a leafy appendage; and as the latter has the appearance of being suspended by a green thread, the effect is very remarkable. These were all exhibited by Messrs. J. Veitch and Sons, of Chelsea. Mr. B. S. Williams, of the Victoria and Paradise Nurseries, Upper Holloway, presented to public notice *Geonoma gracilis* and *Martinezia erosa*, two remarkably fine palms. The first-mentioned has rather small, gracefully pinnate leaves, and is perhaps the most elegant palm in cultivation. It is certainly one of the very best for the dinner table. Mr. W. Bull, of the King's Road, Chelsea, exhibited *Crinum brachynema*, a bold-habited plant, with pure white fragrant flowers, requiring a stove temperature, and *Dracæna candida* and *D. insignis*, two welcome additions to this somewhat large family of fine foliage plants, because of their adaptability for dinner tables and indoor decorations generally.

THE OPENING OF ALEXANDRA PALACE AND PARK will be the great event of May Day, 1875. Our readers are familiar with its history, and will be abundantly informed of the proceedings on the opening day, which, we trust, will be auspicious in every sense, both for the sake of the enterprise and the satisfaction of the public mind, for the undertaking engages the sympathies and hopes of all classes. It is needful here to record that horticulture, and the rest of the rural arts, will be liberally vindicated and represented, while the recreations that are associated therewith are to be plentifully provided for. The new Palace covers seven and a-half acres, on the summit of a hill commanding the most magnificent scenery; the more magnificent, of course, because of the elevation of the spectator, and the distinct definition of scenes belonging to seven or eight counties. The park of 220 acres is supplemented by a charming sylvan nook of 17 acres, called "The Grove," wherein are some of the finest oaks, chesnuts, copper beeches, elms, and hollies to be found in all England. A distinctive feature of the Palace is that it contains an enclosed garden, to be appropriated to sub-tropical plants of noble aspect, this garden being connected with a tropical conservatory, now finely filled with palms, tree ferns, and cycads. Mr. A. McKenzie, the landscape gardener to the Company, has constructed a first-class nursery near the west end of the building, for supplying the park and gardens with bedding-plants, and the Palace with nobler forms of vegetation, and a series of exhibitions is arranged for, the first of which is to be a rose show held on the 24th and 25th of June. Before the next issue of the FLORAL WORLD appears, we trust the greater world will ring with praises of the Alexandra Palace, and that its success as a commercial undertaking may be satisfactorily assured.

HARDY PRIMROSES were exhibited by Mr. Richard Dean, at the meeting of the Floral Committee of the Royal Horticultural Society on the 7th ult., in splendid condition. The plants of which the collection consisted were grown in pots, which they well filled, and were densely furnished with flowers. The effect produced by them in conjunction with Polyanthuses, Forget-me-nots, and other hardy spring flowers, was exceedingly beautiful, and they were, as they well deserved to be, much

admired. Mr. Dean has for some years past devoted much attention to the improvement of Primroses and Polyanthuses, and he has succeeded in raising some wonderfully fine varieties. The collection at his seed grounds at Bedfont is perhaps the finest in the country. These hardy Primroses and Polyanthuses are well adapted for frame culture in pots, as well as for the embellishment of the flower garden.

THE PELARGONIUM TRIAL AT CHISWICK will be carried out as usual this year, and it is requested that raisers of the new varieties, as well as introducers of foreign novelties, will send to Mr. Barron, at Chiswick, the superintendent, plants of such new varieties as they may be able to spare for trial purposes.

THE PELARGONIUM SOCIETY will hold its annual exhibition at South Kensington on July 21. A suggestion was made for holding the exhibition at Chiswick, but there were certain difficulties in the way, and the Committee did not consider it desirable to act upon it. The prizes offered by Messrs. J. Veitch and Sons for fruit, which in the aggregate amount to upwards of £100, will be submitted for competition on the same date as the Pelargonium Show.

THE INTERNATIONAL EXHIBITION OF POTATOES projected by Mr. Peter McKinlay, Woodbine House, Beckenham, and Mr. Shirley Hibberd, is making satisfactory progress. The schedule comprises a large number of classes, and amongst the prizes offered are three silver cups of the value of £5 5s. each, presented by Messrs. J. Carter and Co., Messrs. Sutton and Sons, and Messrs. Hooper and Co. The President is Mr. Alderman and Sheriff Ellis, and the Vice-President J. Abbiss, Esq., J.P., and late Alderman of the City of London. The exhibition will be held on the 29th and 30th of September, in the Alexandra Palace, Muswell Hill, the directors of which, through Sir Edward Lee, have contributed £30 to the prize fund. The promoters are in need of money to carry out the scheme, and subscriptions are solicited.

DESSELT PEARS.—M. Gillekins, in the *Moniteur Horticole Belge*, recommends the following six Pears for walls with a southern and eastern aspect, for late supplies:—1, Doyenné d'Hiver, ripe from January—June; 2, Beurré d'Hardenpoint, ripe in December—January (this, with the preceding, are specially recommended for market purposes); 3, Passe Colmar, December—January; 4, Beurré Rance, January and February; 5, Josephine de Malines, February—March; 6, Passe Crassane, January. The same writer recommends the following six for those who wish to have Pears from July to May:—1, Beurré Giffard; 2, Williams' Bon Chrétien; 3, Louise Bonne d'Avranches; 4, Beurré Durondeau (M. Gillekins states that the flowers of this variety withstand spring frosts better than any other); 5, Beurré Diel; 6, Bergamotte Esperen. The last-mentioned six ripen in the order in which they are here placed.

SAXIFRAGA STRACHEYI, a beautiful plant, has bloomed exceedingly well this season on the rockwork at Kew. The flowers on opening are pure white, but rapidly change to a pale pink colour. It is a near relative of *S. ligulata*, and was raised from seeds sent by General Strachey, F.R.S., in 1851. It is a native of the Western Himalaya and Thibet.

THE METEOROLOGICAL SOCIETY has issued a series of instructions for the observation of the first appearance in spring of wild flowers, birds, insects, etc. This list has been drawn up by a conference of delegates from the Royal Agricultural, Botanic, Dublin, Horticultural, Marlborough College, Natural History and Meteorological Societies. Some years since the British Association published a similar list. Blank forms for recording these phenological phenomena can be had from the secretary of the Meteorological Society, 30, Great George Street, S.W.

THE GARSTON VINEYARD, near Liverpool, has been purchased by the Cowan Patents Company, Limited, who intend to use the property for the purpose of exhibiting their system of lime-kiln heating in full working order, while at the same time endeavouring to maintain the well-earned fame of the Vineyard, and, if possible, to increase its reputation. The price paid was over £10,000.

NEWMAN'S BOTANICAL PAPER has obtained amongst working botanists the celebrity it deserves, and many of our readers may be advantageously advised to adopt it for herbarium purposes, as it combines absorptiveness of texture with great strength. The size generally used measures 24 in. by 20 in., which affords a choice of four useful sizes by folding or cutting the sheets. The time of year having arrived when botanical excursions have more than ordinary interest and entertain-

ment, the selection of a suitable paper for the herbarium becomes a matter of considerable importance.

A NEW PELARGONIUM is announced in the French gardening journals. It is believed to be a cross between *P. hederacfolium* and *P. zonale*, and it freely bears seed. Our friend, Mr. Jean Sisley, describes it as resembling *P. hederacfolium* in its prostrate habit of growth, with leaves like those of *P. zonale*. The flowers are bright red, and produced in good trusses. It was found in a garden at Nice, in a bed planted with several varieties of the zonal section, and a lilac-white variety of *P. hederacfolium*. Mr. Sisley considers it a great acquisition on account of its fertility—a quality not possessed in a remarkable degree by *Wilsii*, *Wilsii rosea*, *Emperor*, and *Dolly Varden*. He thinks it may probably give birth to a distinct new strain, in the hands of a clever hybridiser. It will be sent out this spring by Messrs. Huber, of Nice.

PRIMULA PUCHERRIMA, introduced by Messrs. Backhouse and Son, York, is a lovely species, taller than *P. denticulata*, and has deep lavender-purple flowers with yellow centres, and borne in large trusses. Messrs. Backhouse say that it is "quite distinct from the plant usually known as *P. purpurea*, though, judging by the colour, it has far more right to the name. A grand plant both for rockwork and well-drained borders, in stiff loamy soil, blooming in spring, and perfectly hardy which the true *P. denticulata* is not with us." It is a charming plant for the Alpine house and cold frame, as it may be cultivated most successfully in pots.

A LARGE SPECIMEN OF AUCUBA JAPONICA, standing in a sheltered corner in the Gardens of the Royal Botanic Society, Regent's Park, annually presents a most attractive appearance in the early part of the year. It is about fifty feet in circumference and eight feet high, and the fertilization of its flowers is secured by placing a small male plant in a pot in the centre of the bush. This season it was exceedingly well furnished with its large brilliantly-coloured berries, and demonstrated in the most forcible manner possible that a crop of berries may be reared with but little difficulty. We noticed last autumn, in the nurseries of Mr. C. Turner, at Slough, that the Aucubas in the open quarters were bearing berries freely, notwithstanding the fact that the male plants were a considerable distance from them.

THE LONDON CLUB, intended as a common centre for horticulturists, has secured a club-house in a suitable locality, within three minutes' walk of Charing Cross. The club offers its subscribers the conveniences of a West End club at very moderate rates, there being handsome reading, dining, and drawing-rooms, as well as billiard-rooms and smoking-rooms; bedrooms for the accommodation of country members are also provided. The subscription at present is two guineas per annum, with an entrance fee of two guineas.

THE YELLOW PELARGONIUM, *P. oblongatum*, has lately flowered in Mr. Cannell's nursery at Woolwich. The petals are long and narrow, and of unequal size, the colour pale primrose-yellow, the top petals very lightly marked with purple lines.

THE REAL MAIDENHAIR FERN, *Adiantum capillus-veneris*, is reported by Mr. H. C. Hart to be abundant in rocky ravines and fissures in the Arran Isles, Galway Bay.

A GREAT ROSE SHOW is announced to be held at the Alexandra Palace, Muswell Hill, on Thursday and Friday, June 24 and 25.

THE COLOGNE INTERNATIONAL HORTICULTURAL EXHIBITION which opens on the 25th of August, and closes on the 26th of September, comprises Horticultural productions and appliances of every description. Flowers and fruits will be exhibited in two series: the first series from August 25 to September 10, and the second series from the 11th till the 26th of the last-mentioned month. It is under the most distinguished patronage, and a very large number of most liberal prizes are offered for competition.

TO CORRESPONDENTS.

J. C. J.—The Edinburgh firms referred to as having raised bedding violas of great merit, were Messrs. Dickson and Son, 32, South Hanover Street, and Mr. Downie, 17, South Frederick Street.

S. T. J.—You might grow ivies and ferns on the objectionable space of ground in the greenhouse, if you would first make a low rockery with burrs or stones and sandy peat soil. If you plant them on the level, the drip will probably kill them or prevent healthy growth; but if raised one, two, or three feet (the higher the better) they will improve the appearance of the house immensely.

PRIMULAS.—*K. V.*—The plants have excessively long flower stems through their being crowded up with other things, or owing to their being placed too far from the glass. If the plants are grown in a pit near the glass in the early part of the season, and when coming into bloom placed on a stage or shelf, from one to two feet from the glass, the flower stems will be strong, and the trusses of bloom just above the foliage. It is good practice to sow the seed early, to afford time for the plants to be grown to their proper size without being pushed on in a temperature in excess of their requirements.

PALMS.—*W. F. Frost.*—The tips of the leaflets will assume a yellowish appearance when the plants are kept too dry at the roots, and also when the soil has become sour from an excess of moisture. The leaves of species requiring stove temperature change colour in precisely the same manner when they are kept for some time in a cool house. We can only advise you to supply them carefully with water; they require rather liberal supplies, but overmuch moisture will cause the soil to turn sour, and when this occurs the roots perish. Palms do not require a very moist atmosphere, unless they are in a very high temperature. If you were to give us the names of the kinds grown, we could tell you whether they are suitable for the greenhouse, or whether they require a higher temperature. If, on examination, it is found that the soil is in a sour state, and the roots are in an unhealthy condition, turn the plants out of the pots, remove as much of the soil as possible without disturbing the roots too much, then cut away the decayed roots, and repot in clean pots with a mixture of turfy loam and peat in about equal parts, and a good sprinkling of silver sand. The roots must be disturbed as little as possible, for palms suffer severely when the roots are unnecessarily interfered with.

BRITISH FERNS.—*T. P. P.*—The following seven, in addition to those you have already in your collection, can be strongly recommended for exhibition purposes—namely, *Athyrium filix-fœmina corymbiferum*, a moderately robust variety; the fronds from eighteen to twenty inches high, and surmounted with a dense crest several inches in width. *Lastrea filix mas grandiceps*, a strong grower, with beautifully crested fronds. *Polystichum angulare grandiceps*, a tall strong-growing variety, the fronds beautifully crested; very distinct and handsome. *P. a. proliferum Wollastoni*, a robust and exceedingly elegant form; the fronds range from two to three feet in length, and from six to eight inches in breadth, according to the size and vigour of the specimens. The *Scolopendrium vulgare digitatum* and *S. v. ramo-marginatum* are both exceedingly good. *Asplenium marinum* is very distinct and remarkably beautiful, and, when well grown, makes a good specimen, and is useful in affording a greater variety in a collection.

POLYANTHUSES IN POTS.—*B. B.*—The laced polyanthuses which are now in pots should be placed on a north border when they go out of bloom, and receive moderate supplies of water during the summer season. In the autumn they can be divided and be put in pots, or what is decidedly better for them, be planted in a bed of good loamy soil in a cold frame. The polyanthuses lifted from the flower-beds should be planted on a shady border, and be put rather close together in lines, nine or twelve inches apart. In the autumn, when the flower-beds have been cleared of their summer occupants, they can be lifted and divided.

HARDENING OFF BEDDING PLANTS.—*A Young Gardener.*—The hardiest of the bedder,—the geraniums, calceolarias, petunias, and verbenas, for example, that are now nicely established, and properly hardened, may be removed from the frames to a sheltered position out of doors, and be protected with mats at night. Temporary frames, or cradles as they are technically termed, made about four feet in width, with planks nine or twelve inches wider, set on edge, and held together by cross pieces, are

most valuable for bedding plants at this stage. They cost very little to make, as the planks forming the sides can be fixed in their places by means of stout pegs driven into the ground, and the commonest of boards may be cut up to make cross pieces. The plants can be protected from frosts with mats laid over the cradles, with a few pieces of wood laid across to prevent them breaking or otherwise injuring them. The tender bedders, such as *Alternantheras* and *Coleus*, should be removed from the stove to the frames as soon as convenient after the middle of the month. They must be kept rather close at first, and if the frames are heated, a little artificial warmth will be most beneficial to them during periods of cold weather. As it is not safe to plant them out until quite the end of May, they should be kept rather warm until the first week or so in that month, to keep them in a progressive state, but after the first week they must be gradually hardened, and for a fortnight or so before they are planted, the lights must be drawn off altogether during the day. Bedders raised from seed should be potted off separately, or pricked off into boxes with as little delay as possible and be put in the frames.

CHEMICAL MANURES, &c.—*Amateur*.—The article in the *Garden Oracle* for 1872, mentions the chemicals used in M. Ville's experiments. To give quantities or proportions is impossible, because soils differ so greatly in requirements. Good soils in good condition are, generally speaking, in no way benefited by artificial manures, but poor soils may be greatly aided, especially by the use of potash salts and phosphates. You may reckon half a ton per acre as the fullest dose of any chemical mixture allowable. Of such a manure as Aimes's patent, 5 cwt. per acre is plenty. You may remove weeds by means of salt and other such plant-killing materials, but you will run a risk of killing the box edging also. In the best kept gardens they have not yet got beyond hand weeding. Nitrate of soda is especially suitable for plants that are grown for their leaves, but it is a good stimulant also for onions. If in solution, put one pound to ten gallons of water; if used dry spread it at the rate of a pound and a half to the square rod. The chemical manures we have found most useful on chalky and sandy soils are muriate of potash and superphosphate, 4 cwt. of each to the acre for potatoes.

T. T. P.—Your selection comprises a very desirable lot. We should recommend you to add *Athyrium f. f. multifidum*, *Lastrea f. m. polydactyla*. But we are not prepared to strike out of your list two to make room for them.

BEDDING DAHLIAS.—*Amateur*.—The dwarf-growing dahlias are very attractive in large beds and in broad borders, as they produce a profusion of flowers, and are quite distinct in character. We should advise you to purchase the plants early in the month, and to place them in a frame for a fortnight or so before planting out. They should be kept rather close during the first three or four days after they are received, but afterwards the lights should be removed altogether during the day. As they will be in small pots, they will require a supply of water once a day, for the moisture soon dries out of the soil. In planting them in beds, the various colours may be mixed; but in the case of borders due care should be taken to distribute the colours throughout the entire length. It is a very good plan to arrange the dark and light flowers alternately, and when the border is very broad, to form good masses by putting three plants of each variety together. We would suggest that the arrangement of the colours in the borders be in the following order: scarlet, yellow, maroon, lilac, crimson, white, purple, and lilac, and then repeat as many times as may be necessary in precisely the same order. The following are the most desirable of the border varieties:—Scarlet, *Charles Backhouse*, *Disraeli*, *Madge Wildfire*, and *Firefly*; yellow, *Leah*, *Pluton*, *Flambeau*; maroon, *John Sladden* and *Gladiator*; lilac, *Lilac Queen*, *Juno*, and *Mrs. Bennett*; crimson, *James Service*, *Emperor*, *Lord Palmerston*, *Captain Ingram*, *Floribunda*, and *Crimson Gem*; white or pale-coloured, *Mrs. Brunton*, *Charlotte Darling*, *Marchioness of Bath*, *Maid of Essex*, *Snowball*, and *White Bedder*. The two latter are pure white. Dahlias should be planted in well manured soil, if practicable, and away from the shade of trees. They do very well intermixed with shrubs, if the latter are not too close together; but they become drawn and do not bloom satisfactorily when in borders overshadowed by trees. The bouquet varieties, which have Lilliputian flowers, produce a good effect, and are useful for furnishing cut flowers during the autumn season. The best of these are—*Dr. Webb* and *Fireball*, scarlet; *Guiding Star* and *Little Dear*, white; *Golden Canary* and *Glow-worm*, yellow; *Little Nigger* and *Little Bobby*, crimson; *Nemesis* and *Perfection* of

Lilliputs, maroon; and *Pure Love* and *Tom Tit*, lilac. The price of dahlias during May ranges from 3s. to 4s. 6d. per dozen.

KIDNEY BEANS FOR EXHIBITION.—*S. S.*—The finest dwarf French bean for exhibition purposes is *Cutbush's Giant Scarlet*, which produces an abundance of pods ranging from eight to ten inches in length, which are thick and fleshy, and remarkably handsome. It is one of the best, also, for main crops, because of its productiveness and fine quality. To make sure of obtaining it true, we would advise you to obtain the seed direct from the introducers, Messrs. W. Cutbush and Son, Highgate, N., or in sealed pint or quart packets, as sent out by the firm through the seedsman who usually supplies you. The best scarlet runner for exhibition is *Carter's Champion*, which bears pods nearly twice the size of the ordinary scarlet runner whilst quite young and tender. It is very productive, and of the finest quality. This should be procured direct from Messrs. J. Carter and Co., of High Holborn, for, to keep it true, a rigid system of selection has to be carried out. Both kinds are of strong growth, and require rather more space than others of the respective classes.

STRAWBERRY BEDS.—*G. H. R.*—The strawberry plants which have been fruited in pots in the orchard-house will, if planted out at once, soon become established, and form fine crowns by the autumn; next year they will produce heavy crops of fruit. They should have two or three thorough waterings during the first fortnight or so of their being planted, to assist them to form new roots, and take possession of the soil as quickly as possible.

AZALEAS.—*H. F. G.*—The azaleas which were purchased in the spring, and have just flowered, should be shifted without delay into pots one size larger. Let the pots be clean and well drained; use a compost of fibrous peat, broken up rather small, and sharp silver sand. If readily procurable, add one part of mellow turfy loam to every two parts of peat. The soil must be pressed very firm, and proper care taken to make it of the same degree of firmness all round the ball, so that the water shall not soak away more readily on one side than the other. After they are potted, place them in a frame, keep rather close for the first fortnight or three weeks, and syringe them lightly overhead once a day in dull weather, and twice a day when the weather is warm and dry. Place some rather thin material over the glass in sunny weather. At the expiration of three weeks commence to ventilate freely, and as they will have become established at the end of a second period of three weeks, remove them in about six weeks or two months, from the time of their being repotted, to a rather shady situation out of doors.

SHAKSPEARE'S WALLFLOWERS.—*R. A.*—The plants began to flower in February, but the weather was against them. Throughout the past month they have been solid with bloom. We shall soon have seed enough to satisfy all inquirers.

TRADE CATALOGUES.

JAMES BACKHOUSE AND SONS, YORK.—*Catalogue of Alpine Plants and Hardy Perennials.*

WILLIAM BARRON AND SON, ELVASTON NURSERIES, BORROWASH, NEAR DERBY.—*Descriptive Catalogue of Roses, and Select List of Coniferae and Ornamental Plants, etc.*

B. K. BLISS AND SONS, 44, BARCLAY STREET, NEW YORK.—*Catalogue of Potatoes.*

ROBERT BUIST, 922, MARKET STREET, PHILADELPHIA.—*Supplement to Catalogue of New and Rare Plants.*

WILLIAM BULL, KING'S ROAD, CHELSEA, LONDON, S.W.—*Retail List of Flower, Vegetable and Agricultural Seeds, and New Plants.*

JAMES CARTER AND CO., HIGH HOLBORN, LONDON.—*Illustrated Catalogue of Prize Farm Seeds and Potatoes.*

J. COOMBS, ENFIELD, MIDDLESEX.—*Catalogue of Cuttings of Geraniums, etc.*

MESSRS. F. AND A. DICKSON AND SONS, CHESTER.—*Catalogue of New and Select Farm Seeds.*

EWING AND CO., THE ROYAL NORFOLK NURSERIES, NORWICH.—*List of New Roses for 1875, New Patent Greenhouses, Lawn Mowers, etc.*

FREBEL AND CO., HORTICULTURISTS, NEUMUNSTER, ZURICH. — *Price List of Seeds, Bedding Plants, and New Plants.*

E. G. HENDERSON AND SON, WELLINGTON ROAD, ST. JOHN'S WOOD, LONDON.—*Illustrated Catalogue of Flower, Vegetable, and Agricultural Seeds.*

LOUIS VAN HOUTTE, ROYAL NURSERIES, GHEENT, BELGIUM. — *Catalogue of Gesneraceous Plants, Caladiums, Cannas, and other Bulbous and Tuberous-rooted Plants.*

V. LEMOINE, RUE DE L'ETANG, 67, A NANCY. — *Catalogue of New Plants, etc., for 1875.*

J. LINDEN, 52, RUE DU CHAUME, GAND, BELGIUM.—*Catalogue of Stove and Greenhouse Plants, etc.*

THOMAS MEEHAN, GERMANTOWN NURSERIES, PHILADELPHIA. — *Wholesale Price List for 1875.*

WILLIAM PAUL, WALTHAM CROSS, LONDON, N. — *Catalogue of New Roses, Geraniums, Phloxes, Dahlias, Hollyhocks, etc.*

SMITH AND SIMMONS, 36, HOWARD STREET, ST. ENOCH SQUARE, GLASGOW.—*Cultural Guide and Seed Catalogue.*

STUART AND MEIN, WOOD MARKET, KEILSO.—*General Catalogue of Seeds.*

MESSRS. SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.—*Farmers' Year Book and Graziers' Manual.*

THIBAUT AND KETELEER, RUE HOUDAN, 87, A SCEAUX, SEINE. — *General Catalogue of Plants, etc.*

VILMORIN, ANDRIEUX AND CO., QUAI DE LA MEGISSERIE, PARIS.—*Catalogue of Trees, Shrubs, Conifers, etc.*

T. S. WARE, HALE FARM NURSERIES, TOTTENHAM, LONDON.—*Spring Catalogue of Hybrids, etc.*

ALEGATIÈRE, CHEMIN DE ST. PRIEST, A MONPLAISIR, LYONS. — *Catalogue of Florists' Flowers.*

EXHIBITIONS TO BE HELD IN MAY.

1.—ALEXANDRA PALACE, MUSWELL HILL.—*Opening Festival.*

1.—CRYSTAL PALACE.—*Exhibition of Spring Flowers.*

1 TO 24.—ROYAL BOTANIC SOCIETY. — *Messrs. Jackman's Exhibition of Clematis.*

3 TO 10.—ROYAL BOTANIC SOCIETY.—*Mr. W. Paul's Exhibition of Pot Roses and Pictorial Trees.*

5 TO 7.—CRYSTAL PALACE.—*Mule and Donkey Show.*

5.—ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—*Annual Spring Show.*

7 & 8.—ROYAL BOTANIC GARDENS, GLASGOW.—*Horticultural Exhibition.*

12.—BATH.—*First Floral Fete.*

12.—ROYAL HORTICULTURAL SOCIETY.—*Exhibition of Pot Roses and Meeting of the Fruit, Floral, and Scientific Committees.*

14 TO 21.—MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—*Annual National Horticultural Exhibition at Old Trafford.*

17 & 18.—HALIFAX HORTICULTURAL SOCIETY.—*Annual Exhibition.*

20.—ROYAL HORTICULTURAL SOCIETY OF IRELAND.—*Great May Exhibition.*

20.—COLCHESTER AND EAST ESSEX HORTICULTURAL SOCIETY.—*First Summer Exhibition.*

26.—ROYAL HORTICULTURAL SOCIETY.—*Meeting of Fruit, Floral, and Scientific Committees.*

26.—ROYAL BOTANIC SOCIETY.—*First Summer Exhibition.*

29.—CRYSTAL PALACE.—*Summer Flower Show.*

31.—COVENTRY AND WARWICKSHIRE HORTICULTURAL SOCIETY. — *Annual Exhibition.*

31, TO JUNE 26.—MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—*Exhibition of Rhododendrons at Old Trafford.*



DIPLADENIA BREARLEYANA.

DIPLADENIAS.

(With Coloured Illustration of *Dipladenia Brearleyana*.)

BY GEORGE GORDON.



DIPLADENIAS have long occupied a high position

amongst stove plants grown for their flowers, and now that so many valuable additions have been made to the somewhat circumscribed list of species and varieties, they will probably obtain increased attention from cultivators generally. The newest and one of the very best of recent introductions is *Dipladenia Brearleyana*, of which a coloured illustration accompanies these remarks. It is not only one of the best of the Dipladenias, but it is one of the finest of stove plants, whether we regard its adaptability for training up the pillars and along the rafters of the plant stove, or for cultivation as a specimen plant. For the latter purpose, it is probably without an equal, and those who cultivate plants for competitive purposes should lose no time in making its acquaintance. It is a garden hybrid, distributed for the first time last autumn, by Mr. William Bull, the well known new and rare plant merchant, of the King's Road, Chelsea. It is of free growth, and is furnished with opposite oblong acute leaves of a deep rich green, which form an admirable background to the immense clusters of richly-coloured flowers. The flowers are of a larger size than those of existing species, and of an exceedingly rich shade of crimson, which increases in intensity as the flowers acquire age. They are produced in clusters of large size; and a specimen two or three feet in height, and as much in diameter, and furnished with twenty or thirty of these clusters, has a wonderfully striking appearance. A well-flowered plant trained up a pillar in the stove is also exceedingly beautiful.

The other first-class Dipladenias now in cultivation are:—*D. amæna*, a variety of free growth, the flowers abundantly produced, and of deep rose colour, with orange throat. *D. Boliviense*, a more slender grower than the other kinds, producing a profusion of small pure white flowers. *D. insignis*, the flowers large and of good substance, the lobes rose-carmine, the throat deeper in colour, and the outside of the tube white. *D. Williamsi*, a magnificent hybrid with large flowers of a delicate rose-pink, the throat bright rose. It is very free flowering, and in every way a decided acquisition.

Dipladenias require a stove temperature throughout the year, and in the early part of the year an atmosphere well charged with humidity is most conducive to their well-being. They should, as a rule, be potted just before they commence to make new growth in the spring, in a compost prepared by incorporating together two parts each of fibrous loam and peat, and one part of silver sand and nodules of charcoal. The sand and charcoal to be in equal proportions. The pots must be well drained, and, as a rule, about double the crocks required for the general stock of stove plants

should be put in the pots. To enable them to start into a vigorous growth, place upon a bed of fermenting materials, or over the hot-water pipes, if practicable, as a rather brisk bottom-heat is found of immense assistance to them in the early part of the year. The size of the pots must be determined by the relative size of the plants, and, excepting when they are very small, a shift once a year will suffice to maintain them in the most healthy condition. The flowers appear to the greatest advantage when the growth is trained to a balloon-shaped trellis, fixed firmly in the pot. To afford ample opportunities for the proper development of the foliage, and to enable the young wood to acquire sufficient strength to produce a profusion of well-developed flowers, the shoots should be trained to strings up the rafters of the stove, each shoot to have a separate string. When the flower-buds can be distinctly seen, take them down and neatly arrange them on the trellis. As the shoots will have twined round the strings, no attempt must be made to separate the two. During the summer, moderate supplies of water will suffice, and in winter very little will be required. The atmospheric humidity needful, previous to their coming into bloom, may be provided by sprinkling the stages and paths two or three times a day. After they go out of bloom, and the season's growth is completed, place them in a sunny position, and, if possible, remove to a house in which the temperature is rather lower.

The season's growth will require to be pruned back moderately in the course of the winter.

RAISING SEEDLING CINERARIAS.

BY J. JAMES,

Head Gardener, Redlees, Isleworth, W.



THE notices which have appeared in the horticultural papers of the display of cinerarias we have had at Redlees during the past season, and of the seedling cinerarias I have exhibited at the metropolitan shows, have brought me many letters asking for information in reference to the cultivation of these flowers from seed. From these inquiries, it appears that there are numerous cultivators who, as yet, are not so well acquainted with the principal details as they should be, and a concise description of my system of culture will possibly be useful to many readers of the *FLORAL WORLD*.

As an exhibitor of cinerarias for something like twenty years, I have necessarily paid special attention to these flowers, and have annually grown large numbers of plants raised from offsets and from seeds. Propagation by means of offsets for the purpose of increasing the stock of seedlings of superior quality, and of varieties obtained from nurseries under name, is attended with some little trouble and a few difficulties, and cannot be recommended as suit-

able for amateurs. Raising seedlings, on the other hand, is very simple, and, it appears to me, that it is well nigh impossible to fail. Much has been written in books and periodicals condemnatory of seedlings, because, as it is asserted, a very large proportion come tall in growth, and bear ill-shaped and badly-coloured flowers. To a certain extent this assertion is correct; for if the seed is saved from flowers of an inferior character, the seedlings will be inferior also; but by saving seed from first-class varieties only, the percentage of inferior flowers will be very small, so small as not to be worth a moment's consideration. Our collection this year comprised some hundreds of seedlings, and there was hardly a variety inferior to the best of the named sorts, and there were many vastly superior, and they were so regular in growth that even the most experienced cultivator might have fallen into the error of supposing that the stock had been increased by means of offsets. The flowers were large, mostly of fine quality, and all exceedingly rich in colour. I mention this, merely to show that, with good seed, the flowers will be of excellent quality; and if I have said more than ought to be said upon this point, our editor, who has seen my seedlings, will, doubtless, set me right. I may add, that I save my own seed, and that some years of careful selecting has been necessary to bring my strain to its present state of perfection.

Cinerarias are of the most value for decorative purposes in March and April; and to produce strong plants for blooming in these months, sow in the first or second week in June. Prepare one or more pans by putting an inch layer of small crocks in the bottom, and then filling, nearly level with the rim, with light sandy soil; sow thinly, and cover lightly with fine sandy soil. The surface should then be sprinkled lightly with water, and the seed-pans placed in a cold pit or frame in a shady position. We find it advantageous to shut the seed-pans up in a small propagating frame inside the pit, as by this means the soil holds the moisture longer, and frequent waterings are, therefore, rendered unnecessary. This is a decided gain, because of the risk of some portion of the seed perishing when the pans are placed where the moisture dries out of the soil quickly. The latter must be maintained in a moderately moist condition, and as soon as the young plants make their appearance, remove the cover from the inside frame; and as they increase in strength, admit air to the outer frame by tilting the lights at the back. As soon as the seedlings have a rough leaf as large as a shilling, prepare other pans similar to those in which the seed is sown, and the compost used for filling these should contain a rather larger proportion of leaf-mould. When the surface has been made rather firm, carefully lift the seedlings with a pointed stick, and dibble them in the pans rather more than an inch apart, sprinkle them lightly, and shut them up in the frames again for a week or ten days, by which time they will be established in the new soil. They will require rather liberal supplies of water, and when they begin to grow and produce new leaves, the frame must be ventilated more freely. They will soon fill these pans, and when the plants touch each other put them separately in the pots known as "small sixties." Again place in the frame, and also keep

close for a week or so, and when it is found that the roots are running freely round the sides of the pot increase the supply of water, and immediately there are sufficient roots to hold the ball of soil firmly together, shift into pots five inches in diameter. It may be proper to add that the pots, whilst in the frame, should be stood upon boards or coal ashes, to prevent the worms entering the pots; and as the cinerarias delight in a cool and rather moist atmosphere during the summer, a canful of water may be poured over the floor occasionally with advantage to them. If the pit is in a sunny position, the plants must be shaded in bright weather.

After the shift into five-inch pots, the season will have so far advanced as to render a cool, airy house, or a roomy pit, more desirable quarters for the stock. During the winter, sufficient artificial heat must be employed to keep out the frost and to dry up superfluous moisture, and no more; and during a sharp frost, the lights should be covered with mats, so that it may not be necessary to use an excess of fire-heat for keeping out the frost. About the last week of January, or the first week in February, shift them into one size larger, and then no further repotting will be required, as it is intended they should bloom in these pots. Cinerarias from seed require no stopping or training, and to keep them dwarf and compact, they must be placed near the glass from the time they are potted off separately until they are coming into bloom and are removed to the conservatory. They should receive nothing but clear soft water, as the use of stimulants frequently does more harm than good. The foliage sometimes becomes infested with greenfly, but this pest may be readily destroyed by fumigating them with tobacco. The compost we have found the most suitable after they are potted off separately, is prepared with mellow loam four parts, leaf-mould one part, and a small proportion each of manure rotted to a powder, and sharp silver sand.

To prevent private letters being addressed to me, which my duties render it impossible for me to answer, I would say that seed raised from first-class strains may be had from the principal seedsmen, provided the best seed is ordered.

MR. WILLIAM PAUL'S EXHIBITION OF POT ROSES, which is now considered one of the important events of the London season, was this year held in the gardens of the Royal Botanic Society in the Regent's Park. The plants were arranged in the large Rhododendron tent on the west side of the gardens, and although the display, as in past years, was rich in specimens of immense size, fresh and superbly flowered, did not appear equal to similar shows held at the Crystal Palace and South Kensington. The tent was too large to allow of the specimens being staged close enough together to produce a decisive effect and leave a thoroughly favourable impression on the mind. The general effect was also materially impaired by the pots being placed on the bare soil instead of on grass banks. There was one advantage in having a large tent, and that consisted in plenty of space being afforded for the whole of the specimens to be stood out singly, so that they could be readily seen on all sides. The exhibition comprised in addition to the roses a large number of fine pyramidal specimen Ivies, numerous hardy deciduous trees with variegated and richly-coloured foliage, a few choice evergreens, and examples of some of the best gold, silver, and bronze zonal pelargoniums.

THE NETTLE AND THE HEMP.

A STUDY FOR THE GARDEN BOWER.



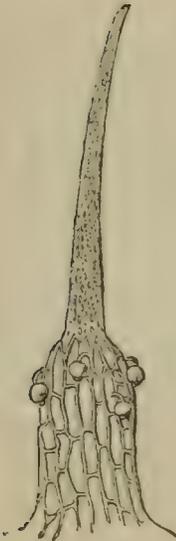
THE nettle and the hemp are two of the best known plants in all the world; yet while everybody to a certainty knows the first, there are people (not of the ignorant class) who do not know the second. And when I come to think of it, there are people (also not of the ignorant class) who do not know the nettle thoroughly. It is a delightfully hot day, and I am in no humour for preparing a careful essay, but I have just had a walk round the garden, and the nettles and the hemsps have suggested to me that something might be said about them that perhaps would, at this season of the year, interest the readers of the FLORAL WORLD. May I for once write hastily, with strict regard to facts, and the least possible regard to system? I will venture, and hope, even in the rough, to be useful.

As to nettles, you have seen of late two beautiful plants in flower, the white dead nettle, *Lamium album*, and the red dead nettle, *Lamium purpureum*. As the summer advances other dead nettles will come into flower, one of the most noticeable being the yellow weasel-snout, *Galeobdolon luteum*. Now these are *dead* nettles, and do not sting. In other words, they are not nettles at all, but belong to the Labiate order, in which we find nearly all our savoury herbs and home-grown spices, such as horehound, sage, mint, thyme, marjoram, ground ivy, basil, etc. But there may be a dead nettle that stings, for the labourers in the harvest field are sometimes afflicted with a severe inflammation of the hand or finger, which they attribute to the common hemp nettle, or "dog nettle," *Galeopsis tetrahit*, which has tubular bristles arising from a swollen base or vesicle. But it is by no means clearly established that this plant has the power of stinging.

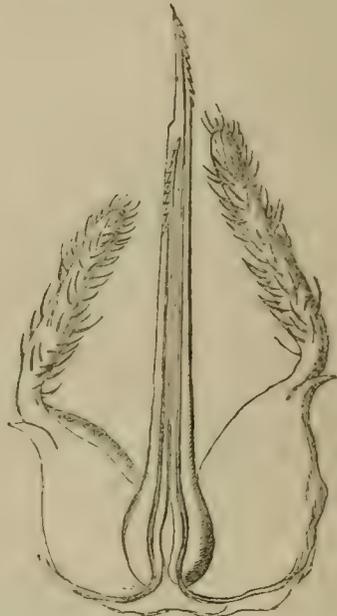
The real nettle, *Urtica*, is a representative plant, for in the nettle tribe URTICÆ we find the mulberry, the bread-fruit, the upas, the cow-tree, the hemp, the hop, and the fig. The common nettle, *Urtica dioica*, is in some places a pest, as on the borders of grass-fields and in water-cress beds. But though feared and ruthlessly rooted out by diligent farmers and gardeners, it might be made much of in the arts. The young tops make a good spring vegetable when cooked as spinach, but of much more importance is the tough fibre of its stems, which may be manufactured into the strongest of ropes. The ancient Egyptians so employed it, and moreover they wove its finest fibres into linen of the best quality, so that this savage plant helped in its day to clothe the voluptuous limbs of Cleopatra. In Siberia and Piedmont nettle fibre is largely used; and in this country it has been to some extent, but not to a great extent, employed in the manufacture of paper. The nutritive properties of the nettle are not less important. The rough green herb may be crushed to serve as fodder for horses, cattle, and sheep, and when mixed with wheat straw, constitutes as good a food, barring hard

corn, that can be given to horses. The seeds are of immense value as food for horses and poultry, but should be mixed with other corn. Finally, the juice of the plant will coagulate milk, without giving it any unpleasant flavour. In Sweden the plant is cultivated for cattle feed, and in Scotland it is forced as a table vegetable.

The sting of the nettle is a first-rate microscopic object. It may be easily removed from the stem by means of a sharp knife, and when submitted to examination will be found to be constructed as represented in the accompanying figure. It consists of a sharp pointed tube filled with a pellucid fluid, which is secreted by a little



STING OF COMMON NETTLE.



STING OF WASP.

gland at the base, and there held in reserve for use. It will be well to compare it with the sting of a wasp, which is easily obtained. This is formed of a long taper process, furnished at the base with cells and glands, and on each side arise jointed arms, the end joints being covered with hairs. The end of the sting is flattened and pointed, and one side is serrated, so that it combines the features of the dagger and the saw, and being hollow and connected with glands that secrete an irritant poison, it is, in its way, a more formidable weapon of war than man has ever designed, though his best faculties of brain and hand have been, time out of mind, directed to the production of engines of offence.

The nettle supplies food to several insects, but notably to the beautiful nettle butterfly, *Vanessa urtica*, the ugly caterpillars of which may now be found in great abundance on the plant. In a delightful article on the subject published in the first volume of

“Recreative Science,” Dr. Deakin says, Those who wish to see the wonderful transformation of this interesting tribe of insects, should take some of the largest caterpillars that they can find feeding upon the leaves of the nettle, and place them in a cage made for the purpose, or an ordinary bird-cage, covered with thin muslin or lace, to prevent their escape. Then feed them with the fresh leaves of the nettle until they have arrived at maturity; after which they become listless, and soon change into the pupa state, and thus remain dormant for a time. They then burst the hard case which covers them, and the perfect butterfly comes forth decked in all its brilliant colours, and is soon ready for flight, and no one, however much he may have disliked the unattractive caterpillar, will now fail to ad-



THE NETTLE BUTTERFLY.

a, caterpillar; *b*, chrysalis; *c*, perfect insect.

mire the perfect insect clothed in its beautifully coloured and exquisitely arranged minute scale-like feathers. The butterfly, soon after it becomes fully developed, deposits a considerable number of small roundish eggs, and always places them on or near the plant suited for the young caterpillar which each egg contains, and which in the course of a short time, by the aid of the heat of the sun, breaks its delicate shell. Thus, without much difficulty or trouble, may be observed all the remarkable transformations which the progeny of the butterfly undergoes.

The reader does not need to be informed what these transforma-

tions are. The egg becomes a grub or caterpillar; this changes to a chrysalis, and in due time the beautiful butterfly comes forth. The history is one of the most sublimely poetical that we shall find in the great book of Nature. To the Christian it may represent the resurrection and glorified life to which man is destined; to the classical scholar it is full of fanciful suggestions, the most attractive of all being the fable of Psyche. In the paper to which reference has been made above, Dr. Deakin says:—Great learning and laborious research have been bestowed by many men in the endeavour to trace out the origin of this myth; but nothing appears to be really known of it anterior to the time of Apuleius, who lived, it is believed, towards the close of the second century of the Christian era. In his work, ‘The Metamorphosis,’ the title of which was afterwards changed to that of ‘The Golden Ass;’ not, however, it is thought, by the author himself, but probably on account of its affinity to Lucien’s story of ‘The Ass,’ the epithet of ‘golden’ being added as a mark of admiration. The episode of Psyche is introduced in the latter part of the fourth book, and it is continued in the fifth and sixth; but the simplicity of the myth, as no doubt it was in its original state, is here greatly distorted by many puerilities and absurdities.

The origin of this symbolical fable may be traced back to a period much anterior to the time of Apuleius, especially through the medium of ancient gems.

The ancient Egyptians likened the supposed renewal of the earth after the flood, and the return of Time, to a second infancy; and depicted the renovation of the world under the emblem of a child, and called him *Eros*, that is to say, *Love*. Hesiod, in his ‘Theogony,’ l. 120, in alluding to the state of Nature after the deluge, says: ‘First Chaos was produced, then Tellus, then Love, the most beautiful of the gods; Love the soother and softener, who relaxed the weary limbs.’ Aristophanes, in his comedy of the ‘Birds,’ l. 695, says, in his poetical language of the same event, ‘Sable-winged night then produced an egg, whence sprouted up, like a blossom, *Eros*, the lovely and desirable, with his glossy golden wings.’ Love is here used emblematic of the divine mercy for the human race. The Greeks introduced as its companion, the personification of the soul, originally in the form of the aurelia, or butterfly. Plutarch, in the second book of his ‘Symposiaca,’ says: ‘A chrysalis, after being stiffened and cracked from dryness, emits through its opening a second animal with wings, which is called Psyche.’

‘The winged animal,’ Mrs. Strutt says,* ‘thus designated by Plutarch under the name of Psyche, the word by which the Greeks expressed likewise the soul, is in all probability that which Ælian calls *Pyraustes* (Πυραύστρης), a word denoting the attractive influence which light or fire exercises upon the moth. This truth in

* A very beautiful and talented work, “The Story of Psyche, with a Classical Inquiry into the Signification and Origin of the Fable,” by Elizabeth Strutt; with designs in outline by John Gibson, Esq., R.A.: to which we are chiefly indebted for the remarks here made in allusion to the fable.

natural philosophy is poetically depicted to the eye by the device, which we see on many ancient gems, of Cupid holding a butterfly over his torch, by which act is at the same time typified the suffering of the soul from being subjugated by passion; and, mystically, its purification 'as by fire' from the defilement of matter. Such an ingenious allegory was not likely to escape the attention of the poets, and we accordingly find it alluded to by them at an early period. Thus Meleager, B.C. 160, plays very prettily, in one of his epigrams, upon the double meaning of the word *Psyche*, as a moth and as the soul, introducing it in immediate connection with *Eros*, or Love.'

The same authoress, in allusion to the caterpillar, says: 'At the close of its final existence as a worm, crawling upon this lower earth, an emblem of man encumbered with his material body, this insect lies dead as it were

for a season, in a sort of tomb or grave, which bears a great resemblance to the mummies found in the Egyptian tombs. In this state of darkness,' the authoress continues, 'it remains throughout the gloom of winter; at the joyous return of spring, the torpid chrysalis bursts its bonds, leaves its earthly body (or rather case), never more to be resumed, and soars up towards heaven, decked in the most gorgeous attire, and rejoicing in new life; a beauteous type of the celestial soul freed from the restraints of matter, and exulting in liberty and light.'

'Like other animal symbols,' says Payne Knight, in his 'Inquiry into the Symbolical Language of the Ancients,' 'as the owl, under which Minerva was first depicted, this Psyche was by degrees melted into the human form, the original wings only being retained to mark its meaning. So elegant an allegory would naturally be a favourite subject of art among a refined and ingenious people; and it accordingly appears to have been diversified and repeated by the Greek sculptors more than any other which this system of emanation so favourable to art could have formed.'

It would take us far beyond the province of this work to enumerate all the interpretations which have been given of this fable, for there are few authors who have written upon ancient literature or the arts but have given their ideas as to its symbolical meaning; in the arts, especially that of sculpture and engraving upon gems and stones, even down to our own times, it is one of the most favourite subjects treated, and every collection, either of ancient or modern art, has some representation of the subject.

That there is a pure and lofty signification symbolically repre-



PSYCHE IN THE FLAME.

sented in the fable there can be no doubt. Archdeacon Nares, in his 'Remarks upon the Ballet of Cupid and Psyche,' says: 'Psyche, the human soul, formed originally of exquisite purity and beauty, is placed in a state of refined happiness, of which, however, some of the principal causes are concealed. Amidst the enjoyments offered to her, *one prohibition* only is interposed. It is required, as the condition on which her happiness depends, that she shall not attempt to gain *forbidden* knowledge concerning the Author of her blissful state. Contrary to her own better judgment, she is overpersuaded by wicked and malicious suggestions, and actually acquires the knowledge she was so strictly ordered not to seek. Her curiosity and disobedience are fatal. She is driven from her state of happiness, and sent to wander over the earth, amidst innumerable difficulties and trials; yet constantly, whenever she is in any danger of sinking under the severity of her situation, some supernatural interposition (that is, some divine revelation) prevents her from despairing, and kindly enables her to perform that which was naturally beyond her powers. Even in the first moment of her condemnation, her judges, we are told, showed manifest tokens of an affection to which every other consideration was subordinate. And, finally, when she is depressed even to hell by the difficulties which assail her, divine love—for so, with Mr. Bryant, I am inclined to think Cupid (Eros)—interposes for her relief, and not only rescues her from the horrors of that dreadful place, but, uniting her with himself, places her for ever in a state of transcendent exaltation and of perfect bliss.' 'Such,' continues the reverend commentator, 'is this extraordinary allegory, which, that I have not in any respect misinterpreted, may be seen by recurrence to Apuleius, Fulgentius, Baucer. Now, if it be true, as I believe has been conjectured, that the mystic fables and hieroglyphics of the Egyptians concealed, as beneath a veil, these important truths, which at first were known universally to all men, but which in other places, except when preserved by divine interference were lost, corrupted, or forgotten—if this, I say, be true, if it be even probable, why may we not consider this fable of Cupid and Psyche as a singular and very curious instance of the perfect preservation of one of these religious allegories? The Greeks, it is well known, even by their own confession, borrowed from Egypt all their mythology; but, if this interpretation be admitted, we can hardly expect to discover, among all their thefts, another of any comparable importance.' ('Essays,' 1810.)

With regard to the way in which this subject has been treated by the imagination and skilful hand of the artist, the most ancient illustrations known are probably those found on gems, in which Cupid is represented holding a butterfly over a flaming torch, which we have already alluded to. At a later period the body of the butterfly is transformed into that of a beautiful female figure, with the wings of the butterfly attached between the shoulders. After this period Psyche always appears to be thus represented. At no period of art has the fable of Psyche been more beautifully and elegantly illustrated than by Mr. John Gibson, R.A., in whose studio

at Rome the whole series may be advantageously seen. Those who may be disposed to study the subject more at length will find it treated with much skill and learning, and beautifully illustrated from drawings by Mr. Gibson, in Mrs. Strutt's work above referred to; by Mrs. H. Tighe; D'Israeli's 'Curiosities of Literature;' Clarke's 'Travels,' etc.

The Hemp, *Cannabis sativa*, is an equally interesting and important plant. If you do not know it, you may probably find it at the very first search growing on a heap of cinder-ashes. In such a spot it is pretty sure to be found in the garden of a person who keeps cage birds; and the common canary, a most elegant grass, with perhaps the flax and the rape, are likely to be its companions. You may do well to sow a few seeds of hemp in any sunny spot. They will make a tuft of elegant herbage, and when they ripen their seeds, they will be visited by the tomtits and other small birds, who will perform some strange antics in their endeavours to obtain the seed, the plant being so pliant that they cannot obtain a good foothold upon it.

The hemp is famed more especially for its fibre, from which the greater part of all the cordage used in this country is derived. Dr. Deakin says:—Throughout the whole of Italy, and in most of the southern provinces of France, and in almost every part of Germany, the cultivator of the soil allots a certain portion of his land to the growth of the hemp; and the industrious women, both young and old, especially in the rural districts of Italy, may be seen, while tending their flocks and herds, busily engaged spinning it in the ancient manner, with the distaff, which is generally made of a portion of the stem of the bamboo; they afterwards wind the thread upon bobbins, and weave it into various fabrics for domestic use; but it is chiefly in the northern parts of Russia, even as far north as Archangel, that the hemp is grown as an article for exportation, and it is from that country that our manufactories obtain the greater portion of their supplies.

The plant grows from six to twelve feet high, and is more or less branched, terminating in a bunch of greenish flowers. The leaves are large, divided into five to eight narrow lanceolate serrated segments in a palmated manner; and when the plant is grown separated from others, it has a pretty, graceful appearance. When the plants have attained their full growth, they are pulled up, and the roots chopped off, and then spread out to dry in the sun; when they are sufficiently dry they are beaten so as to separate from the stem the leaves and smaller branches; the stems are then immersed



THE ITALIAN DISTAFF.

in pools or streams of water, until they undergo a species of putrefaction, and when large quantities are going through this process, the stench arising from them is extremely offensive. By being thus steeped in water, the glutinous matter of the plant is destroyed, and the fibre is in a great measure liberated. They are then taken out of the water, and spread out to dry and bleach in the sun. The whole, except the woody fibre, is now become very brittle; it is then beaten and chopped between stout pieces of wood arranged for the purpose, and the fibre separated from the rest of the vegetable matter. It is then combed, and tied up into convenient-sized bundles for home use or sale.



LEAF OF THE HEMP.

The roots of the hemp are very liable to be attacked by one of the species of that curious tribe of parasitical plants the *Orobanche*, and, from its stem being branched, it is called the *O. ramosa*. It grows from six to twelve inches high, is of a pale yellowish brown colour, and bears a few scattered brown membranous scales in the place of leaves; its flowers are numerous, of a pale purplish colour. An ordinary sized plant bears about sixty-six capsules, and in each there are about 1100 small, but very beautiful-looking seeds; so that one plant alone furnishes no less a number than 72,600 seeds! each of which is capable of producing a plant, and as the seeds of the *Orobanche* are known to remain a considerable time in the ground without losing their vitality, the chances of their ultimate development on the roots of the hemp are increased.

I have observed, in a field where the hemp has grown, the roots very much infested with this plant, but still the plants of the hemp on which it grew were apparently uninjured by it. The field was sown with wheat, turnips, and other crops, I believe, five succeeding years; but not a plant of the *Orobanche* was to be found, but hemp was again sown, and then there sprung up an abundance of this pretty parasitical plant.

The most remarkable property of the hemp, however, is to be found in the resin, which in hot climates is derived from its juices. The intoxicating properties of this substance, which is known by the terms *bang*, *subjea*, *churras*, *haschisch*, etc., etc., have in all probability been well known from the most ancient times by many races of men. Herodotus relates the use of it by the Scythians (B.C. 75), and it answers exactly to the description of the plant which Homer makes Helen administer to Telemachus to make him

forget his troubles. In the East it is the baneful rival of the more baneful opium, and only little less of a curse to mankind.

The practice of chewing the leaves of this plant, to induce intoxication, prevailed or existed in India in very early ages: hence it was introduced into Persia, and about six centuries ago (before the middle of the thirteenth century of our era) this pernicious and degrading custom was adopted in Egypt, but chiefly by persons of the lower order, though several men eminent in literature and religion, and vast numbers of fakeers (or poor devotees), yielded to its fascinations, and contended that it was lawful to the Moos'lem. The habit is now very common among the lower orders in the metropolis, and other towns of Egypt. The same author says: The preparation of hemp used for smoking generally produces boisterous mirth. Few inhalations of its smoke, but the last very copious, are usually taken from the gozeh. After the emission of the last draught from the mouth and nostrils, commonly a fit of coughing, and often a spitting of blood ensues, in consequence of the lungs having been filled with the smoke. Hhashæ'sh is to be obtained not only at some of the coffee-shops; there are shops of a smaller and more private description, solely appropriated to the sale of this and other intoxicating preparations; they are called mahh'shesh'ehs. It is sometimes amusing to observe the ridiculous conduct, and to listen to the conversation of the persons who frequent these shops. They are all of the lower order. The term hhash'sha'sh, which signifies a smoker, or an eater of hemp, is an appellation of obloquy. Noisy and riotous people are often called hhash'sha'shee'n, which is the plural of that appellation, and the origin of our word "assassin"—a name first applied to Arab warriors in Syria, in the time of the Crusades, who made use of intoxicating and soporific drugs, in order to render their enemies insensible.*

A preparation of hemp has been of late years introduced in medical practice, it being found in many cases a better anodyne than opium, and less injurious to the digestive system. A detailed account of its effect on a sensitive Englishman, who partook of it



OROBANCHE RAMOSA.

* Lane's "Modern Egyptians," vol. ii. p. 32.

solely for the purpose of experiment, and to make the best report possible of its effects, will be found in the "Intellectual Observer," Vol. II. p. 435. For the first trustworthy suggestion of its usefulness we were indebted to Dr. O'Shaughnessy, who made careful observations of its effects on the natives of India. He says:—When *churrus*, or natural hemp resin, is administered in moderate doses, it produces increase of appetite and great mental cheerfulness, while in excess it causes a peculiar kind of delirium and catalepsy. At two p.m., says the learned author, a grain of the resin of hemp was given to a rheumatic patient; at four p.m. he was very talkative, sang, called loudly for an extra supply of food, and declared himself in perfect health. At six p.m. he was asleep; at eight p.m. he was found insensible, but breathing with perfect regularity. His pulse and skin were natural, and the pupils freely contracted on the approach of light. Happening by chance to lift up the patient's arm, the professional reader will judge of my astonishment when I found it remained in the same posture in which I placed it. It required but a very brief examination of the limbs to find that by the influence of this narcotic the patient had been thrown into the strangest and most extraordinary of all nervous conditions, which so few have seen, and the existence of which so many still discredit—the genuine catalepsy of the nosologist. We raised him to a sitting posture, and placed his arms and limbs in every imaginable attitude. A waxen figure could not be more pliant or more stationary in each position, no matter how contrary to the natural influence of the gravity on the part. To all impressions he was almost insensible.

S. H.

A NEW WAY OF GROWING GRAPES.

BY WILLIAM COLE,

Head Gardener, Ealing Park, Middlesex, W.



N the papers on the "Amateur's Vinery," which have lately appeared from the pen of Mr. Trussler, ample advice has been given on the construction, planting, and management of permanent vineries, and I would like to supplement those excellent papers with a brief description of a method by which most excellent crops of grapes may be produced without a vinery. This system of grape growing, which has been thoroughly tested at Ealing Park, appears to be especially adapted to the requirements of amateurs, as the labour incidental to the management of vines in pots, and the expense of establishing a vinery, are alike avoided. Moreover, the smallest house likely to be met with in the garden of an amateur may be devoted to grape-vines, with a full assurance of obtaining a good crop, provided the vines receive proper attention.

It is of no consequence whatever whether the house has a lean-to

or a span roof; its length and width are of very little consequence, but to afford the vines sufficient space to produce a good crop, the rafters or sash bars should be not less than six feet in length. And it may also be said that if more than eight or nine feet, there will be a little waste of roof space. To enable me to describe the system as clearly as possible, we will for the moment consider the case of an amateur who has a lean-to house, five or six feet in width, and with a roof six or eight feet in length. We will also suppose that along the front of the house there is a stage, table, or platform, upon which the plants in pots are stood, or on which a bed is made up for cucumbers or melons. If the stage is formed with open lattice-work, it will be needful to cover it with boards, slates, or flag-stones, for it is intended to form a bed of soil upon the platform, and unless this precaution is taken the soil will, it need hardly be said, fall through. When this has been done, fix a rather stout board about twelve inches wide on edge, and thirty inches from the front wall if there are hot-water pipes; and not more than twelve inches above the platform, a similar board must be fixed along the front also, to keep the soil away from the pipes. The outer side of the last mentioned board should be fixed an inch or so from the hot-water pipes. When these have been properly fixed, cover the platform with a thin layer of crocks or pieces of brick, broken up to the size of a small hen's egg, and over these put a thin layer of partly decayed manure, or of strips of turf, to keep the soil in its place. This needful preparation completed, proceed to form the bed with good turfy loam and manure. The best course is to break the turfy loam up and then incorporate with it thoroughly decayed hot-bed manure, or partly decayed horse droppings, in the proportion of one part of manure to three parts of loam. Bone dust or crushed bones may be added, but the cost is too great to justify their being used in a border of a temporary character, such as the one we are now considering. But all bones that may have been saved from the kitchen should be broken up with a big hammer, and added to the compost. The proportion of manure is larger than would be desirable for a permanent border, but as the vines will have to remain one year only, more manure may be employed with advantage than would be desirable in borders of a permanent character.

The most suitable vines for planting are those which were struck from eyes rather late last spring, and that were cut back to within one or two buds of the base at the winter pruning, and these if planted out at once, and receive careful management, will commence to grow rapidly, and by the end of the summer will have strong rods capable of bearing a heavy crop of fruit the following season. The vines should be put two feet apart, and receive a liberal application of tepid water to well settle the soil about the roots. They will also receive material assistance by the house being kept rather close for the first ten days or so after they are planted; and to prevent the temperature rising too high, and the foliage from being scorched, a strip of canvas or a mat should be laid over the glass during the hottest part of the day. After the period above mentioned, no shading must be employed, for it will then be possible to

keep the temperature down by increased ventilation, and provided the house is sufficiently ventilated, there is no danger of scorching. The early part of May is undoubtedly the best time for planting, but the most perfect success may be insured by planting in June, provided vines more advanced in growth are selected. To speak more plainly, they should now be about thirty inches or so in height, instead of twelve inches, which is the proper height for those planted earlier.

Until the end of August they should receive rather liberal supplies of water, be syringed moderately once or twice a day, as the weather may happen to be cool and moist, or hot and dry, and after the month mentioned, the syringing must be withheld, and the ventilators opened as widely as possible night and day to insure the proper ripening of the canes. After the beginning of November, the ventilators may be closed in case of severe frosts, as it is better for the vines not to be exposed to these. The pruning may be done some time during the winter, and this consists in shortening the rod back to the end of the rafter, if it has gone beyond that point, and the removal of the lateral growth, which must be cut off close to the cane. The soil must be maintained in a nice moist state throughout the winter, for, contrary to the general opinion, vines suffer severely if the border is allowed to become dust dry. The vines may be forced in the same manner as those in pots, and may be started at any time after Christmas, but amateurs will find it more advantageous to start them with a gentle heat in March. From ten to fourteen bunches may be left upon each vine, according to the length of the rod. When they commence to grow freely, cover the surface with a layer of half-rotted manure; and as soon as the berries begin to swell, supply alternately with weak liquid manure until the grapes begin to colour, and then discontinue its use, and supply them exclusively with clear water. As soon as the crop is gathered, the vines should be pulled up and destroyed, for they are no longer required, as better results are obtained from vines that have been planted one year only.

To produce a crop annually, only one-half of the house must be planted each year, unless there are two houses available for the purpose. In the case of a span-roof house, one side may be planted this year, and the other the next, and so on. There is no loss of space in having two houses, for the house from which the crop of grapes is gathered, say this summer, may be devoted to the preparation of plants for the conservatory during the remaining part of the autumn, to the protection of bedding plants during the winter, and to the production of an early crop of strawberries without fire-heat in the spring. By the time the strawberries are gathered, then another batch of vines must be planted. The house can also be devoted to the late summer and winter crops of cucumbers, if it is so desired.

It will be needful to strike a batch of eyes every season, and these should be put in small pots, filled with light soil, and when nicely rooted be shifted into six-inch pots. Until just before the berries begin to colour, these should remain with the vines in bear-

ing, and then be removed to the house, newly planted. When there is only one house, they must of necessity remain in that house. Some attention and labour are necessary in carrying out the system of grape growing here described, but the splendid crops that may be obtained from very small houses will afford ample compensation. A lean-to house twenty feet long will accommodate ten vines, and from these a crop weighing from seventy to eighty pounds may be obtained. A span-roof house of the same length will of course accommodate double the number of vines.

The variety best adapted for this system of culture is the *Black Hamburgh*, but if a few white grapes are required, two or three vines of *Buckland Sweetwater* may also be planted. Healthy vines may be obtained now at a very low rate, and by purchasing and planting at once, a good crop may be had next summer. It is important to select those in a thrifty state, for if at all stunted they will not make canes strong enough to produce good crops the following season.

ROSES IN THE GREENHOUSE AND THE WINDOW.

BY J. E. SAUNDERS, ESQ.



HIS spring I have had such a splendid display of roses in my conservatory and drawing-room windows that my friends have been somewhat astonished, and it has been suggested that a few particulars of the means by which such satisfactory results have been obtained would be interesting, and probably prove as useful to some of the many readers of the *FLORAL WORLD*.

Amateurs who have an opportunity of seeing the gigantic bush roses in pots, which Mr. Charles Turner, of the Royal Nurseries, Slough, and one or two other trade growers exhibit in London and one or two of the principal provincial shows, admire these triumphs of cultural skill, and think that because they cannot produce specimens of equal merit, they cannot enjoy the freshness and beauty of roses grown in pots under glass. If they are told that the cultivation of pot roses is really not difficult, they will refer you to the poor half-starved pigmies which are usually staged by gardeners by the side of these well-fed giants from the trade growers. As a frequenter of some of the principal exhibitions, I know well enough that not more than one gardener in twenty exhibits roses in really first-class condition; nevertheless, I am prepared to assert that pot roses may be grown by amateurs without any special difficulty. I know not why gardeners fail, but I do know that there is no greater danger of failing with them than there is with many other good things. I might say much in advocacy of the pot culture of the rose; I might speak of the great beauty of a medium-sized plant, furnished with six or eight superbly-developed flowers; I might also descant on the extreme freshness and delicious fragrance of flowers produced under glass; but I will leave that to the imagin-

ation of the reader, and at once proceed to explain the means by which my conservatory has been made beautiful, and my drawing-room redolent with perfume by the roses.

To enable me to do this in an intelligible manner, I must go back three years—to the season of 1872. About the middle of the summer of that year, I called upon a nurseryman who makes rose growing somewhat of a speciality, to purchase a few plants of various kinds, and amongst other things I bought one dozen of roses, nicely established in six-inch pots. These cost twenty-four shillings per dozen; and in the autumn following I obtained from the same source two dozen plants lifted from the open quarters. These were on their own roots, and cost twelve shillings per dozen. I thus had a stock consisting of thirty-six plants, and comprising as many varieties. Those purchased in the summer were transferred to pots one size larger within a week or so of their being received, and were then placed on a bed of coal ashes, upon which a portion of the stock of bedders had been placed in the spring previous, and between the pots was packed some partly decayed leaves, to prevent the moisture being dried out of the soil too quickly. On the approach of winter they were removed to a cold pit, and about Christmas were pruned. They were furnished with from three to five shoots each, and these were cut back—some to two and some to three buds each. It was not considered desirable to leave the shoots longer than this because of the risk, as in the case of roses out of doors, of the growth being weak. Moreover, I was anxious to keep the shoots well down.

The majority of gardeners do not prune their pot roses low enough, and in a few years they, owing to the weakness of the shoots, have a thin appearance, and produce miserably poor flowers. About the middle of February they were removed to a pit half filled with leaves collected in the autumn, and the mean temperature of the pit was 60°, until the young shoots were about three inches long, and after arriving at that stage it was increased to 65°. These produced from eight to twelve blooms each, of excellent quality, and just as they commenced to expand they were removed to a conservatory. They were syringed once a day whilst in the pit, and more blooms would have been borne by all the plants had not the buds been thinned out at an early stage.

The plants lifted from the ground were put in six-inch pots and placed in the cold pit with the first lot. These were pruned in the last week of January, and allowed to remain in the pit until they were coming into bloom. The flowers were not so abundant nor of such good quality as those produced by the other batch of plants, and this may be accounted for by their not being so well established; but they made a very nice display, and as they formed a good succession to the others, were much appreciated. The following season they bloomed superbly. Each autumn since I have bought a dozen plants similar to those now being referred to. This has been done to enable me to have a stock of plants of medium size for the drawing-room, and also for the purpose of having young plants to take the place of older specimens, as they grow out of shape or assume

an unhealthy appearance. Some few of the two sets first purchased have been destroyed, but by far the largest proportion are now buxom bushes, the largest quite thirty inches across, and in the course of the spring have quite three dozen flowers.

Acting upon the advice given in the "Amateur's Rose Book," I am particular in having the pot-roses well cared for during the summer season. Roses appear to be most impatient of neglect, for a few of my plants that were not well looked after in the summer of 1873, are a long way behind the best of those which had proper attention. As they go out of bloom, they are placed in a cold pit for a fortnight or so, and then removed to a shady position out of doors for the summer season. The pots are, as in the first season, stood upon coal ashes to prevent the worms finding their way into the pots, or through the holes in the bottom. The supplies of water are fairly liberal during the summer season, and any shoots that make a too rapid progress, and are likely to rob their weaker neighbours of their fair share of nourishment, are cut back to about twelve inches when eighteen inches in height. Early in September, the general repotting takes place; each plant is turned out of its pot, the ball of soil is reduced, and it is returned to another pot, carefully drained, perfectly clean, and either of the same size or one size larger, according to the necessity of the plant. A compost, formed by mixing together fibrous loam and well decayed manure in the proportion of four parts of the former to one of the latter is used. They are returned to their summer quarters, and supplied less freely with water than during the summer season. In November, the whole stock is removed to a cold pit, and the pruning is done early in January. A few of the most vigorous plants are started, in the manner already described, to bloom early, and the others are allowed to produce their bloom with no more assistance than that afforded by the cold pit; and 'as the latter bloom even more satisfactorily, amateurs must not force any portion of the stock.

With the assistance of the book mentioned above, those who have plenty of time on their hands may, after purchasing a few plants to begin with, maintain the stock by means of cuttings, which do not appear to be so very difficult to strike. I have but little time to spare for garden work; and as the price of established varieties both in and out of pots is, comparatively speaking, so low, I prefer to purchase the few plants required.

The following are especial favourites with me and my friends, and I do not think they will fail in pleasing any one fond of roses, namely:—

Hybrid Perpetuals: *Alfred Colomb*, *Anna Alexieff*, *Baroness Rothschild*, *Beauty of Waltham*, *Charles Lefebvre*, *Dr. Andry*, *Duke of Edinburgh*, *Etienne Levet*, *General Jacqueminot*, *Madlle. Eugenie Verdier*, *Marie Baumann*, *Marquis de Castellane*, *Victor Verdier*.
Hybrid China: *Charles Lawson*. Noisette: *Celine Forestier*. Tea-scented: *Catherine Mermet*, *Madame Camille*, *Marie Sisley*, and *President*.

YOUNG CARROTS ALL THE YEAR ROUND.

BY A KENTISH GARDENER.



YOUNG carrots are not usually considered delicacies during May and the two following months, for they are then plentiful everywhere ; for in these three months nothing is more easy than to place upon the table a dish of young and tender carrots. To have them in excellent condition during the other nine months, when they are looked upon as delicacies, is quite another matter ; and, although it is not a difficult task, some knowledge of the proper dates for making the sowings is essential.

The usual March and April sowings for summer use in a young state, and for storing for use during the winter in soups, etc., have of course, been already made, and we have now to consider the next sowing, from which a supply of young roots may be had late in the autumn. Now the proper time for making this sowing is about the middle of July. The seed-bed should be on a warm south or south-west border, where the soil is light and rich. A space five feet wide and eight feet long would suffice for a large family. The seed should be sown broadcast, for the object is not to obtain a few heavy roots, but large numbers of small ones. If the seed is sown thinly, and when well up thinned out two inches apart each way, there is plenty of space to grow roots as thick as a man's middle finger, which is as large as carrots are wanted for the table. At this season of the year it is the better plan to water the ground before the seed is sown, and then cover the seed with fine moist soil. If the weather is dull it will not need shading ; but as shading is far better than continual watering, which hardens the surface, it is always best to lay upon the bed a few green branches, to break the force of the sun's rays ; this saves much labour in watering, and the seed comes up sooner, because the shading helps to keep the seed uniformly moist. I may remark here, once for all, that slugs are particularly fond of this esculent, therefore a sharp eye must be given to all crops in all their stages of growth. When sown in the open ground, a mixture of soot and lime scattered thinly over the bed and round its sides and ends is the best preventive. When grown in cold pits or frames, the same application is serviceable, but in this case the surest cure is to trap them by the aid of pieces of cut carrot, or lettuce, or cabbage leaves. If these are distributed about the pit or frame, they are sure to take up their quarters amongst them, when they can be caught and killed at once.

It is not possible to keep those sown at the end of July in good condition in the open ground after the end of October, or, at latest, the end of November. But much in this respect will depend upon the nature of the soil. If light and sandy, they will keep longer ; if stiff and cold, the slugs will be sure to disfigure them, unless very carefully attended to. To guard against a mishap, it is best to sow again in a pit or frame that occupies a south position on the first of September. This crop will furnish nice roots in mild winters from

the middle of December and onwards, according to the nature of the weather. I prefer to grow this crop in a frame, to which, if it is required, I can add a lining of hot fermenting materials about the end of October.

The September-sown crop must be much thinner than any of the others; for having to grow through the shortest and darkest days of the year, there must be more room for the air to circulate between them. Of air, indeed, they must have a good quantity both night and day when it is mild, which it often is up to Christmas. The little artificial heat which they receive will of course admit of more air being given; at the same time, judgment in admitting it in rough stormy weather is of course necessary, especially at night, for sometimes the air will be too cold. Damp in a pit or frame is a great enemy to this crop, and they grow best at that season when kept moderately dry.

A few years ago, I thought it possible to dispense with the aid of artificial heat for this crop, so I sowed in a cold frame in the middle of August, thinking I could grow and keep the crop on for winter use. This I accomplished; but there were complaints that they were rather hard, and inferior to those slightly forced as explained above. Some may perhaps say that they can secure young carrots up to Christmas in the open ground, if the weather continues open and mild up to that time. I admit they can, for I can, even here, in this stubborn soil; but, as I have just shown, they were not considered equal in flavour to those grown under glass of a later sowing. Another sowing is made on a gentle bottom-heat about the middle of October; these will require the protection of a frame all the winter, to be kept secure from frost and damp, and at the end of February the frame should have all round it a good stout lining of stable manure and leaves, which will warm the soil, and start them into active growth about the middle of March. The end of February is early enough to put the lining to the frame, as they must not be started into growth until the season admits of an abundance of fresh air being given, and that does not occur before the middle of March.

A sowing is also made again about the end of February, in a pit or frame on a slight bottom-heat. These will soon be up, and growing away vigorously, and will come in admirably after the October-sown ones are becoming too large. They are not usually considered delicate enough if they get larger than the middle finger. Where there is a warm south border in a light soil, a small bed may be sown at the end of February in the open ground; but in heavy soils or cold positions, nothing is gained in the average of seasons by sowing so early. For such positions the middle of March is soon enough, which is the time I sow here for the first crop in the open ground. I sow another small piece again about the beginning of June, which is all that is required for the season, because if there should be a gap between those sown in March and those sown in June, a few dishes from the general crop, which is sown here in the middle of April, will fill it up.

This brings me back to my starting-point, for the next sowing must take place, as I stated at the beginning of this paper, about the middle of July.

A CHEAP SHADING FOR CONSERVATORIES AND FERNERIES.

BY W. BRADBURY.



THE cost of providing blinds of canvas, tiffany, or other material, for the conservatory, the greenhouse, and the fernery, is to many amateurs a serious matter, I shall probably be doing good service by giving publicity to a plan of screening the occupants of these structures from the sun without the aid of blinds of any kind. Blinds are not only costly, but they have a rather unsightly appearance; and in the case of conservatories of an ornamental character, there is some difficulty in covering the roof with them. But by the plan I am about to describe, there is no difficulty in screening the plants from the injurious effects of brilliant sunshine, and the cost of materials for a rather large structure is so trifling as to be hardly worth considering.

Instead of moveable blinds, the glass is dotted with a mixture of Brunswick green (a pigment which may be obtained at any oilshop) and milk. There are two colours, known as light and dark green respectively, and to obtain the proper shade these should be mixed together in the proportion of two parts of light to one part of dark green. That is to say, if one and a-half pounds are required, the pound should consist of light green, and the half-pound of dark green. Well mix the two shades, and then add the milk. To insure its mixing properly, the milk must be added very slowly, and be well mixed with the pigment as it is poured in. The best course is, perhaps, to add just sufficient milk to work it into a thick paste, and then, after the mixing has been well done, add as much milk as will reduce it to the consistency of ordinary paint or of cream. In applying this mixture to the outside of the glass, use a brush that is worn very little, and put it on rather thinly. As fast as a few panes are covered, dabble it lightly with the end of the brush to give it a stippled appearance. When so applied, the rains will not wash it off; but at the end of the summer, when shading is no longer required, and, indeed, at any other time if it is so desired, it may be readily removed with hot water and a scrubbing-brush. Hitherto, mixtures of white lead, whitening, and of lime, have been used for smearing over the glass in cases where it was not desired to use blinds; but these mixtures are all more or less objectionable, because of the unsightly appearance the structures have from the outside and the painful effect the white light has upon the eyes from the inside. For ferneries it is especially adapted, as it not only protects the plants from the sun, but it also enhances their attractions by imparting a richer and more brilliant green colour to the fronds. To other structures it also imparts a very cool and refreshing appearance. It must not be left on the glass late in the autumn, for the plants will then require all the light it is possible for them to receive.

NOTES ON CAMPANULAS.

BY JOHN BURLEY, F.R.H.S.,

Hereford Road Nursery, Bayswater, W.



OLD-FASHIONED hardy flowers once more coming to the front, I should like to say a word or two in reference to the Campanulas, for they may be grown in the most satisfactory manner possible, and when once planted in ordinary borders the majority of them will take care of themselves. They are, in fact, well adapted for the gardener or the amateur who has no convenience for the cultivation of large numbers of tender bedding plants. They should not be grown to the exclusion of other good things, but, on the contrary, be associated with herbaceous phloxes, pyrethrums, and other hardy flowers of a showy character.

Of the Campanulas there are large-growing kinds, such as *C. pyramidalis*, that attain quite five feet in height; and again, there is the *carpatica* and *pumila* varieties, and others like them, that grow quite close to the ground. Then, again, there are the choice Alpine kinds, with their neat and pretty blossoms; many of them being found high up in the Swiss mountains, and on ledges and fissures of rock, where scarcely any soil is to be seen. In such places their tiny roots dive down, clinging to the rock by the way until they find the nourishment that is sufficient to give life to the plant at all seasons. The border varieties make a glorious show for months in the flower-garden, and when allowed to grow in one place year after year, they form large masses of thick herbage. When in flower, there is no class of plants that will surpass them in gaiety and general effect. Amongst the dwarf kinds there is none better than *C. carpatica* for general effect. All that need be done to secure a dwarf gay mass of flowers, either in the geometrical garden or in the ordinary flower border, is to plant this Campanula, and leave it to take care of itself; it will soon spread, and when the season for its blooming comes round, it will be sure to meet with its admirers. There are three colours of this kind: *C. carpatica* itself is blue; *C. carpatica alba*, white; and *C. carpatica bicolor*, blue and white, the colours very nicely blended, and very attractive. *C. Barrellieri* is also a dwarf variety with pretty blue blossoms; this kind is admirably adapted for the rockery, as its trailing habit is nicely seen when shooting here and there over a projecting stone, or hanging down over a hollow place. It is quite at home when planted in a sheltered nook of the rockery, and no fear need be entertained of its being destroyed in a hard winter, if the hollow it is growing in is filled up with dry leaves. The soil best adapted for it is a mixture of sandy loam and leaf-mould. *C. alpina* is another fine dwarf kind with purplish blue flowers, which makes a good plan, for the second row in a flower border. *C. garganica* is a beautiful kind for the rockery; it produces its flowers in pendent clusters the plant is literally loaded with them when in bloom; the

colour is a clear sky-blue. *C. fragilis* is another pendent variety with dark blue flowers, but rather tender; it makes an excellent kind for the conservatory rockery. Amongst ordinary border kinds, the varieties of *C. glomerata* will be found the most useful for general effect; they are also compact in their growth, averaging about eighteen inches; there is also a variety of colours amongst them, *C. glomerata* itself being puce; *C. g. alba*, white; *C. g. purpurea*, purple; *C. g. cærulea*, sky-blue. They are all exceedingly free bloomers; in fact, when they are fully out, they are one mass of flower from stem to crown. *C. grandiflora* is another free-blooming kind, about two feet in height, with very showy blue flowers; there is a white variety of this, called *C. grandiflora alba*, that is well worth growing for the sake of a change of colour. *C. macrantha* is a distinct free-blooming species, producing stout stalks, which are abundantly furnished with drooping puce-coloured blossoms; it grows about two feet high. *C. media flore-pleno* and *C. media alba flore-pleno* are double-flowered varieties of the old "Canterbury bells," the first being blue, the second white; they are both noble objects in any border, as they flower freely and require but little trouble. As they are biennials, a few fresh plants should be raised every year. *C. ranunculoides* is another fine effective kind with showy purple flowers produced on spikes about eighteen inches in height. The blue and white varieties of *C. persicifolia* should be found in every garden where there is plenty of border-space, as they grow freely and flower abundantly, continuing in flower as long, or even longer, than most other kinds. The double blue form known as *C. persicifolia flore-pleno*, and the double white variety, *C. persicifolia alba flore-pleno* and *C. persicifolia coronata alba*, and ditto *cærulea*, I can especially recommend, for when in full bloom they are as showy as any plants in the garden. They are all about one height, viz., two feet, just a nice size for beds and ordinary borders. The varieties of *C. pyramidalis*, both white and blue, are well known by their flower spikes often reaching five or six feet in length, forming fine conspicuous objects in wide borders, and for planting here and there to shoot up amongst belts of evergreens. There are many other kinds of Campanulas that I could mention that deserve especial notice, such as *C. pumila* and *pumila alba*, with bright green foliage, and their charming masses of blue and white bells; but space will not permit of a lengthy description of every species known to be good. Suffice it to say, in conclusion, that a more beautiful class of hardy plants is not to be found, or one that will more amply repay any care or trouble bestowed upon them.

Seeds of several of these may be obtained at some of the large seed houses for a mere trifle, and if sown at once, and the seedlings transplanted when large enough, they will bloom freely next year.

THE GARDEN GUIDE FOR JUNE.

The sweet season that bud and bloom forth brings,
 With green hath clad the hills and eke the vale ;
 The nightingale with feathers new she sings ;
 The turtle to her mate hath told her tale.
 Summer is come, for every spray now springs,
 The hart hath hung his old head on the pale,
 The buck in brake his winter's coat he flings,
 The fishes fleet with new-repaired scale ;
 The adder all her slough away she flings,
 The swift swallow pursues the flies small,
 The busy bee her honey now she wings,
 Winter is worn that was the flower's bale.
 And thus I see, among those pleasant things,
 Each care decays, and yet my sorrow springs.

HENRY HOWARD, EARL OF SURREY.



ACHIMENES need help from liquid manure, to prolong their beauty, and develop the foliage and flowers fully.

BALSAMS should never be allowed to get pot-bound ; it throws them into bloom prematurely, and stops all growth. Therefore, as fast as they fill their pots with roots, shift on in rich light soil.

BEDDERS to have as little water as possible. Pay scrupulous attention to pinching and pegging as required, as on this will depend the beauty of the display as the plants come into full bloom. In pegging trailing plants secure first a supply of shoots regularly over the bed.

BORDER BULBS may be taken up as soon as the leaves are withered, and to ensure perfect ripening lay them in clumps as taken up, without damage to the roots, in a shady place, with a sprinkling of earth over them. The practice of laying Hyacinths and Tulips in a broiling sun is one of the causes why so many are worthless the next season.

CELERY to have an abundant supply of water if the ground is dry, as slow growth is ruin to it, and may cause half the crop to bolt. Continue to plant out, using abundance of rotten dung well worked into the soil of the trenches.

CHRYSANTHEMUMS of the pomponé class, for beds, will do better, and occasion less trouble, if planted out in a piece of manured loam. All they will require will be occasional topping, and in October they will lift well.

CONSERVATORY AND STOVE CLIMBERS require much attention now. A moderate freedom of growth must be allowed, but an occasional thinning, regulating, and stopping are needful now.

CUCUMBERS require an abundance of water, both over the foliage and at the root. Put a few cans of water in the pit or in a warm house early in the day, to have it warm and soft for use in the afternoon, then use it and shut up.

DAHLIAS to be tied up betimes, or sudden gusts of wind will tear away the best branches from the base. On hot dry soils mulching is needful, and will prevent need of watering.

FRUIT GARDEN.—Tie in espaliers at once, before the shoots become firm ; use the engine smartly to wall trees and bushes ; nail in the wood to be kept on wall trees, and remove, but not too much at a time, all superfluous wood. Wall trees attended to now will have time to ripen their wood ; if neglected much longer, it will be too late to do justice to them.

FUCHSIAS in full growth will require abundance of water, and once a week liquid manure. Fuchsias in the open ground are generally disfigured with a superabundance of sticks, whereas, in a good turfy soil, with a moderate amount of rotten dung, they ought to need but little artificial support, and a certain easy drooping habit is proper to their character.

GREENHOUSE AND CONSERVATORY PLANTS require special attention now. Turn out for the summer those that require to be in the open air for the completion of their growth and the ripening of their wood. Take care in all cases to guard against worms finding entrance to the pots, and top-dress at once any that require it.

June.

HERBACEOUS PLANTS out of flower may now be propagated from cuttings. These should be put in a cold frame, in a mixture of sand and loam, and kept shaded. It is important to secure plenty of such things as *Alyssum saxatile*, double Wall-flowers, *Iberis corifolia*, and *I. sempervirens*, *Aubrietia purpurea*, *Dielytra spectabilis*, *Salvia chamædrifolia*, etc.

KITCHEN GARDEN.—Stake runner beans. Sow lettuce; tie a few at a time for immediate use. Sow parsley, endive, and turnips.

LEEKs to be transplanted from the seed-bed to very rich ground, and to be earthed up as they grow, to blanch the neck of the bulb. The frequent use of sewage water will swell them to a great size, and with improved quality.

MELONS to be stopped and trained regularly. The rule is for the female blossoms to be impregnated at midday when quite dry.

ORCHARD HOUSE TREES require very little attention now beyond abundant watering, and the use of liquid manure of a moderate degree of strength. No more pinching to be done. Shoots badly placed may be removed now without fear of causing the buds at the base to break.

PINES must have an abundant atmospheric moisture to prevent exhaustion by this hot bright weather. Shut up early, and syringe and water the floor of the house early every morning. Use as little shade as possible to fruiting plants.

RHODODENDRONS, KALMIAS, AND ANDROMEDAS may now be layered for increase; it is the simplest and surest method of propagation, though slow; nevertheless, they are always better on their own roots than grafted, and though many kinds sow themselves in plenty, and produce thickets of seedlings if allowed, there is no dependence to be placed on them for character, when at last they come into bloom.

ROSES.—Gardens newly made may be furnished with Roses now as well as at any time of the year. The nurseries supply dwarf plants in small pots at a cheap rate, and these turned out with care, in ground well dug, and liberally manured, will grow with vigour, and bloom well in the autumn. In forming a plantation of dwarf Roses, we would as soon plant in May or June as at any time of the year.

SOFT-WOODED PLANTS, such as *Cinerarias*, herbaceous *Calceolarias*, Chinese *Primulas*, *Pansies*, *Pyrethrums*, etc., should be raised from seed now in quantity. If *Primulas* were sown in April for early bloom, it will be as well to sow again for a successional batch. Soft-wooded plants rarely do any good if grown slowly; they need abundant nourishment, and if kept stout and strong rarely suffer from vermin. It is the bad practice of starving seedlings in the seed-pans that creates the principal trouble of getting them clean afterwards.

Sow lettuce for succession, broad beans, wrinkled marrow, Emperor and Advancer peas, radishes, scarlet runners, turnips, Early York and Barr's Dwarf cabbage, a few rosette coleworts, and Walcheren broccoli.

STOVE PLANTS.—Take cuttings of *Euphorbias*, and let them dry before inserting in sand. Start another batch of *Gesneras*. Remove to a cooler atmosphere most of the best subjects that are now in flower. Keep a moist atmosphere among soft-wooded plants of all kinds, and especially *Begonias* and *Caladiums*; in fact, water must be used in abundance about floors and walls.

TOMATOES will bear more abundantly, and occasion less trouble, if constantly stopped before the fruit. Give them plenty of water, and mulch the surface with rotten dung.

TRITOMA UVARIA and varieties require abundance of water now, especially if in pots. *Liliums* the same; when throwing up their spikes they can scarcely have too much.

VINES that have ripened their fruit must be carefully brought into a resting condition by gradually withholding water and exposing the wood to the weather night and day except during rain. Crops ripening to have the help of fire-heat in case of a prolonged term of cloudy or cold weather, as any delay in ripening will bring on mildew. Where the grapes are just stoning, attention should be paid for the last time to thianing and tying in, but do not cut away every apparently superfluous shoot; very often a few random growths help to sustain the vigour of a vine, and are in fact the signs of vigour; but of course these should not overlap the old wood, or shade the leaves that have bunches to take care of. Where ripe grapes are to hang, keep the house dry; and to prevent red spider, paint some tiles with sulphur and lay about in the full sun.

WINTER GREENS.—Plant, during showery weather, broccoli, Brussels sprouts,

collards, cauliflowers, endive, celery, cabbages, green kale, savoy, and whatever else is needed to supply the table during autumn and winter, the grand point being to secure enough of each, and somewhat of a reserve of plants to fill up vacancies, and to plant odd plots. Sow now spinach, turnips, lettuce, horn carrot, radishes.

NEW BOOKS.

THE NARCISSESS; ITS HISTORY AND CULTURE. By F. W. BURBIDGE (Reeve & Co.).—Messrs. Reeve promise a series of elaborate monographs of interesting plants, and the present volume may be regarded as an example of them. It is a handsome large octavo, containing forty-eight coloured plates of narcissi, with chapters on the history, cultivation, classification, and garden uses of these flowers. It is an admirable piece of work, that entitles Mr. Burbidge to the hearty thanks of all lovers of hardy plants, and, though it is cast in a somewhat "popular" model, it will be of use to the scientific botanist also, for the drawings of structure are carefully made, and the coloured figures serve as a guide wherein the daffodils are *always in flower*. As there are about a hundred and thirty species and varieties of narcissi in cultivation, such a work as this is of much greater importance than would be supposed by those who know of only two or three kinds of these flowers.

THE PINETUM. By GEORGE GORDON (Bohn).—This is a new and improved edition of a work we recommended to our readers in the *FLORAL WORLD* for November 1858. Since that time many new species and varieties of coniferous trees have been introduced to cultivation, and the taste for such things has not only spread, but improved. The "Pinetum," as a department of the garden, is regarded with less importance than formerly, for we have learnt to use these noble trees in a better manner than in forming sepulchral groves. Now we see them spreading their arms grandly and gracefully on the lawn, or, in their more rigid and fastigate forms, giving a high tone to the decorations of the terrace, or, better still, as at Dropmore, giving distinct features to the woods. Gordon's "Pinetum" has been carefully revised and enlarged, and is the most useful book of its class, not forgetting the larger undertaking of the Messrs. Lawson. It is, however, in its present form, not only a complete catalogue of conifers, that collectors and cultivators may consult with advantage, but it is a book for the merchant and the traveller, for in it will be found a list of all the known names of coniferous trees, in all known languages, carefully compiled by the publisher, Mr. Henry Bohn, who is one of the most learned and tasteful of amateur horticulturists.

HEREDITY AND HYBRIDISM. By E. W. COX, S.L. (Longmans).—In this neat octavo volume Serjeant Cox proposes to explain the phenomena of heredity and hybridism by the supposition of a dual germ. As distinguished from the *aura* theory, this may be called the *duplex* theory, and has a better claim on our attention, both because it is apparently seasoned with common sense in the first instance, and is full of power when employed to explain and illustrate the transmission of special parental characteristics. The classical reader will not need to be reminded that in some sense it is a reproduction of the philosophy of the grand old Stagyrte.

LES ARBRES FRUITIERS A BRANCHES RENVERSEES. Par M. DOLIVOT (Dupont, 1, Rue des Pretres, Grenoble).—A very pretty, ingenious, and original treatise on fruit culture, the main object of which is to teach the mysterious art of reverse training. It is copiously illustrated with examples, and will afford abundant entertainment to amateur pomologists who have made some progress in the most refined manipulations of pinching, pruning, and training fruit trees.

TRANSACTIONS OF THE MASSACHUSETTS HORTICULTURAL SOCIETY, FOR THE YEAR 1874, Part II. (Tolman and White, 221, Washington Street, Boston).—We have to thank our good friends on the other side for this continuation of the Massachusetts Society's Transactions. We dare not consume space in criticising it, but give it a hearty welcome, not only for its valuable contents, but because it suggests to the Britishers that while they talk much about horticulture, they do not keep pace with their transatlantic cousins in the adoption of measures for its promotion. The most important papers in this issue are the reports of the committees on fruits,

plants, flowers, ornamental gardening, and insects that come within the category of the enemies of horticulture.

THE HANDY BOOK OF BEES. By A. PETTIGREW (Blackwood & Sons).—Here is a second edition of the best bee book extant, and it is purged of certain strange notions on matters physiological that we thought objectionable in the first edition, although they did not interfere with Mr. Pettigrew's serious task of simplifying apiarian practice, and making it thoroughly profitable. Those who wish to enjoy bee-keeping and also make it pay should quickly secure this neat little volume, which is as entertaining as it is useful.

HORTICULTURAL AFFAIRS.



ROYAL BOTANIC SOCIETY'S SECOND EXHIBITION OF SPRING FLOWERS, on April 28, was attended with an unusual degree of success, for the weather was most delightful, and the display of spring flowers one of the best ever seen in the metropolis for many years past.

The azaleas were fresh and well-flowered, the roses in pots superb, the rhododendrons solid with bloom, and the early-flowering stove and greenhouse plants of a higher order of excellence than is usual at exhibitions held so early in the season. The prizes offered by the Metropolitan Floral Society for auriculas were competed for on this occasion, and a fair display of these singularly beautiful flowers was the result. Mr. C. Turner, of the Royal Nurseries, Slough, was awarded the principal prizes for roses in pots; Messrs. H. Lane and Son, Great Berkhamstead, received the first prize in the class for rhododendrons; Mr. Ward, of Leyton, was the principal exhibitor of stove and greenhouse plants; and chief amongst the exhibitors of auriculas and other florists' flowers, was Mr. James, of Isleworth. New plants from the nurseries of Mr. B. S. Williams, Mr. W. Bull, and Messrs. J. Veitch and Sons, formed a most attractive feature.

THE ROYAL HORTICULTURAL SOCIETY'S EXHIBITION OF AZALEAS AND POT ROSES, on May 12, was an exhibition of these flowers in name only, for they were practically unrepresented. There was one group of roses, and two or three lots of azaleas, but they were of the most inferior character, and not deserving of a moment's consideration. The only redeeming feature of the exhibition was that formed by the collections of specimen hardy herbaceous plants from Messrs. W. Rollisson and Sons, Tooting, Mr. R. Parker, Tooting, and Mr. R. Dean, Ealing. The collection of eighteen, for which Messrs. Rollisson received the first prize, consisted of immense specimens superbly flowered, and remarkable for their freshness. In the collection were examples of *Gentiana acaulis*, *G. verna*, *Phlox setacea*, *P. Nelsoni*, *Iberis corrifolia*, *I. Garraxiana*, *Trillium grandiflorum*, *Primula cortusoides amœna*, *P. cortusoides lilacina*, *Dielytra spectabilis*, and *Iris Iberica*. Mr. R. Parker, who was second, had, amongst others, excellent specimens of *Scilla nutans*, *S. nutans rosea*, *Trillium grandiflorum*, *Phlox setacea violacea*, a fine dark variety; *P. frondosa*, *P. divaricata*, a distinct species attaining a height of about nine inches, and producing a profusion of pale blue flowers, and *Anemone nemorosa alba plena*. Mr. R. Dean was third, with a collection including large and well-flowered specimens of *Aubrietia Eyrei*, a remarkably fine species, stronger in growth than other aubrietias in general cultivation, and with large flowers of a rich purple colour, and *Lithospermum prostratum*. Hardy herbaceous plants have been shown in remarkably good condition at several exhibitions held this year, and the specimens staged have afforded ample proofs of their adaptability to the requirements of those who have only a pit or frame for the cultivation of plants in pots.

MESSRS. JACKMAN AND SON'S EXHIBITION OF CLEMATIS, held in the gardens of the Royal Botanic Society, from May 1st to 24th, was so well carried out, that it may be fairly considered an event of considerable importance. Hitherto the capabilities of the clematis for exhibition purposes have not been developed to the extent they should be, mainly owing to but few cultivators knowing that they form most magnificent specimens and produce their beautiful flowers so freely as to present a wonderfully attractive appearance. This exhibition was therefore of importance, as it demonstrated the fine effect they are capable of producing in the exhibition

tent and in the conservatory, and also afforded examples of the best style of training for the two classes of specimens. The exhibition was held in the corridor on the north side of the gardens, and comprised several hundred specimens, and innumerable plants of smaller size, which, as in the case of those of larger size, were densely furnished with flowers. The varieties represented belonged chiefly to the Patens, Florida, and Lanuginosa types, which bloom naturally during the spring and summer. Some of the autumn flowering varieties of the Jackmanni type were represented, but, of necessity, they were not so effective as those belonging to the other types mentioned.

THE WHITSUN EXHIBITION in the gardens of the Manchester Botanical and Horticultural Society at Old Trafford has again proved a grand success, both financially and horticulturally. The numerous and exceedingly liberal prizes were keenly contested by exhibitors from all parts of the United Kingdom, and one of the largest and most complete exhibitions of the season was the result. The attendance of visitors was, as usual, very large, especially on Whit-Monday, which is set apart as a general holiday by the operatives in Manchester and the neighbouring towns.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The annual Report of the Institution for 1874 which has been recently issued to subscribers, is of a satisfactory character. There are, it appears, seventy-two persons who are enjoying the benefits of the Institution. The income for 1874, including a balance of £387 9s. 1d. from the previous year's account, and the Barnett legacy of £1000, amounted to £3,134 10s. 6d. Of this sum £720 6s. was derived from annual subscriptions, £700 12s. 7d. from donations at the annual dinner, £55 3s. 6d. from advertisements in the annual Report; £264 14s 9d. from dividends on stock, and £8 4s. 7d. interest on the deposit account. The disbursements comprise £930 for pensions, £361 15s. 10d. for management expenses, and £1,401 5s. for purchase of £1,500 Consols, leaving a balance to be carried forward of £441 9s. 8d. The total amount of stock in the names of the trustees is £10,400 Three per Cent. Consols.

COLCHICUM OR AUTUMN MEADOW SAFFRON.—Some of the varieties have beautifully chequered flowers, and most of them are so floriferous as to cover the ground with a sheet of blossom, and as the leaves do not appear till Spring, at a little distance the effect is peculiar, there being nothing but colour. The natural position in the economy of the flower garden for the Colchicum is the mixed flower and shrubby border, and the woodland walks, but its accommodating habits readily admit of its utilization in flower beds, to prolong the decorative season. In beds of dwarf plants, or where the Geraniums are not crowded together, the roots of the Colchicum, lifted when at rest, may be planted, making with a common dibber holes all over the flower bed, in each hole planting a Colchicum, and covering it with soil. These roots will throw up large masses of Crocus-like blossoms just as the summer flowers are dying off, and yield a most pleasing and distinct effect to the summer decoration. Byzantium, with its rose-coloured flowers; Variegatum, with its beautifully chequered blossoms; and Autumnale, with its rose-purple flowers; and the purple, the variegated, and the pure white doubles, each with their distinctive character, may be intermingled or arranged separately in distinct beds. *Barr & Sugden's Bulb Catalogue.*

MESSRS. BOULTON AND PAUL, the well-known horticultural builders, of the Rose Lane Works, Norwich, have recently issued a new edition of their illustrated catalogue of horticultural structures, heating apparatus, etc. It has been enlarged considerably, and, from the number and excellency of the designs it contains, will doubtless afford great assistance to those who contemplate the erection of plant or fruit houses either of a plain or ornamental character.

THE CRYPTOGAMIC SOCIETY OF SCOTLAND.—It is proposed to have, under the auspices of the Society, an exhibition of Fungi and Cryptogamic plants every year, the show to be held in various parts of Scotland in rotation. Arrangements have been made for holding the show for this year at Perth, on the 1st of October.

ALEXANDRA PALACE.—An International Fruit and Flower Show will be held at the Alexandra Palace on the 2nd, 3rd, and 4th of September next.

THE RAISING OF CINERARIAS FROM SEED has been brought to a wonderful state of perfection by Mr. James, the able head gardener at Redlees, Isleworth, who, by his labours, has shown that when the seed is saved from the first-class varieties but few of the seedlings will produce flowers otherwise than of good

quality. We had an opportunity of seeing Mr. James's stock of seedlings when in bloom, and although no weeding whatever had been done, there was not a bad flower amongst them. By far the largest proportion had flowers that quite surpassed in size, shape, substance, and colour, the best of the named varieties entered in the catalogues, and the finest of the seedlings had flowers of extraordinary substance and fine form. The plants comprising this strain are remarkable for their stocky habit and the large heads of bloom they are capable of producing. Mr. James was awarded three First-class Certificates for seedlings exhibited at a recent exhibition of the Royal Botanic Society.

ODONTOGLOSSUM ROEZLI, the newest of the Odontoglosses, has this season flowered superbly in Mr. Day's magnificent collection of orchids at Tottenham. In habit it bears a resemblance to *Odontoglossum phalanopsis*, but it quite surpasses that lovely species in the size and more perfect form of the flowers. The flowers are quite four inches across, of the purest white, the base of the petals deep purple, and the base of the lip bright golden yellow. Mr. Gedney considers it one of the finest species of the genus to which it belongs, and one of the most to be desired, because of the facility with which it can be grown.

THE HOLLYHOCK DISEASE continues to baffle scientific men and cultivators. Both are familiar with the little plague spot in which it begins, and of the devastation that follows, but neither know how to prevent it nor how effectually to save the plants attacked. It is easy to talk of "stamping it out," but that means wholesale destruction of valuable collections. The same fungus makes its appearance on the common mallow, *M. sylvestris*, and the musk mallow, *M. moschata*. It occurs also on *Althæa hirsuta*, but less frequently. The grower of hollyhocks would do well to root them out wherever they are to be found, for they are, without question, the nurseries of hollyhock disease.

METAL GLASS.—In Silesia, says *Nature*, a new glass has been invented by Herren Lubish and Reiderer, in Count Solm's glass-works, Andreashutte, its Klitschdorf, near Bunzlau. This glass, which the inventors call "metal glass," is so hard, that when a pane lies on the ground and a leaden ball of forty grammes weight falls upon it from an elevation of twelve feet, it receives not the slightest impression; nor is it in the least affected when dipped whilst red-hot into cold water. Window panes, lamp cylinders, and other articles made from this metal glass, can therefore almost be denoted as unbreakable.

THE CULTIVATION OF THE RED CEDAR, *Juniperus Virginiana*, is being tried on a considerable scale in Bavaria, North Germany, and other parts of the Continent. No other wood, except the still rarer *J. bermudiana*, has been found equal to it in the manufacture of lead pencils, and as the consumption for that purpose is very large, some of the makers have recommended their Governments to attempt its cultivation. Faber, one of the largest manufacturers on the Continent, has already planted upwards of 5000 trees on his own estate. In North Germany it has been planted in the forests, and on the waste ground by the side of the railways. We have not heard of its being planted in this country for commercial purposes, but there is no doubt it would succeed very well, especially in the South. It will bear the wind well, and flourish on the sea coast, and certainly deserves to be more generally planted than it is.

TO CORRESPONDENTS.

NAME OF FERN.—*M. B.*—The fern of which we have received a frond, is *Adiantum macrophyllum*. It requires the temperature of a stove for its successful cultivation, and careful management is necessary in the production of good specimens.

PRIMROSE.—*Rev. Arthur B., Pomeroy, Co. Tyrone.*—The primrose sent is very pretty, but it is distinct from the variety alluded to. It is well worth preserving and increasing, for it will, doubtless, be useful for spring bedding, because of its high colour.

GARDENERS' CLUB AT LEEDS.—*T. D., Sheffield.*—There is a Gardeners' Club at Leeds, under the designation of the Professional Gardeners' Friendly Benefit Society. The contributions are 13s. per year, and the benefits are 10s. per week for

twenty-six weeks, and 5s. per week as long as the sickness lasts. The secretary is Mr. William Sunley, Spring Bank, Headingley, Leeds, from whom all information may be obtained.

SPRING FLOWERS.—*An Early Subscriber.*—All the plants mentioned in your letter may be found in the Catalogue of Perennials issued by Mr. T. S. Ware, Hale Farm Nurseries, Tottenham. Mr. Ware also issues annually a Supplementary List of Spring Flowers, which, as well as the General Catalogue, may be obtained on application. The Italian Coltsfoot (*Tussilago fragrans*) is entered in Mr. Ware's Catalogue of Herbaceous Plants, and you will have no difficulty in obtaining a stock. It grows as freely as the common Coltsfoot, and spreads very rapidly in all directions. It should only be planted in semi-wild places, where its spreading is of no great consequence.

CACTI.—*G. W. O.*—We know of no good book exclusively devoted to these plants. Epiphyllums, and others of similar character of growth, are grafted very easily. A notch is cut in the side or at the top of the stock to receive the base of the scion, and when the latter is properly fitted in its place, it is made secure by means of bast. A little moss is wrapped round the wound, and the stocks removed to a house intermediate between the greenhouse and stove. Until a junction is effected, the soil must be kept rather dry, but a comparatively moist atmosphere is favourable to a junction being rapidly effected.

RUNNER BEANS FOR LATE SUPPLIES.—*K. H.*—A row of runner beans, sown about the 10th of June, will be found of immense service in maintaining a supply in the autumn, after those sown in May cease to be productive. Provided the weather remains open, the June sown runners will continue to bear until quite the end of October, and will be of great value, as there will then be a scarcity of the choicer vegetables.

PLANTING WINTER GREENS.—*Amateur.*—Breadths of winter greens of all kinds should be put out as fast as the ground can be made ready for them. It is well to bear in mind that unless these things have a long season of growth, they do not attain their full size, and in consequence the produce is not so large as it otherwise would be. Early planting is of especial importance in the case of Brussels sprouts. It is good practice in planting cabbages and winter greens to press the foot along by the side of the line, and then pour water along the shallow trench formed by the foot. When this is done, and the plants put out immediately after the water has soaked away, the soil about the roots will be in a nice moist state, and the plants will be placed under conditions more favourable to their becoming quickly established than they otherwise would be. The work can also be executed more expeditiously, as there will be no trouble from the dry soil filling up the holes as fast as they are made, as sometimes happens when the soil is in a dry powdery state when planted. Thirty inches apart each way is a fair distance for winter greens of all kinds. If the ground is very rich, the rows may be three feet apart, and the plants thirty inches apart in the row.

WEEDS ON LAWN.—*E. F. Semmercote, Darlington.*—The lawn sand will turn the grass brown if applied in sufficient quantities to destroy the weeds, and the grass will remain brown and unsightly until the autumn. Dressings of phospho-guano, at the rate of three and a half pounds to the square rod, will be the best, as the guano will promote a luxuriant growth of the grasses, and help them to outgrow the weeds. Nitrate of soda, applied at the same rate, is also an excellent dressing for lawns. When a lawn is overrun with plantains, daisies, and other weeds, the dressing of either the guano or nitrate should be applied in hot weather, as it is then more effectual in destroying them. It will turn the grass brown, but the lawn will resume its proper colour after the first shower of rain. When used simply for promoting a more luxuriant growth of grass and clover, the dressing should be applied in dull showery weather, as it will then not affect the colour of the grass at all.

NEWLY-PLANTED FRUIT TREES.—*E. F.*—If the trees appear to be well established, and are making new growth freely, they may be allowed to bear a moderate crop this season. But on the other hand, if they have a starved appearance, and as the season advances the shoots do not extend freely, it may be concluded that they are not well established, and should not, therefore, be allowed to carry a crop.

PROTECTING SEEDS FROM BIRDS.—*A Subscriber.*—A dressing of saltpetre will not prevent birds eating the seeds; but if they are dressed with red lead previous to

sowing they will not touch them. There are at least a hundred different ways of frightening birds from peas and other things, just as they are pushing through the ground, but a kite's tail has been found the most efficient. This, it need hardly be said, is formed by tying strips of paper to a string, of sufficient length to reach from one end of the bed or row to the other. It should not be put down until it is really necessary, for if the birds become familiar with it before the crops come through they take no notice whatever of it. It should also be removed immediately it is no longer required, especially if there are other crops requiring protection.

GREENHOUSE CLIMBER.—*J. M. M. K.*—There is no climber that will bear sweet-scented flowers throughout the winter in a greenhouse from which the frost is barely kept. *Lapageria rosea* blooms throughout the summer and until quite late in the autumn, and would do well in the position mentioned. Roses are not desirable, because of their liability to the attacks of green-fly when grown under glass in company with a mixed collection of plants. If you determine upon planting roses we should advise you to select *Princess Louise Victoria*, which has delicate pink flowers, or *Climbing Victor Verdier*, which has deep red flowers. Both are hybrid perpetuals of good quality. The presence of ants in the greenhouse is not desirable. They cover the foliage with dirt, and help to distribute vermin, with which any of the plants may be infested, over the entire stock.

EXHIBITIONS TO BE HELD IN JUNE.

- 1 & 2.—ROYAL WESTERN HORTICULTURAL SOCIETY.—*Annual Exhibition at Plymouth.*
- 2.—ROYAL HORTICULTURAL SOCIETY. — *Great Summer Show and Meeting of Fruit, Floral, and Scientific Committees.*
- 8.—ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—*First Summer Show.*
- 8 TO 10.—CRYSTAL PALACE.—*Great Dog Show.*
- 9 TO 11.—LEEDS HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 16.—BURTON-ON-TRENT HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 16.—GLASGOW AND WEST OF SCOTLAND HORTICULTURAL SOCIETY.—*Summer Exhibition.*
- 16.—ROYAL BOTANIC SOCIETY.—*Second Summer Show.*
- 16 TO 18.—YORKSHIRE GALA and Floral Fete, at York.
- 16.—ROYAL HORTICULTURAL SOCIETY. — *Meeting of the Fruit, Floral, and Scientific Committees.*
- 17 & 18.—LEE AND BLACKHEATH HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 23.—FAREHAM AND SOUTH HANTS HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 24.—ROYAL HORTICULTURAL SOCIETY OF IRELAND. — *Great Summer Exhibition.*
- 24 & 25.—ALEXANDRA PALACE, MUSWELL HILL.—*Great Rose Show.*
- 25.—EXETER.—*Annual Rose Show.*
- 26.—CRYSTAL PALACE.—*Great Rose Show.*
- 29.—WEST OF ENGLAND ROSE SOCIETY. — *Annual Exhibition in the Shire Hall, Hereford.*
- 30.—ROYAL BOTANIC SOCIETY.—*Exhibition of Fruit and Cut Flowers.*
- 30.—MAIDSTONE HORTICULTURAL SOCIETY AND MAIDSTONE ROSE CLUB.—*Annual Exhibition.*
- 30.—WISBEACH HORTICULTURAL SOCIETY. — *Annual Exhibition and Great Rose Show.*
- 30 & JULY 1.—SPALDING HORTICULTURAL SOCIETY.—*Annual Exhibition.*
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— 2. ROSE.—PAUL VÉRON

TOWN ROSES.

(With Coloured Illustration of the new Hybrid Perpetual Rose PAUL NEYRON.)



AS towns increase in number and enlarge in size, and horticulture ministers in an ever-increasing degree to the material and æsthetic requirements of urban populations, town roses will acquire proportionately more and more importance. It has been a constant source of anxiety to us to promote the cultivation of roses in towns, and of necessity, we are continually inquired of in respect to varieties suitable to endure the hard conditions of town life. In thoroughly close and smoky districts roses will not grow at all, and there is an end of the matter, as regards the central districts of towns, wherein coal smoke permanently darkens the sky. But in the suburbs of large towns and everywhere in towns not characterized by the prevalence of big chimneys, roses may be very satisfactorily grown, provided the amateur goes to work in the right way. Generous treatment is of the first importance, and the real rosarian who must have roses near him in the smoky town, will provide a respectable rosehouse for the purpose. But the open air culture will always interest a larger number than the culture under glass; and the question will arise again and again, what are the sorts best adapted for the town garden. As in part answering the question, we present a coloured figure of the finest town-rose known. We must have for the town garden roses of vigorous constitution, that flower profusely, and are rarely afflicted with mildew. The variety here figured answers these requirements agreeably, and presents us with an abundance of superb flowers of large size, full globular form, with fine shell petals, the colour deep purplish red, the foliage bronzy green, and peculiarly robust in character. If a rose is seen to have weak foliage, it would be folly to plant it in a town garden. Hence the rejection of very many light roses of good quality, such as Madame Freeman and Madame Lacharme, for they have weak foliage and cannot resist the unfavourable atmospheric conditions to which, in a town garden, they are necessarily exposed. It is really not difficult for the rosarian, who has never had a town garden, to point out such varieties of roses as would thrive in a town with fair treatment.

The vigorous leafage of such as Jules Margottin, General Jacqueminot, and Paul Neyron, indicate their suitability; but, of course, in such a case, the *a posteriori* is better than the *a priori* argument. The following we know to be good town roses, and we beg of those correspondents, who have lately written to ask for assistance in making a selection, to accept the subjoined list as the best reply we can make to their inquiries:—

BEST FIFTY ROSES FOR TOWN GARDENS.

HYBRID PERPETUALS.—*Alfred Colomb, Anna Alexieff, Baroness Rothschild, Baronne Prevost, Beauty of Waltham, Boule de Neige,*

Charles Lefebvre, Charles Rouillard, Doctor Andry, Duke of Edinburgh, Elizabeth Vigneron, Elie Morel, François Treyve, General Jacqueminot, General Lamartiniere, Gloire de Ducher, La France, John Hopper, Madame Boll, Madame Charles Wood, Madame Clemence Joigneaux, Madame de Cambacères, Madame Domage, Madame Victor Verdier, Paul Neyron, Pierre Notting, Prince Camille de Rohan, Princess of Wales, Vicomtesse Vezins, Victor Verdier.

BOURBON PERPETUAL.—*Catherine Guillot, Comtesse Barbantanne L'Avenir, Madame Charles Baltet, Michel Bonnet.*

BOURBON.—*Empress Eugenic, Prince Albert, Souvenir de la Malmaison.*

CHINA.—*Common China, Mrs. Bosanquet.*

MOSS.—*Baronne de Wassenaer, Common, Luxembourg.*

HYBRIDS OF CHINA AND BOURBONS.—*Charles Duval, Charles Lawson, Coupe d'Hebe, Paul Ricaut, Paul Perras, Vivid.*

S. H.

ROSES AND ROSE SHOWS.

BY W. BRADBURY.



IT is now seventeen years since the first exhibition of roses was held in the metropolis, and in that comparatively brief space of time, the cultivation of roses has increased, probably, a hundredfold, and some twelve annual exhibitions of these flowers have been established in the United Kingdom. For some time previous to the holding of the first of the rose shows, the rose, so generally and so truthfully designated the Queen of flowers, was rapidly increasing in popularity. Amateurs who had been satisfied with the common kinds which had long had a place in English gardens, were turning their attention to the choicer hybrid perpetuals, and others that were being introduced from the Continent; and others, who had been more exacting in their requirements, were devoting more space to the cultivation of their favourite flower. This being the case, it was thought, in the early part of 1858, by one of our leading amateur rosarians, that the time had at length arrived for holding an exhibition of roses, quite apart from everything else. The idea being communicated to some of the principal growers, was considered most excellent. A committee was formed, a fund raised, and the result was the Grand National Rose Show, held in St. James's Hall, on July 1, 1858.

A sonorous designation was that under which the exhibition was held, but it was one which the results fully justified, for it was truly grand and thoroughly national. All the nurseries in which roses formed a special feature were represented by boxes of blooms, varying in quality, but all more or less good; and the amateurs who were pushing their way to the front, put in an appearance, and joined heartily in the competition for the prizes offered.

Those rosarians who had an opportunity of inspecting the beautiful display of flowers, and the magnificent array of silver cups, some thirty-six in number, which were awarded to the most successful competitors, will not readily forget the effect it produced upon their minds at the time. The second National Rose Show was held in Hanover Square Rooms, on June 23, 1859; but the roses did not appear to such advantage as in St. James's Hall the previous year, and generally it was not such a decided success. The third National Show was held at the Crystal Palace on July 12, 1860, when it was attended by such an immense concourse of visitors that the directorate determined henceforth to hold an exhibition of their own, and the Crystal Palace Rose Show has, for the past fifteen years, been invested with special interest to rosarians, because it is usually held in advance of all the other exhibitions of a similar character, and consequently affords the first opportunity for arriving at conclusions respecting the quality of the roses throughout the country. The fourth National was held in the gardens of the Royal Horticultural Society at South Kensington, on July 10, 1861; and since that year an exhibition of roses has been held annually, under the auspices of the Society.

It would occupy too much space to speak in detail of the various exhibitions now held annually in the United Kingdom, and it will suffice to say that the more important exhibitions in the provinces are those held at Hereford, Exeter, and Birmingham. The latter, which has long been considered one of the most important of the provincial gatherings, has, since 1872, been held in connection with the horticultural exhibitions held in the Lower Grounds, Aston Park, of which it has invariably formed an important feature. There is this year to be an exhibition of roses in the Nottingham Arboretum, from the 8th to the 10th of July; and as the prizes offered amount to no less than £250, it will probably be the best show of the season. There has also been a capital show of roses at the Alexandra Palace, Muswell Hill, and under the able management of Mr. McKenzie, the superintendent of the horticultural department, it proved successful throughout.

The amount of money offered annually in the form of prizes for roses is, at first sight, quite astounding. There is some difficulty in arriving at an approximate estimate, but it cannot be less than £2000, for, in addition to the sums offered in the schedules of the rose shows, the metropolitan and several of the most important provincial societies offer liberal sums for pot roses, and the majority of the provincial societies that hold their exhibitions in June and July, offer large amounts for roses, with a view to induce some of the principal trade growers to add to the attractions of their exhibitions.

When we consider how high is the estimation in which the rose is held by all classes of the community, and the liberal encouragement it receives, it will not be found difficult to believe that the trade in roses has now become of vast importance. In several of the nurseries may be found as many as 100,000 standards ready for sale, and, in addition, thousands of dwarfs on their own roots and on the manetti. It is practically impossible to say, within some

thousands, how many standard roses are distributed from the nurseries, but it certainly cannot be less than 1,000,000, of the value of £50,000 ; and, in addition, thousands of dwarfs in and out of pots, are of course sold annually. This, it must be understood, is exclusive of the new roses sent out every year, for these form an important department of the rose trade ; and it is estimated that at least £10,000 are paid annually to the French raisers for the new varieties they have to offer, and these can hardly be propagated and placed in the hands of the English amateurs for a less sum than £20,000. Therefore, there cannot be less than £100,000 expended annually in the purchase of roses.

Whilst the exhibitions have done much to encourage the cultivation of the rose throughout the country, the "Amateurs' Rose Book," which is unquestionably the most valuable work on the cultivation of roses in the English language, and the *FLORAL WORLD*, may fairly claim some of the credit. Certain it is that no one can read the "Amateurs' Rose Book," which has now reached its third edition, without being filled with a desire to form a rose garden, and enter into the arena with his stands of twenty-four, thirty-six, or forty-eight cut blooms, according to the means at command, and it is equally certain that the many timely hints on selecting and cultivating which have appeared in the pages of the *FLORAL WORLD*, must have been of immense assistance to the cultivator in bringing his labours to a successful issue. I know the advice on doubtful points that I have received through these publications has been most valuable to me, and gladly do I acknowledge my indebtedness. Sometimes the advice most needed has referred to some cultural detail, and at other times it has been in the form of a criticism of the new varieties. The articles on the new roses which appear from time to time in the *FLORAL WORLD* are by no means the least valuable of its contents, and I am afraid to say how much money I have saved within the last ten years by acting upon the advice given, and buying those only which have been recommended, but I may say that by so doing I have avoided the purchase of varieties that have ultimately proved to be inferior to those already in the collection.

In no year has the encouragement to rosarians been more liberal than in the present season, and fortunately there is an abundance of flowers of good quality. It has been a trying season, for in the spring we had a long continuance of cold easterly winds. This was followed by a period of brilliant sunshine and drought, and the trees in many instances had more than their usual share of enemies to contend with. The "worm in the bud" first, then the aphid, and those who have succeeded in keeping these pests under have not had their time hang heavily on their hands. The rains which fell about the middle of the month were of immense assistance in helping the trees to fully develop their flowers, and they doubtless have been the means of saving more than one rosarian from an ignominious defeat at the exhibition ; for on dry soils, where there is always more or less difficulty in the production of first-class blooms, the drought was severely felt. I have not had so much trouble

with vermin as some of my neighbours, for I have acted upon the advice Mr. Hibberd gives us in the "Amateurs' Rose Book," to the effect that good cultivation is the best means of warding off the attacks of insect pests; so long as a vigorous growth is maintained, so long will the green-fly, which is one of the most troublesome pests, be unable to do them any harm; but let the trees be checked in their growth, either through an insufficiency of nourishment or moisture, and they will at once be attacked by a colony of aphis, and a considerable amount of labour will be necessary to dislodge them. My roses are mostly growing in soil that was deeply trenched and liberally manured previous to their being planted, and which has been top-dressed annually. My practice for many years past has been to apply a top-dressing of partly decayed stable manure in March or April, and this has been found of immense assistance in helping them to tide over periods of drought. Where they are grown in beds, the entire surface is covered to a depth of six inches, and the trees that are placed singly about the garden have the roots covered to a distance of about eighteen inches from the main stem. This not only prevents the moisture drying too rapidly out of the soil, but it facilitates the application of water, for when the latter is poured on the loose material it soon soaks into the ground, but when the surface is exposed it becomes so hard in dry weather that the water runs away and does very little good. Moreover, the trees receive considerable assistance from the fertilizing properties washed out of the manure in the course of the season, and in the autumn, or during the winter, the manure can be covered by simply turning over the surface soil.

GAY FLOWERS FOR NEXT SPRING.

BY GEORGE SMITH.



SPRING flowers are becoming more popular every year, and in a few seasons a flower-garden unoccupied during the months of March, April, and May, will be as singular as an empty flower-garden during the summer season. This is not by any means surprising, for there can be no question that large numbers of the hardy flowers which bloom in spring are extremely beautiful, and those best adapted for massing are fortunately multiplied without difficulty. It is quite surprising to find how easy large stocks of those which make the best display may be raised, and I would strongly advise those who have not yet had a display of spring flowers in the parterre to have one next year, and to commence at once the task of raising a stock of the various kinds with which to fill the beds. There are large numbers of plants capable of producing a beautiful display of flowers in spring, more, in fact, than one would suppose, but they are not all alike adapted for the parterre. Some are not so readily propagated as the exigencies of the case demand, and others, again

cannot be transplanted without receiving a check, or do not bloom satisfactorily until well established. We will, therefore, pass them by, as being suitable only for the herbaceous border, where they can remain undisturbed throughout the year. There are plenty of good things which can be propagated and transplanted with the same facility as the commonest of the scarlet geraniums, and which also will make a most beautiful display. The most useful of the spring-flowering plants for massing are, unquestionably, *Alyssums*, *Arabis*, *Aubrietias*, *Daisies*, *Forget-me-Nots*, *Iberis*, *Phloxes*, *Pansies*, *Primulas*, *Silenes*, *Wallflowers*, and *Violas*. These are rather too many for an amateur to begin with in quantities; and it will, in most cases, be well to select from them the *Daisies*, *Forget-me-Nots*, *Silenes*, and *Wallflowers*. With the exception of the daisies, which can be purchased at a very cheap rate, these can be raised from seed sown early in July, and, provided the arrangements are good, the display will be very effective. The *Arabis* can also be recommended, for it produces new roots so freely that it may, during the summer, be pulled to pieces most unceremoniously, and planted in nursery beds with the full assurance of its taking root and producing a stock of plants by the autumn.

The dwarf growing *Alyssum saxatile* produces a mass of flowers close upon the surface, and of the brightest yellow; and is one of the finest yellow spring flowers for edging purposes we have; it can be propagated during the summer by means of cuttings of the side-shoots, inserted in sandy soil, under hand-glasses, placed on a shady border, and also by seed sown at the same time. As it is of rather slow growth the young plants will not be large enough for planting in the flower beds until the autumn of the year following the striking of the cuttings or the sowing of the seed, and in the meantime they must be planted in a nursery bed, when sufficiently advanced, to afford them a chance of becoming well furnished with roots and side shoots. The plants may be employed in the flower garden several years in succession, if the straggling shoots are pruned in when they are removed from the seed-bed.

Arabis albida, is the best of its class; it has pure white flowers, and when in bloom is about ten inches in height. To increase the stock and keep the plants compact, pull the clumps to pieces either when they come from the flower beds or in the course of the summer. Shorten the stems if necessary, and plant in lines, either in a sunny or shady position. It is of no consequence their not having any roots, but sufficient stem must be left to admit of their being fastened properly, and when they are without roots and put in a sunny position, they must have some kind of shade for a fortnight or three weeks after planting. It is not of much use to lift a large mass in the autumn, and then pull it to pieces and plant in the beds, as it is practically impossible to produce satisfactory results.

Aubrietia deltoidea, lilac, and *A. purpurea*, purple, are the two best aubrietias. They should be propagated in precisely the same manner as the arabis, with the exception that as they are of much smaller growth they should be divided into small clumps instead of singly. They both grow about three inches in height, and are very

beautiful for marginal or second lines. The aubrietias are not well adapted for heavy clay soils, as in wet winters a portion of the plants perish.

Daisies simply require to be divided into single crowns when taken from the beds, or some time during the summer, and to be planted in a shady position. The *Double crimson*, *Double White*, and *Double Pink* are the most effective daisies, are exceedingly valuable, for they bloom early and continuously, and are so hardy in constitution, that they grow freely on the unkindest soils, and are not affected by the most unfavourable weather.

The best of the *Forget-me-Nots* is that known as *Myosotis sylvatica*, as it is robust in growth, blooms freely, and is not affected by severe or wet winters. To raise a stock it is simply necessary to sow the seed, which can be procured at a cheap rate, in drills on a shady border, and lift when the plants are required for filling the flower beds. As they will not be transplanted, the seed must be sown thickly, or a few of the plants be pulled out when an inch or so in height. The flowers are of a beautiful light blue shade, and when the plants are in bloom they are usually about twelve inches in height.

The dwarf-spring flowering *Phloxes*—of which, *P. frondosa*, rose, *P. Nelsoni*, white, and *P. verna*, rosy-pink, are the best—must be propagated from cuttings, as advised for the alyssum. They can also be employed several seasons in succession, by pruning them to keep them bushy. They require a rather more shady situation, more moisture, and greater care than the alyssum.

The most generally useful of the evergreen Candytufts for massing, is *Iberis sempervirens*, which has pure white flowers. It requires precisely the same treatment as the alyssum, and may be kept until it attains the dimensions of a large bush.

The single and double varieties of the Primrose, *Primula acaulis*, are very attractive in masses. Even the common Primrose itself is useful for forming an edging to a bed filled with darker flowers. *P. altaica* has deep violet flowers, and is very showy. *P. cortusoides amena* has flowers of deep rose-colour, is very free-flowering, and unsurpassed in attractiveness. It is quite hardy, and can be strongly recommended for bedding purposes; but it is yet too expensive to admit of its being extensively employed for that purpose. They should all be divided in the same manner as the daisies, and during the summer be grown in a shady situation.

On rather dry soils, Pansies are unsurpassed in effectiveness, for they come into bloom early, and produce glorious masses of yellow, purple, blue, and white; but on cold clays they cannot be depended upon, and they should not, therefore, be planted. The earliest blooming and the hardiest varieties are the *Cliveden Blue*, *Cliveden Purple*, *Cliveden White*, and *Cliveden Yellow*, which have flowers of the colour indicated by the name. Cuttings of the young shoots should be struck in July, under hand-glasses in a shady border, and the young plants be put in nursery lines immediately they are rooted, to afford them a chance of becoming strong by the time of their being planted in the flower-beds.

The *Violas* require to be propagated and transplanted in precisely the same manner as the pansies. They are very similar in character, and succeed under the same conditions. The most effective and useful varieties are, *V. Perfection*, blue; *V. lutea major*, bright golden-yellow; and *V. sulphurea grandiflora*, pale sulphur.

The well-known *Silene pendula* is one of the most useful spring bedders with pink flowers, as it may be raised in any quantity in the same manner as the forget-me-nots. The seed must be sown some time in July, and if thinly in drills, no transplanting will be necessary beyond transferring them to the flower-beds. Like the pansies, the silene does best on a rather dry soil. The beautiful *Silene pendula compacta*, raised a few years since by Mr. William Cole, is much better than the species, for it is more compact and produces a greater profusion of flowers. For masses, especially if the beds are small, and also for second rows in borders, it can be strongly recommended. Seed is now cheap, and obtainable at all the nurseries and seed stores; so that there is no difficulty in giving it a trial.

The Wallflowers are all very hardy, may be propagated readily by means of seeds or cuttings with the utmost facility, and, in point of effectiveness, they are unsurpassed. The seed should be sown thinly in drills in an open quarter not later than the middle of July. The plants will then require no transplanting. The best results are obtained by sowing in May or June, and then transplanting once, and nipping out the growing point to promote the production of side-shoots. Wallflowers may be kept an indefinite number of years, but they have an unsightly appearance during the summer season, and occasion a considerable amount of trouble; and the amateur will find it more advantageous to raise a fresh stock annually. The *Belvoir Castle Yellow* is a fine dwarf variety, with pure yellow flowers, and undoubtedly the best yellow spring flowering plant we have for the centre of beds, and, in fact, for any purpose where there is a difficulty in raising a stock of the alyssum. The strain known in the trade as *Dark Blood Red* is very useful for large beds, as the flowers are of a rich crimson, and in a mass are very effective.

Previous to sowing the seeds of either of the foregoing, the drills should be well watered, to assure the soil being sufficiently moist to assist the seeds to germinate quickly.

ROOTS IN DRAINS.—In a paper recently read before the Edinburgh Botanical Society, some curious cases were cited of the entire occupation and stoppage of drains by roots of trees. In one instance a two-inch pipe, with sockets, laid in an orchard a foot below the surface, was completely filled with the roots of an apple-tree. In another, a root had entered a lead pipe and grown and branched into numerous fibres which filled the pipe for a considerable distance. The strangest case was where a willow growing near a dam had sent roots 25 feet beneath a road, and penetrated a large leaden drain-pipe 7 feet below the surface, and stopped it. The pipe was taken up and cleared, and the tree cut down. The drain was relaid, but some time afterwards was again stopped. It was then found that the stump, which had sprouted, had sent a mass of rootlets into the drain, which had filled the pipe solidly, although their connection with the tree was only by a single rootlet.

STRAWBERRIES IN SMALL GARDENS.

BY JOHN SCOTT,

Merriott Nurseries, Crewkerne, Somerset.



OWING to the drought, the strawberry crop has not been so heavy this season as usual; nevertheless, on ordinary good soils, and also where the means have existed for supplying the beds rather copiously with water, the fruit has reached a fair size, and has been of excellent quality. It would be a waste of time, a waste of space, and an undue tax upon the reader's patience, to say much in praise of this fruit. All who read these remarks will be prepared to acknowledge it to be one of the most delicious fruits grown out-of-doors in this country, and also one of the most useful for preserving. It will not, however, be amiss to say, that to have strawberries in perfection, you must have a bed of your own from which to gather. You can then have the fruit in the freshest possible condition, in a perfect state of ripeness, and possessing that delightful aroma peculiar only to strawberries that have not had to be packed, and to pass through the hands of the dealer and the fruiterer before coming to table. To form a strawberry-bed is by no means difficult, neither is it very expensive, even if all the plants have to be purchased, for runners of all the established kinds may be had at prices ranging from three shillings and sixpence to five shillings per hundred. The after-management is not likely to be an undue tax upon the time and the skill of the amateur, for it really resolves itself into keeping the bed free from weeds and surplus runners, and in placing loose material underneath to keep the fruit clean. The beds cannot be left wholly to themselves, for when they are neglected they become so choked up with runners, as to render the production of good crops impossible.

Knowing how highly appreciated is the fruit, and how productive a bed is when it receives the small amount of attention needful to keep it in proper order, I would strongly recommend the formation of a good-sized bed in all villa gardens of a quarter of an acre and upwards.

Some diversity of opinion exists amongst cultivators as to the best time for forming new beds. Some contend that the best results are obtained by planting towards the end of the summer, whilst others support spring planting. This difference is in a large measure explained by the fact that beds may be formed at both seasons with the certainty of the plants doing well. But this much may be said, beds formed in the month of July, or as soon afterwards as strong runners can be had, will produce nice crops the following summer: but spring-planted beds will not come into bearing until the following summer twelvemonths. Runners planted now will require rather more attention at first than those planted in spring, otherwise they will be dried up, and make but little progress. They will simply require a moderate watering every alternate day during the con-

July.

tinuance of dry weather, until they are nicely established. The simplest course is to plant in rows two feet apart, and to put the plants eighteen inches from each other in the rows. The gathering of the fruit will be facilitated by allowing a space thirty inches in width between every second row.

A rather deep-holding loam is undoubtedly the most suitable for strawberries, but they do well in all kinds of soil, provided they are not very light or excessively heavy. Soil which has been trenched deeply and dressed liberally with manure in the winter previous, is undoubtedly the most suitable in which to plant strawberries; and if a piece of ground in a suitable position has been prepared as here described, and cropped with early potatoes, it should be taken possession of, for by forking it over the surface it will be in a capital state for the reception of the strawberry plants.

Until the following spring, no attention will be required by the bed beyond hoeing over the surface once or twice to keep down the weeds in the autumn. In March, when the surface is dry, the soil immediately about the plants should be made firm with the foot. Sometimes, especially when the winter has been severe, the soil becomes so loose that the dry winds materially injure the roots. In after years this precaution is not often necessary. The bed should be hoed over as often as may be necessary to keep down the weeds until the flower trusses are pushing up, and then a little clean straw or long litter from the stable should be laid between the rows, to prevent heavy rain washing up the soil and damaging the fruit. The runners, unless required for layering in pots, to raise a stock for the formation of a fresh bed, or for pot culture under glass, should be removed when about six inches in length. They can then be nipped off with the thumb and finger; but if they are allowed to remain and take root, a very large amount of additional labour is required in their removal, and the plants are injured by their crowding them up, and preventing the development of healthy foliage.

From what I have seen of strawberry growing in the gardens of amateurs, I am of opinion that amateurs are more in need of information on the selection of suitable sorts than upon any other point. Certainly, it is not an uncommon occurrence to meet with beds consisting of sorts that are either second-rate in quality, or inferior to others as regards productiveness. In selecting, those which are free growers and produce heavy crops of fruit of large size and high flavour should have the preference. The time of their ripening their fruit must be taken into consideration, so as to prolong the season as much as possible. Six sorts are none too many for a garden of an average size, and the six that I should recommend as combining the above-mentioned qualities are:—

Dr. Hogg.—A large and handsome fruit, of cockscomb shape, and remarkable for its sweetness and rich flavour. A hardy and free-bearing variety, ripening at mid-season.

Filbert Pine.—A medium sized conical fruit, of a dull crimson colour, with solid, brisk, and richly-flavoured flesh. It is very prolific, and succeeds admirably on light soils, where the *British Queen* will hardly grow. Late.

Frogmore Late Pine.—A very large conical fruit, of a deep, yet bright red colour; very juicy and richly flavoured, possessing, in a large degree, the *Pine* aroma. The best late strawberry.

Keen's Seedling.—An old and well known strawberry, producing large ovate fruit of good flavour. Rather early, and one of the best for general purposes.

President.—A large, handsome fruit, of the brightest crimson; of excellent flavour, and remarkable for its firmness. It travels better than the majority of varieties; early, productive, and in every way desirable.

Vicomtesse Hericaut de Thury.—A pretty fruit, conical, rather above medium size, and of a brilliant scarlet; solid, rich, and briskly flavoured. A very abundant bearer, and well adapted for general cultivation. Mid-season.

If ten sorts are required, I should recommend in addition to the foregoing:—

Carolina Superba.—A large, handsome ovate fruit, of a pale red colour; firm, solid, rich, and vinous, with fine aroma. A very good cropper. Mid-season.

Eliza Improved.—A medium sized ovate fruit, of a fine red colour, and most exquisite in flavour. More productive than *Myatt's Eliza*, and ripening at mid-season.

Premier.—A large, roundish fruit; corrugated, firm, rich, and juicy, and with bright shining red skin. A good cropper. Mid-season.

Sir Charles Napier.—A very large fruit, of handsome appearance and good quality. The flesh is brisk, rather acid, but not highly flavoured. It is of robust habit, very productive, and brings its crop to maturity at mid-season.

I would add that these have been carefully selected from my collection, which now includes nearly one hundred of the best sorts in cultivation.

FILMY FERNS.



FILMY ferns, which comprise the *Hymenophyllums*, the *Todeas*, and the *Trichomanes*, differ from ferns generally grown, in requiring a much closer and moister atmosphere and the fronds to be kept in a constantly moist state. Two of the best known filmy ferns are *Todea superba*, which is perhaps one of the most beautiful ferns in existence, and the Killarney fern, *Trichomanes radicans*, which is certainly not wanting in attractiveness when in ordinary health. These ferns have such a cool and refreshing appearance during the summer season, that wherever ferns find a home under glass, provision should be made for their cultivation. Inhabiting, as they do, when growing naturally, dark ravines where they are constantly wetted with the spray from a waterfall, or kept sufficiently damp by the moisture rising from the water below, they are necessarily peculiar in their require-

ments, and to achieve success in their culture they must be placed under conditions somewhat similar to those under which they are placed in a state of nature.

To cultivate filmy ferns successfully is not difficult, and no great expense need be incurred in providing for their wants; a single specimen may be grown under an ordinary bell-glass, half-a-dozen plants in an ordinary plant or fern case, but if the collection is rather large, a cool shady corner of the fernery may be shut off from the other part of the house by means of a division, or, more properly speaking, a glass screen. The close moist atmosphere so essential to their health, is more or less hurtful to the majority of the other ferns, therefore some separation is necessary in the interest of both classes. Even if the collection is large, it does not necessarily follow that the fernery should have a division of glass put up, for all the plants can be grown singly under glasses, or a few may be grouped together in cases. At Kew Gardens, for example, in which the collection is thoroughly representative, each species is grown in a separate case of somewhat primitive construction, and this plan may be commended to the notice of those amateurs who are disposed to commence their culture. A beginning may be made with two or three kinds, and as soon as their cultivation is well understood they can be added to according to the inclination of the cultivator. By this arrangement there will be no great outlay at any one time either for plants or for cases, and there will be sufficient opportunities for becoming well acquainted with their requirements before a large outlay is made. This is a point of some importance, for they are mostly rather expensive to purchase. A leaky aquarium, with a cover of green glass, is in every way suitable for these ferns, when no longer fit for its original purpose.

The species to which special reference is now made, may be divided into two classes, one comprising those requiring the temperature of a stove, and the other, those succeeding well in a cool fernery or greenhouse. They will all grow freely in the stove, but in purchasing it is desirable to select the sorts according to the temperature in which they are to be grown. A list of a few of the most desirable species will be given, with indication of the temperature most suitable for each, so that there will be no difficulty in selecting suitable kinds.

In fitting up cases for these ferns a moderate quantity of soil must be provided, and above the soil should project pieces of stone that is rather soft, and that will hold the moisture.

The Hymenophyllums and the Trichomanes have creeping rhizomes, and spread over the surface and any piece of rock that may be placed on the soil; whilst the Todeas have a single upright stem, and one of the species when of rather large size has the appearance of a miniature tree fern. The Todeas therefore should be grown in an ordinary pot, and the pot placed in the case, or in a pan and covered with a bell-glass; the others should be grown in ordinary pans. The Todeas have spreading fronds, and plants growing in six-inch pots will require a bell-glass twelve or fifteen inches in diameter to allow of the full development of the fronds. Larger plants will of course

require glasses of proportionate size. When the fronds are crippled and bent for want of room, they have an unsatisfactory appearance. The other kinds are perhaps more effective when the glass is quite full, and the fronds press against the side of the glass. A mixture consisting of fibrous peat two parts, sphagnum moss one part, and about half a part of lumps of sandstone ranging in size from a hazel nut to a walnut, is the most suitable for the majority of the species. The *Todeas* may have half a part of fibrous loam in lieu of the lumps of stone, and in all cases where there is a difficulty in obtaining the stone, broken bricks may be substituted. The pots must have a good drainage of crocks placed in the bottom, for long experience in their cultivation has shown that although they require to be kept constantly moist, the drainage must be sufficient to carry off the superfluous moisture, and prevent the soil becoming sour through the moisture remaining in a stagnant state. The plants should be turned out of the small pots carefully and put in the pans, the soil pressed firmly about them, and the pieces of stone placed over the surface and put about halfway in the soil and halfway out. Some few of the smaller growers succeed best on pieces of wood, and on portions of dead stems of tree ferns, but as none of these will be mentioned, it is not necessary to say anything in reference to their cultivation, and on this occasion attention will be confined to those which require to be grown in soil. Those with creeping rhizomes must not be potted deeply, and as they succeed much better where they can spread over a few pieces of stone the latter should not be more than from two to three inches above the surface. The *Todeas* should be potted in the usual manner, and the crown of the plant kept from two to four inches above the level of the rim, and the soil, which should have a surfacing of live moss, banked up about it.

The general management consists in sprinkling the plants overhead daily during the summer season, and as often as may be necessary to keep the fronds damp at other times. Water perfectly clean and of the same temperature as the structure should be used, and it may be applied with the syringe in the form of a gentle shower or through a fine rose. Although these ferns require a close atmosphere, they must not be kept absolutely without air, and the glass may be occasionally removed, or the case opened, but this should be done when the house is closed. They must be kept in a rather dark position, and should they be placed where they will be exposed to the sun, a thick shading must be put over the glass before the sun shines upon them. When grown indoors, a window facing the north should be selected, and care taken to have the window closed when the glasses are removed to admit of the necessary watering.

The undermentioned are the best for a cool house:—*Hymenophyllum demissum*, *H. flexuosum*, *H. scabrum*, *Todea superba*, *Trichomanes elongatum*, *T. radicans*, *T. reniforme*, *T. venosum*. The finest of those requiring a stove temperature are, *Hymenophyllum ciliatum*, *H. pulcherrima*, *Todea Wilkesiana*, *Trichomanes crispum*, *T. maximum*, and *T. rigidum*. The majority of the cool species may be most successfully cultivated in indoor apartments, provided they are not exposed to draughts or sunshine.

FILIX-MAS.

CHOICE PLANTS FOR THE GARDEN FRAME.

BY A LONDON AMATEUR.



ANY, with only a pit or garden frame in which to cultivate plants in pots, will probably be interested in a few particulars of some plants that are not generally known and cultivated, but which are exceedingly beautiful, and may be grown most successfully without the aid of any artificial heat whatever. The class of plants to which it is intended to direct the attention of the reader, comprise the hardy Lady's Slippers, and a few other hardy orchids; the hardy Side-saddle, or pitcher plant, the grass of Parnassus, Pinguiculas, and others of like character. A two-light frame, about six by eight feet, would afford sufficient accommodation for a rather large collection of these, and throughout the season the amateur would have something to interest him. It must be premised that these plants will require greater care and more attention than the general run of soft-wooded plants. But when their peculiarities are properly understood, no great difficulty will be experienced in growing them to perfection. Any ordinary pit or frame will answer perfectly, provided it is watertight; for although the majority of the plants that will be named luxuriate in an abundance of moisture during the summer season, they will suffer considerably if exposed to drip. Especially is drip injurious to the plants when at rest during the winter season. A shady situation is required by most of the plants; and to avoid the labour incidental to the use of shading material the frame should be placed in a shady situation, not overhung with trees. When the pit has been placed in a position and has had a layer of sifted coal-ashes placed in the bottom to a depth of three or four inches, it will be ready for the reception of the plants with which it is to be occupied.

We now come to the selection of the most interesting of the subjects particularly suitable for the purpose which we have in view. There will be no trouble in finding a sufficient number, for there are more than will be required in any one collection. Perhaps the most important are the hardy orchids, and foremost amongst these are the Lady's Slippers, which are very beautiful, and owing to the peculiar formation of the flowers, are generally much admired. *Cypripedium acaule* is a fine American species, producing flowers quite two inches in length, and of a lovely rose colour, on stems about seven inches in height. *C. parviflorum*, a vigorous growing species, ranging in height from twelve to twenty-four inches; the stems are leafy, and bear from one to three large flowers; the lips yellow, and the petals and sepals brownish purple. *C. pubescens* is similar to the preceding, with larger flowers. *C. calceolus* is a fine British species not often met with. From one to three blooms are produced on a stem, and these are large; the slipper, or labellum, yellow, and the sepals and petals reddish purple. *C. spectabile* is one of the very finest of the hardy species. The flowers are produced on stems about a

foot high, are of large size, and the slipper is of a delicate rose colour, whilst the sepals and petals are pure white. Several specimens of this species have been exhibited this season, and it may be truly said that none of the orchids grown in a high temperature, at an immense expense, presented a more beautiful appearance. These should be grown in pots filled to about one-third of their depth with large crocks, and in a mixture of three parts fibrous peat, one part leaf-mould, and one part of rough sand. *Orchis foliosa* is of a quite distinct character to the preceding, and produces spikes of purple flowers about eighteen inches in height. It makes a grand specimen, and is of free growth, succeeding admirably in a mixture of equal parts turfy loam and fibrous peat. They all require liberal supplies of water during their growing season, and the soil to be kept just moist at other times. Throughout the summer, the frame must be freely ventilated, and during the continuance of frosty weather be kept close.

The side-saddle plant, *Sarracenia purpurea*, has a remarkably interesting appearance at all times, for the leaves have the appearance of large pitchers, and remain in a fresh state throughout the year. It thrives admirably in a mixture of peat and moss, and during the summer the pots should be stood in a pan of water. At the Glasnevin Botanic Gardens there is a large specimen of this remarkable pitcher or side-saddle plant, which has been out of doors several years, and makes good progress. It is planted in the bog, and the soil with which it is surrounded was frozen quite solid several times in the course of last winter, so that there is no doubt of its hardiness.

Several of the hardy primulas are more beautiful grown under glass in a cold frame than when planted in an open border. There are, for example, the two Japanese species—*P. cortusoides* and *P. Japonica*, and their several varieties. The best varieties of the former are *P. c. amœna*, *P. c. lilacina*, *P. c. alba*. All the varieties of *P. Japonica* are good. These may all be grown in a good turfy loam and leaf-mould, and when in the form of large specimens are extravagantly showy. The dwarf kinds, such as *P. denticulata*, *P. farinosa*, *P. glaucescens*, *P. glutinosa*, *P. luteola*, *P. nivalis*, and *P. viscosa*, are all beautiful, the two latter being especially good. They all thrive in a light mixture of leaf-mould, loam, and sand.

Again, some of the tuberous-rooted begonias which are most attractive, producing a profusion of brightly coloured flowers, thrive exceedingly well in a frame. The best, perhaps, are *B. Boliviensis*, scarlet; *B. octopetala*, white, and *B. Veitchi*, vermilion. These all succeed most satisfactorily in good turfy loam, leaf-mould, and sand. The pots should be placed, during the winter, where the frost cannot reach the soil. In spring, the tubers will require shaking out of the old soil, and potting in fresh compost.

There are numerous other plants suitable for frames; but I am most anxious not to overburden the reader with names, and sufficient have been mentioned to make a good beginning with. Those who are desirous of having a larger collection, may have a more extended list by expressing their wishes to that effect in the FLORAL WORLD.

SPRAYS FOR THE HAIR.

BY MISS A. HASSARD.



MY last paper in the FLORAL WORLD being on the subject of bouquets for the head, I think I cannot do better than follow it up by one on the arranging of natural flowers for the hair, as one so often accompanies the other. Sprays of natural flowers in the hair have a much more pleasing effect than those formed of artificial flowers, but they are not so often employed as they otherwise would be, from the prevailing supposition that they soon droop and fade in the heated atmosphere of a theatre or ball-room. That they do so, if not properly mounted, there cannot be two opinions, therefore how to mount them properly and get over this difficulty is what I shall endeavour clearly to explain.

All flowers such as pelargoniums, etc., should be gummed, and such as camellias and gardenias wired. Those varieties which last longest should be selected, but by being mounted many can be employed which would otherwise fall to pieces in a few hours when subjected to a heated atmosphere. To enter on the subject of how each particular flower should be wired would take up far too much space, therefore I must only presume that my readers are well informed on this point, and have the flowers which may be selected so prepared. The form and style as regards shape of sprays of natural flowers change with the fashion just as much as with artificial ones, therefore the best plan is to copy the form of the fashionable artificial ones as closely as possible.

The centre flower of all sprays for the hair is mostly of a larger size than the others employed in its construction, such for example as a rose-bud, gardenia, etc.; then around this centre flower are worked others of a lighter growth and smaller size, such as stephanotis, bouvardia, etc. The flowers to form the point should be lighter still, such as lily of the valley, or any of a light and graceful form suited to finish off the point. At this season a pretty spray could be formed of a bloom of eucharis amazonica, spikes of scarlet ixia, and pips of stephanotis, maidenhair fern being interspersed through the whole. I shall now describe how I should set about arranging a spray of the flowers which I have just enumerated. First as to the wires, etc., required; these will be a stub wire, some piercing wire, a reel of fine binding wire, some fresh green wood moss, and a little white cotton wool. The first thing I should do would be to pull the truss of stephanotis to pieces, that is to say, break or cut off each pip, in place of leaving them all in one truss, as when growing. The number of pips which form one truss vary, some have five and others seven pips, and some even a larger number. Having separated each pip, I should pierce the tube close to where the short stem joins on, with one of the piercing wires, and I should cross this again with another, which would leave four ends projecting, and

then I should pull these to equal lengths and then bend them back all together till they form a wire stem to the pip; the next thing will be to take one of the four ends so bent back, and twist it round the others, and a firm artificial stem is formed. Operate in this way with as many pips as may be required, then take the spikes of ixias and round each of these twist a piece of piercing wire. The reason for doing this is that the stems of the ixia are hard and brittle, and are therefore difficult to bend into any shape or position that may be required, but when done with binding wire, as I have described, this difficulty is quite overcome. The eucharis bloom will not require to be prepared in any way. Having finished all, so far as regards wiring, the next move is to endeavour to keep them as fresh as possible, and it is for this purpose the moss and cotton wool are required. Dip the cotton in cold water, and then press the water from it, leaving enough to make it feel wet in the hand, and retaining moisture enough to keep the flowers fresh during the evening. Next take a very small portion of the cotton, and bind it close round the bottom of each pip of stephanotis with the reel wire. Being white, the cotton will not show up against the colour of the stephanotis. Next take the stub wire, and to the end bind on with the reel wire a frond of maidenhair, binding in a little damp moss all along the stem, then take an unopened pip of stephanotis and lay it on the fern, and bind it on to the stub, and so work along down the wire, adjusting the flowers and foliage according to taste. When the spray has been made of the length desired, a spray of fern should be so adjusted as to conceal the finishing off. The stems of the flowers should be next cut off, but not shorter than two inches as these when the spray is about to be placed in the hair can be inserted in a little flower tube filled with water, such as are used for coat flowers, the hook having been broken off. This may be easily concealed amongst the braids of the hair, and will tend to keep the spray fresh during the evening.

Should it so happen that the arrangement be required to keep fresh for some time previous to being worn, such as taking it a long journey, and that it must be made on the morning of the day required, the best way to preserve its freshness would be to place it in a small biscuit tin, in the bottom of which is a mat formed of wet moss, on this lay the spray, then take some water and well sprinkle it with it, and put on the lid which should be as air-tight as possible. In this manner it will keep fresh for two days, but care must be taken not to overturn the box, or the wet moss would spoil the flowers.

Some people, after they have made their floral arrangements on the moss and damped the flowers, lay a sheet of cotton wool over the face of the spray or bouquet, but I myself do not approve of this plan, as there is a gum on one side of the cotton wool which if it becomes damp and touches the flowers anywhere, sticks amongst them, and imposes on one a great deal of trouble in picking the flowers over. If flowers are only to be sent a short distance, there is no better mode of packing than in cotton wool, but where flowers require to be damped, it should be avoided, except where flowers

unmounted are to be sent, in which case such as roses, can have each bloom closely rolled up in a piece of wet cotton wool, and packed together; but when mounted flowers are being sent a long distance *by hand*, I should not advise its being employed, but if by rail or post and the box receive rough treatment, then over the face of the arrangement by all means place cotton wool. The trouble incurred will be compensated for by its arrival at its destination in a fresh and perfect condition. According to the season of the year, the flowers for sprays must be selected; it but would occupy far too much space were I to enumerate those obtainable each month, so on this point my readers must use their own discretion and taste.

VEGETABLES TO BE SOWN AND PLANTED IN JULY.

BY WILLIAM COLE,

Head Gardener, Ealing Park, W.



DURING the month of July, a large amount of work of an important character has to be done, for some of the principal winter and spring crops have to be either sown or planted out from the seed-bed. Amateurs and others who have not had much practical knowledge of cropping the kitchen garden, suppose that all the seed sowing and the greater part of the planting-out are done in the months of March and April; but it is not so, for, although the majority of the principal crops is then sown or planted, as the case may be, much is necessarily left to be done in the summer season. Indeed, during July, sowings of ten or twelve different vegetables must be made, and nearly the same number of sorts planted out from seed-beds. It will therefore be seen there is plenty to do during the next few weeks, and it may be said with advantage, that all work proper to July should be done in that month. After the end of July, the days shorten at a rapid rate, and the temperature materially declines; and there is in consequence no chance of crops sown or planted a month or so after the proper date making up for lost time.

Up to the middle of June, the season has been characterized by drought, and although the crops have not suffered so severely as they did in 1868, peas and other things which require an abundance of moisture to enable them to bring heavy crops to perfection, have not grown so vigorously as we could wish, and the later kinds will not, in all probability, produce such heavy crops as they do under more favourable circumstances. To supply all the crops with water, is, where the kitchen garden is of a rather large size, quite out of the question. Surface waterings are most hurtful, for they tend to draw the fibrous roots towards the surface, and immediately the surface soil becomes dry the crops are placed under conditions less favourable than they would have been had they received no artificial watering. Consequently, when it is considered desirable to

water any established crop, apply sufficient to moisten the soil about the roots to a considerable depth. It is in every way preferable to water one crop thoroughly than to half-water half-a-dozen. Crops newly planted do not, of course, require heavy waterings, but a moderate sprinkling, as the plants have but few roots, and these are necessarily near the surface. Peas, cauliflowers, cabbage lettuce, and kales, will all pay for a few liberal soakings; but the crop to which special attention should be directed is that of scarlet-runner beans. These, with a little assistance, will yield a plentiful supply from the time of their coming into bearing until the frost makes an end of them; and in a season like the present the produce will be found of especial value. They should have, about twice a week, liberal supplies, and they may also be sprinkled overhead occasionally with immense advantage. To insure the water soaking down to the roots, a small ridge of soil may on each side be formed, about nine inches from the row; and when time can be spared for sprinkling them overhead, it should be done in the evening with a watering-can, to which a rather coarse rose has been affixed. To procure soft-water is out of the question, but, as far as practicable, the water used should be taken from a tank or butt where it has been fully exposed to the atmosphere for at least a few hours previously. Water drawn from a deep well and used immediately does, as a rule, more harm than good to the crops to which they are applied, excepting for seed-beds or small plants recently put out. The watering-can should be used without the rose, as the surface is not so likely to be beaten down so hard. All watering, especially when the use of the rose is necessary, should be done some time in the evening.

The most important crops of which seed must be sown in July for successional supplies or otherwise, are as follows:—*Long-pod Beans*, if broad beans are in much request late in the season; but as the crop sown now is so risky, no sowing should be made unless the circumstances are exceptional, and there is plenty of spare room. *Endive* and *Lettuce* for main autumn crops. Two sowings of endive should be made, one at the beginning of the month and the other at the end. The *Moss-curved* and the *Green-curved* should be sown both times, with the addition at the last sowing of the *Broad-leaved Batavian*. The lettuce should also be sown twice, and at the same time as recommended for the endive, the best sorts for the first sowing being the *Paris White Cos* and the *Drumhead Cabbage*, and for the last the *Brown Bath Cos* and the *Hammersmith Hardy Cabbage*. As both lettuce and endive run to seed before they are half-grown, when transplanted in dry seasons, they should be sown very thinly in drills, where they are to remain, and the plants thinned to the proper distance apart when of a suitable size. The surplus lettuce plants should be removed gradually, in case snails and slugs should attack them whilst small, and make blanks in the rows. *Peas*—the best sorts for sowing now are *Laxton's Alpha*, *Sutton's Ringleader*, and *Easte's Kentish Invicta*. These, if the season is favourable, will produce a few dishes, which will be very acceptable; but there is too much risk with peas sown now to

justify amateurs with small or even middle-sized gardens sowing them. *Parsley* should be sown during the second or third week for the main crop. For the main gatherings a long row by the side of one of the walks will be the most convenient; but it is desirable, also, to sow a bed which can be covered with a one or two-light box during the winter, to maintain a supply in severe weather. Parsley requires rather rich soil, and stands the winter best upon a dry subsoil. It should be thinned three or four inches apart in the rows, to insure the development of strong crowns. *Spinach* may be sown early in the month, if there is a likelihood of a scarcity of green vegetables during the autumn. Provided the soil is in good heart, a plentiful supply of excellent quality will be obtained. The *Round-seeded* is the best for present sowing. *Turnips* for main crop should also be at once sown, if not already done. The best sort to sow are the *Early White Stone* and *Veitch's Red Globe*, as they produce good crops, are of excellent quality, and form a capital succession, the first-mentioned coming into use first. The other has the merit of producing handsome bulbs, which remain fit for use a long time after they attain their full size. In dry seasons like the present there is no little difficulty in raising a crop of turnips, because of the destructiveness of the "fly." The only means of saving the crop is to dust the bed or drills with soot as soon as the turnips are visible, and repeat at intervals until the crop is out of danger. A sharp look-out must be kept, because the "fly," when the plants come up slowly, devour them as fast as they come through, and unless the dressings of soot are applied hardly a plant will be seen. The soot should be applied when the leaves are wet with dew, or after the bed has been sprinkled, as it then adheres to the leaves, and is consequently more efficacious.

In sowing seeds at this season of the year, especially if the weather is dry, it is most excellent practice to draw the drills rather deeper than usual, from half an inch to one inch deeper will suffice, and then fill the drills quite full of water. If the soil is very dry, the drill may be filled twice. When the water has soaked away sow the seed, and then cover in usual way. By this plan seed is enclosed in a body of fine moist soil, and placed under conditions most favourable to its germinating quickly. Sometimes, when seeds are sown in soil in a dry state, they do not germinate for a month or six weeks after the proper time, and frequently the crops are of very little value in consequence. Filling the drills with water even when the breadth sown is rather large takes up, comparatively speaking, very little time. A little guano sprinkled along drills previous to sowing turnips will promote a quick growth during the earliest stages, and materially assist a crop at the most critical moment.

The crops that require planting during the month are *Broccolis*, *Borecoles*, or *Kales*, *Brussels Sprouts*, *Cabbages*, *Cauliflowers* from the May sowings; *Celery* and *Lettuce* from sowings made the previous month. It is now quite time all the main crops of the foregoing vegetables are in their permanent quarters; and there must be no waiting for showers, or the season will be gone. The soil in the

celery trenches should be made thoroughly moist before the plants are put in them; and for a few days after planting, protect from the sun by laying across the trenches canvas, boards, or even branches of trees or shrubs. In planting the other vegetables mentioned, lay down the line and make a shallow trench with either the foot or the hoe, and previous to planting pour water along them. The work can be done more readily, as the soil will be in a moist state, and will not fall into the hole with the dibble; and the roots being in contact with the moist soil will be more favourably placed than when in dry, powdery stuff. They must be watered daily for a week, at least, should the weather continue dry, to give them a good start. Planted in the ordinary way, and then left to themselves, they suffer so much at the commencement that they lose quite a month, which may be truly described as most valuable time. In dry seasons the plants are especially liable to be cut off by the larvæ of the daddy-long-legs, a large brown grub. They generally eat through the stem just below the surface, and if the soil about any of the plants is examined immediately the plant flags, the grub may be caught and destroyed. They seldom injure plants with hardy stems; and if the tender part can be kept up above the surface, they will receive no harm. For this reason rather tall plants with a portion of hard stem are preferable for soils badly infested with these grubs. When they commence their depredations, the uninjured plants should have a little of the soil drawn from about the stems, if it can be conveniently done.

KALOSANTHES FOR THE CONSERVATORY.

BY THOMAS TRUSSLER,

Nurseryman, Edmonton, N.



It may be said with truth that these beautiful flowers do not receive anything like the attention they deserve. Whether for exhibition or conservatory decoration they are equally valuable, and there is no other class of greenhouse plants with which I am acquainted that can present such glorious masses of colour at Midsummer when they are at their best.

Starting with the assumption that the Kalosantes are worth growing, I will now proceed to offer a few hints upon their culture, which will help to make matters more easy for those who know little or nothing about their management, and are persuaded by me to take them in hand, with the determination to deal with them according to their deserts. Well, then, to business. The cuttings can be struck at almost any time of the year, but the best season is certainly during July and August. Short stout side-shoots, without flower, should be selected, and inserted singly in three-inch pots, filled with a mixture of peat, loam, leaf-mould, and sharp silver-sand. The wood at the base of the cutting should be firm, and the leaves stripped off that

July.

portion of them which will be below the surface. A cold frame is the most suitable situation until they are rooted, and as soon as that is accomplished the plants should be shifted into six-inch pots, and be placed out of doors, or returned to the frame, and receive liberal ventilation. If placed out of doors, they must be housed at the same time as the stock of greenhouse plants.

During the winter *Kalosanthes* require very little water, but they must have sufficient to keep the foliage from flagging. In February the growing points should be stopped, and as soon as they have started again the plants should be shifted into larger pots. At this stage it must be determined whether the plants are to be grown into large specimens or flowered in a young state. If required for specimens, the growing points will require nipping out, and the plants shifting on as fast as it becomes necessary. They, however, should not be put into pots too large, and they must have the last shift by the beginning of August, and no stopping ought to take place after that time. The treatment advised will show that they are not to bloom the first season, our object being to produce stocky plants. From June to the middle of September the whole of the stock should either be in the open air or in a cold frame, with the lights drawn off at all times excepting when the rains are very heavy.

Keep them in a dry airy greenhouse or pit through the winter, and close to the glass, and early in March shift them into the flowering pots, and regulate and tie out the young shoots. From this time until they come into flower keep close to the glass, and tie out the growth as it progresses, to insure well-proportioned specimens. A well-grown specimen when in flower ought to present a huge convex mass of bloom, like that of a well-finished exhibition *pelargonium*.

After the beauty of the flowers is past, the whole stock should be placed out of doors in the sun for a week or ten days, and be kept quite dry. At the end of that time cut each shoot back to about two inches, and place them under cover, and give the old stumps a skiff with the syringe once a day, but keep the soil dry. When the young buds begin to push, give a little water to the roots, to keep the soil moist; and after the young shoots are an inch long take the plants out of the pots, reduce the balls, and repot them in the same size pots again. Great care must be exercised in watering them until the pots are full of roots, and the shelter of a cold frame must be afforded to keep off the autumn rains. A nice balance between too much and too little moisture at the roots must be maintained. Too much will destroy the roots and produce disastrous results, on the one hand, and too little will cause the loss of the lower leaves, and thus give the specimens an unsightly appearance.

That succulent plants like these require good drainage is only a matter of course, therefore nothing further need be said about it, and we will pass on to the preparation of the soil. At one time it was considered necessary to pot them in brick rubbish, but now they are better understood a more substantial compost is used. There is nothing better than good turfy loam, mixed with a liberal proportion of leaf-mould, broken crocks, and silver-sand, and a small quantity

of thoroughly-decayed hotbed manure. It should be used in a rough lumpy condition, and every particle of the fibre preserved.

The cutting back and repotting must be practised annually after the flowering season is past, in the same way as already advised. If large specimens are required quickly, three or four small plants may be put into one pot. The only point worth notice in the matter is to select nice healthy little specimens in five-inch pots.

RAISING HARDY FLOWERS FROM SEED.

BY WILLIAM GARDINER.



LARGE numbers of amateurs are now stocking their borders with hardy flowers, and restricting their bedding operations to the flower-beds; and as the cost of purchasing plants for this purpose is to many a serious matter, I have thought a brief description of the best way of raising seedlings, by which a large stock of hardy flowers may be obtained at a trifling cost, would be useful. I have thought it desirable to direct attention to the matter now, for if the seed is sown at once the plants will acquire sufficient strength to produce a good bloom next year.

Raising hardy herbaceous plants from seed is a comparatively easy matter, but as the seed of many of them is small, a little trouble must be taken to have the soil in proper condition before they are sown, otherwise many of the choicest subjects will probably not come up. A shady spot ought to be selected, or some system of shading adopted, because the seed must have moisture to enable it to vegetate, and when exposed to the sun the soil soon dries up, and the continual application of water and the sun together soon make the surface compact and hard. It is then in anything but a congenial condition for the tender seedlings to push through. Supposing a nice shady situation has been selected, dig the ground up, and if rather stiff, prick in a little sandy stuff just upon the surface, or, what is better still, a good dressing of drift or river sand. After this is done, make the surface smooth, rake off the stones and rough pieces of soil, and mark the space out into beds about two feet wide. This will be a convenient width for attending to the plants when up, and the space occupied by each sort can be separated with a piece of stick.

Sow the seed thinly, and have a few handfuls of sifted soil in readiness to cover it with. The thickness of the covering must be regulated by the size of the seed, but it is easier to err in putting too much than not enough; sufficient to cover it is all that is needed. Instead of allowing the plants to remain crowded together until they are strong enough to be planted in their permanent quarters, prick them out in a spare corner, at a distance of about a couple of inches apart, and let them remain for a few weeks to strengthen. A cool dull day ought to be selected for all transplanting operations, and the plants have a good watering to settle the soil. If they are lifted carefully and not allowed to remain out of the ground any longer than

possible, with the above-mentioned precautions, they will scarcely experience a check. These things ought not to remain either in the seed or nursery bed a day longer than is really necessary, for it ruins them to be drawn up with weak spindly stems. About September, or even earlier if of sufficient strength, the plants should be planted in the border, and a careful watch kept to prevent their being destroyed by snails or other vermin.

Seeds of a large number of the finest perennials may be obtained at prices ranging from threepence to sixpence per packet, but for the information of those who may be desirous of saving seed of any flowers they have, I will add a few words on saving seeds of hardy flowers. First of all, let me say that as soon as the ripening of the seed commences a sharp look-out must be kept, or it will be blown away by the winds long before a thought enters the cultivator's head about gathering it. Very few plants open all their flowers at once, so that the whole of the seed cannot mature at the same time; therefore, if the flower-spikes are left until all the seed is ripe before being gathered, a large portion of the seed must be lost. I have hit upon a capital plan for avoiding the loss of seed from outdoor plants, and it is so simple that it is within the reach of every one. At the commencement of the season I have a lot of five-inch pots filled with sand, and watered sufficiently to make it thoroughly moist. These are placed in a cool airy place, generally a peach-house from which the crop has been gathered; but a room-window will suit equally well. The borders are looked over frequently, and the flower-spikes of any plants from which it is desired to save seed are cut off as soon as the lower or outside pods begin to ripen, and stuck in one of the pots of sand. A label is put to each, and the pot set upon a piece of paper to catch the seed as it falls out. The spikes must be cut off with a sharp knife; for when twisted or bruised the stems do not take up the moisture so readily, and the seed shrivels and perishes. The stems may be taken out, and half an inch of the stems cut off about once a week, until the whole of the pods are ripe. Care must be taken not to remove the spikes until the first tier of seed-pods are matured. By this simple method any loss of seed is effectually prevented.

MESSRS. SUTTON AND SON'S SEED STORES, READING.



THE seed stores of Messrs. Sutton and Sons at Reading are of such magnitude, and so unique in their way, that we feel assured our readers will be interested in a brief description of them. To describe them so fully as we could wish is rendered impossible by the limited space at our disposal; but we hope to be able to convey an adequate idea of their colossal proportions, and their adaptability to the purposes to which they are devoted.

The frontage to the offices and seed stores in the Market Place, notwithstanding the boldness of its design and the beauty of its decorations, conveys a very inadequate idea of the extent of the premises, or of the immensity of the business transacted therein. A visitor to Reading, unacquainted with the operations of the firm—if that were possible—would probably be struck by the elegance and commanding appearance of the façade; but he would little imagine that behind are ranges of

offices and warehouses in capacity, as well as in other particulars, without an equal. They constitute of themselves a little town, with quite an army of workers to give life and reality to the scene. On entering the retail stores, one cannot fail to be struck with their light and airy appearance, and the facilities which exist for the rapid execution of orders. After passing through this department, and proceeding along a passage, we come to two ranges of offices, one on each side. That on the right is the Ledger Office, some sixty feet in length; and on the left, is a private office for the firm, and farther on, the office for transacting business with the railway and other carrying companies, and also the general foreign trade. It will, perhaps, afford our readers some idea of the extent of the business transactions of the Messrs. Sutton if we say that during the spring season, when seeds of all kinds are in most request, from 800 to 1000 letters are received daily, entailing, it need hardly be said, an immense amount of office work.

Proceeding to the next floor by means of an iron staircase, we find first of all on the right a room about sixty feet in length, devoted to stationery and other office stores; and immediately in front, a large room provided for the recreation of the employés. In this the people meet for prayer every morning; and at intervals, during the winter season, lectures and other entertainments are given. Close by is the Reading-room, as bright and cheerful as a gentleman's library, with two noble fireplaces in carved stone and encaustic tiles; the floor comfortably carpeted, and the tables well supplied with news and horticultural papers, and periodical literature. There are also bagatelle and chess-boards for the use of those who frequent the reading-room.

Leaving these rooms we pass on to the Garden-seed Department, and in this we find that every convenience suggested by long experience has been provided for the expeditious execution of the orders. The principal chamber in this department is quite a hundred feet in length, lofty, and of proportionate width, and is fitted up with innumerable drawers. Two of the chambers are devoted to the collections of garden seeds, which are found so convenient to amateurs, and for which this firm has so long been famous, both for the liberality and judgment with which they are made up. In the season may be seen in these rooms some thousands of these collections, ready for transmission when the "rush" comes—and come it does, every year. Every one requires their principal stock of seed at the same time; and few indeed are those who send in their order many days before the seeds are required for sowing. Consequently, the resources of the establishment—vast as they are—are taxed to the utmost in the busy season; and, unless ample preparations were made beforehand, the work would undoubtedly obtain the mastery. During the seed season the orders come in at the rate of between 400 and 500 a-day, and it is one of the principles of the firm to have the day's work done in the day. Were it otherwise, the orders would accumulate at such a rapid rate, that the execution of a goodly proportion of the orders would at length become impossible until an advanced period of the season. The Flower-seed Department is like the one devoted to vegetable seeds, fitted up with every possible convenience; and in the season may be seen tens of thousands of packets of seeds, already prepared for packing in collections or otherwise. Here a separate staff is employed, for the business in flower seeds is simply enormous; especially in the choice strains of calceolarias, primulas, cinerarias, and cyclamens. Beyond this department are the Bulb-rooms, in which the vast quantities of bulbs, as they are received from Holland, are stored. The bulb season lasts from August until the beginning of the new year; and, as a rule, those who purchase late expect to have bulbs of as good a quality as those who buy early. In recognition of the fact that it is the duty of the trader to always provide the customer with a good article—no matter how much the customer may be to blame for deferring the order until an unreasonably late period—the Messrs. Sutton have in practice some ingenious methods for preserving the bulbs for a long time without starting into growth, or becoming mildewed. An equable temperature is, in the first place, maintained by the vast mass of stone, brick, and timber of the stores themselves, and the perfect ventilation of the whole fabric. In the second place, every separate lot of bulbs is kept in a large basket of light wickerwork, which admits air all round, and in the centre, passing through the mass of bulbs, is a tube of wire netting, which again brings air into the mass. The reserves are then shut up in compartments with sliding doors. The result of this management is to favour a dormant condition, for exhaustive evaporation is prevented, and at the same time the bulbs are kept so dry and cool, that they are most reluctant to grow until potted

or planted, and are thus placed under the conditions most favourable to a new growth.

The orders for agricultural seeds are executed on the same floor as the garden seeds, which is unquestionably a great convenience, and needless running to and fro is avoided, for frequently garden and agricultural seeds are sent for by customers at the same time. To keep this floor constantly supplied with seeds from the warehouses above and below is a prime necessity; and one of the aids thereto is a new lift worked by steam. With the assistance of this lift a waggon coming into the yard can be quickly unloaded, and the seeds sent to the topmost or other floor; and in the same manner, the vans can be quickly loaded with hampers, boxes, and parcels from the packing department.

The Packing-room, in which the various parcels are put into hampers and boxes, and the room in which the hampers are directed and despatched, are necessarily of an immense size. Crossing over a bridge, we come to the stores, in which seeds of various kinds are kept in bulk, and the potato-store. The latter is exceedingly interesting, owing to the manner in which it is fitted up for the preservation of the seed-potatoes in the best possible condition for planting. After passing the long range of stabling and yards provided for the spacious vans, and proceeding about a hundred yards, we come to the agricultural seed store, which has a handsome frontage to the King's Road. This building is nearly 200 feet in length, and has three floors, and preparations are again being made for further extension. Here, in the early part of the season, may be seen hundreds of tons of mangel, swede, and turnip seeds, for the trade in agricultural seeds is co-extensive with the trade in garden and flower seeds.

On the London Road, at a distance of about a mile from the town of Reading, the Messrs. Sutton have an extensive trial farm, and this may be seen from the Great Western and South-Western railways. During the summer season the trial farm is brilliant with masses of annuals, and blocks of turnips in bloom. The most interesting part, however, consists in the hundreds of rows of beans, peas, beetroots, carrots, cabbage, lettuce, potatoes, and other vegetables, grown exclusively for trial. The germinating power of every parcel of seeds received from the growers is tested under glass previous to any portion being retailed; and the trial at the farm is for the purpose of testing the relative value of varieties, and the purity of the stocks received from the growers, and in consequence the absolute purity and genuineness of the seed is placed beyond doubt.

In concluding this brief notice of Messrs. Sutton's establishment, it will perhaps be interesting to add that the firm now consists of Mr. Martin Hope Sutton, Mr. Alfred Sutton, and Mr. Martin John Sutton. It was founded about seventy years ago, by Mr. John Sutton, the father of the two senior partners. The seed business was then limited almost exclusively to agricultural seeds; and these were, according to the usual custom, procured from the wholesale dealers. On the admission of Mr. Martin Hope Sutton and Mr. Alfred Sutton into partnership, some 25 years since, the garden-seed departments were added; and the former, seeing the disadvantages of procuring the seeds through the wholesale houses, because of the adulteration then so largely practised, determined to obtain the seed direct from the growers who supplied the London wholesale houses, to enable the firm to sell seed genuine, pure, and unadulterated. After some difficulty, arrangements were made, and eventually a considerable number of growers were selected to produce seeds specially for the firm, and under its constant supervision. The Messrs. Sutton have now several thousand acres under cultivation for the express purpose of growing seeds for supplying their customers, who amount to upwards of 50,000, in the United Kingdom, India, America, the Colonies, and other parts of the world. From Italy, France, and Germany, vast quantities of flower and other seeds that ripen best in these countries, are obtained annually; and the growers of these, as well as of other seeds in this country, are regularly visited by a member of the firm.

The Messrs. Sutton were amongst the principal promoters of the Bill to prevent the adulteration of seeds, which was passed in 1869; and to the fact of their supplying seeds pure, genuine, and unadulterated, they attribute the large extension which is annually made in their business.

THE GARDEN GUIDE FOR JULY.

Flowers! when the Saviour's calm benignant eye
 Fell on your gentle beauty: when from you
 That heavenly lesson for all hearts he drew,
 Eternal, universal, as the sky;
 Then, in the bosom of your purity
 A voice he set as in a temple-shrine,
 That life's quick travellers ne'er might pass you by,
 Unwarned of that sweet oracle divine.
 And though too oft its low celestial sound,
 By the harsh notes of work-day care is drowned,
 And the loud steps of vain, unlistening haste;
 Yet the great Ocean hath no tone of power
 Mightier to reach the soul in thought's hush'd hour
 Than yours, meek lilies, chosen thus and graced.

MRS. HEMANS.



AGAPANTHUS to have abundance of water while throwing up flower-spikes, and until the bloom is over; then to be shaken out and parted, and the strongest crowns selected for next year's bloom. Pot these singly in small pots, removing with a sharp knife any of the straggling roots that cannot be got into the pots. The soil should be sandy loam, rotten dung, and peat, equal quantities.

BROCCOLI must now be got out to furnish a supply during autumn. Manure liberally, and if the planting is done in dry weather, give water as abundantly as possible. Better, however, to get the ground ready and wait for showers.

CARNATIONS, FICOTEES, AND PINKS to be propagated largely now from layers and pipings, both easy and certain methods.

CAULIFLOWER.—Plant out and hoe between those coming forward, but do not earth up the stems except of such as are loose at the collar.

CELERY newly planted will require abundance of water. Plant out as fast as possible, if any left in beds or pots. The fly has not seriously damaged the crop this season, and where it has not appeared there is now no further danger, and the late celery is likely to escape altogether.

CINERARIAS coming up in seed-pans to be pricked out as soon as large enough to lift, and have separate thumb-pots, with light rich compost, and be put in a frame to grow on.

CHRYSANTHEMUMS require liquid manure now, and frequent sprinkling overhead. Tie out as fast as the side-shoots break, for if they once harden out of shape it is no easy matter to restore them to a proper form.

CONSERVATORY will require air night and day, unless there are many stove plants, in which case shut up while the sun is on the house. Use water in plenty, and liquid manure wherever it seems to be required.

CUCUMBERS must have steady bottom-heat to produce fine fruit. It is a common fallacy that when the weather becomes warm the beds may be left to cool down, but it is rarely fine fruit are cut from frames that are never lined after the first heat is out.

FRUIT GARDEN.—Put netting over currants, gooseberries, and cherries, to keep the birds from the fruit.

FUCHSIAS must be syringed once or twice a day, and have moderate shade. Fine plants in comparatively small pots will be greatly benefited with weak liquid manure every three or four days.

GREENHOUSE HERBACEOUS PLANTS, such as Cinerarias, Primulas, herbaceous Calceolarias, etc., must have frequent attention now. Let seedlings be pricked out into pans or singly in thumb pots; shift cuttings and rooted suckers.

HARD-WOODED PLANTS requiring a shift this season must have it at once, or the time will go by for them to derive full benefit from the operation. The most important matter of all is to secure good drainage, and to use the compost in as rough a state as possible consistent with the size and nature of the plant.

HARDY HERBACEOUS PLANTS of all kinds may be propagated now from seeds and cuttings.

HARDY SHRUBS of all kinds may be propagated by layers or cuttings, the latter preferably, and the smaller the better if the shoots are firm.

July.

MELONS need a brisk bottom-heat to ripen the fruit, and to be kept rather dry. Those swelling fruit to be encouraged with a lining, and a moderate amount of atmospheric moisture. Keep the vines regularly trained, so that the leaves are exposed to light, as wherever they are crowded the fruit will be found to damp off.

ORCHIDS require now a free circulation of air to ripen the spring growth. Use as little shading as possible, and keep the air moist by watering the paths and borders in the afternoon; after which shut up.

PANSIES to be propagated from cuttings of young wood; the old hollow stems are quite unfit for the purpose. Beds to be planted to stand over winter should now be deeply dug and manured, which will tend to reduce wireworm, as they will be turned up in the process and be destroyed.

PEACHES ripening off to be kept as cool as possible; hot sunshine and close air will spoil the flavour and cause the fruit to fall.

PELARGONIUMS, as they go out of bloom, to be cut down, and placed in a warm, sheltered, and rather shady place for a week, then to be put in the full sun, and kept rather dry at the root, with occasional sprinklings of the stems and leaves till they break, and then to be repotted back into small pots with sound lumpy turf to make their new roots in.

PINRS should have every needful attention now, as at this season plenty of growth may be secured for the succession plants. Those swelling their fruit will need the help of liquid manure and atmospheric moisture, with a good steady heat.

RASPBERRIES to have their suckers reduced to three or four to every stool; those left will rise strong and ripen their wood well, but a forest of spray will be all weak alike.

ROSES require now to be pruned back, and have a mulch, and plenty of water to assist the autumn bloom. Cuttings of half-ripe shoots of most of the perpetuals may be put in towards the end of the month. Buds to be entered on briars with discretion; the bark must be firm, or the work cannot be done properly.

STRAWBERRIES.—Plant out the first lot of well-rooted runners in ground well manured, and shade for a week and keep well watered; these will at once form good crowns, and bear well next season.

TREE ONIONS need a little support, as the crop is apt to fall over and be preyed upon by snails. The top bulbs are the best of all onions for pickling.

VINES in early houses to be kept rather dry to promote the ripening of the wood, and to have plenty of air. In late houses encourage quick ripening, keeping up the heat, and ventilate well to prevent damp and mildew. Water and mulch the borders of late houses, and by all means abstain from cropping the borders, as the practice is most injurious to the roots of the vines, the best of which are near the surface.

WINTER GREENS to be planted out at every opportunity. It is most important to put out good breadths of Brussels sprouts as early as possible.

HORTICULTURAL AFFAIRS.



GRYSTAL PALACE FLOWER SHOW, on May 29, was a glorious success, for there was an abundance of the staple subjects of a great summer exhibition, and a large concourse of visitors. Stove and greenhouse plants in bloom, which form such an important feature at the May and June exhibitions, were largely represented. Azaleas were so abundant as to make an attractive display. Pot roses were better than usual. Orchids were more plentiful than is customary at the metropolitan exhibitions, and materially enhanced the attractiveness and interest of the exhibition. Fine foliage plants were numerous, and the specimens of which they consisted remarkably fine. Pelargoniums were fairly represented, and made a fine display. The groups of plants arranged for effect were more numerous, of greater extent, and generally the arrangements were more tasteful than usual, and they in consequence form a more important element than in any previous year. Not the least attractive feature of the exhibition was the group of fine-foliage plants in

front of the stage, arranged by Mr. Thomson, the superintendent of the horticultural department of the Crystal Palace. It consisted of Palms, Tree-ferns, and of ornamental-leaved plants of large growth, and the group was neatly finished off with dwarf-growing plants.

ROYAL HORTICULTURAL SOCIETY'S GREAT SUMMER SHOW, on June 2, as compared with similar exhibitions held at South Kensington in previous years, was a very small affair, and the efforts of a few of the nurserymen resident in the neighbourhood alone prevented its being a complete failure. Flowering plants, with the exception of those in two or three collections of no importance, were entirely absent, and the exhibition consisted almost exclusively of ornamental-leaved plants. One of the most attractive features of the exhibition was a large bank of plants arranged for effect by Mr. J. Wills, of Onslow Crescent, who was awarded a Gold Medal. There were a few good dishes of grapes and other fruit, and several collections of Peas were staged in competition for the prizes offered by Messrs. Sutton and Sons, and Messrs. J. Carter and Co. In the several collections, Sutton's Bijou, Carter's Extra Early Premium Gem, Laxton's William the First, Sutton's Early Emerald, and Laxton's Unique, were well represented. Two magnificent collections of hardy ferns were exhibited, and as the varieties represented comprise the cream of those in cultivation, some of our readers will probably be interested in a list of the names of the varieties in the first prize collection, which was staged by Messrs. Ivery and Son, of Dorking, Surrey. They were as follows:—*Athyrium filix-femina* Fieldæ, *A. f.-f. corymbiferum*, *A. f.-f. pulcherrimum*, *A. f.-f. plumosum*, *A. f.-f. formosa-cristatum*, *Polystichum angulare decurrens*, *P. a. Wollastoni*, *Lastrea filix-mas* Bollandæ, *L. f.-m. grandiceps*, *L. f.-m. cristata*, and *Osmunda regalis cristata*.

THE PRESENT POSITION OF THE ROYAL HORTICULTURAL SOCIETY.—A meeting of the fellows of the Royal Horticultural Society, convened by the Lindley Club (late the Horticultural Club), was held on the 16th ult., at the Charing Cross Hotel, "to consider the present position and prospects of the Society." Mr. A. F. Godson, of the Inner Temple, presided. The chairman said the object of the meeting was to prepare a practical scheme which would extricate the Society from its difficulties, and then called upon Mr. Shirley Hibberd to address the meeting. Mr. Hibberd having detailed the history of the Society, said the fellows were tied up in a scheme which had failed from the first. They could not sell their land to speculative builders, and they had no available assets, and, in fact, they had nothing which they could carry into the open market. In making proposals for improving the position of the Society, he considered it of the very first importance to honour existing covenants, to perform all duties prescribed by the charter, to make the best of the lease, the best of the Society's relations with the Commissioners of the Exhibition of 1862, and the very best of the local fellows. To reconstruct the Society on a sound basis the London garden must be kept in the most perfect condition possible; improvements should be made in the garden by which the expenditure would amount to £17,000 per year. It was simply impossible that the Society could pay its way at the present rates of subscription. He proposed that the subscriptions for the fellows residing within a mile of the gardens at Kensington should be £10 10s. annually. The raising of the subscriptions would tend to enhance the value of the attractions by restricting the enjoyment of them to a select company. He believed his scheme, if carried out in a spirited manner, would result in raising the Society's income from subscriptions of fellows alone to £20,000, which would leave an ample margin for the redemption of the debenture debt. Assuming that only 1000 fellows joined at £10 10s., it would realize 10,000 guineas. The exhibitions, life compositions, admissions to gardens, and miscellaneous receipts, would bring the income up to £20,000, and, as the working expenses would be £17,000, there would be a balance of £3000 to pay off the debt. The gardens, in his opinion, should be made the most beautiful town gardens in the world. He moved, "That in any scheme which may be promoted with a view to the restoration of the Royal Horticultural Society to its original high position, the annual subscription of fellows within one mile of the gardens at South Kensington should be fixed at a minimum rate of Ten Guineas, and that the fellows' tickets should be used only by resident members of the families of fellows." Mr. S. H. Godson suggested that the fellows should get up a subscription for the benefit of the Society. Mr. Hibberd, in answer to a question, said he would not disturb the existing

fellows, but all future fellows should pay £10 10s. per year. The resolution was then put and carried. It was decided that the same should be forwarded to the council of the Society.

THE ROYAL BOTANIC SOCIETY had, on June 16, a grand exhibition of Stove and Greenhouse plants in bloom, Orchids, Pelargoniums, Cape Heaths, and new plants, to which all the principal exhibitors in the neighbourhood of the metropolis contributed. It was visited by the Sultan of Zanzibar, and suite, who appeared to take a great interest in the various subjects of which the exhibition consisted.

MR. WILLIAM COLE, who for many years past has been one of the principal contributors to the pages of the FLORAL WORLD, will retire from the management of the gardens and grounds of Ealing Park, a post he has so worthily occupied during the past ten years, to enable him to devote the whole of his attention to the production of grapes for market, and the cultivation of vines in pots for planting and fruiting. He has purchased a freehold at Feltham, and has erected thereon a number of vineries, which are mostly planted, and the vines in some of them are now coming into bearing. The Muscat of Alexandria and Lady Downes are planted the most extensively; the first-mentioned variety—with which, by the way, Mr. Cole has achieved his deservedly high reputation as a grape-grower—largely predominating. The vines grown for sale in pots will consist of the varieties most in demand. Of these there is already a fine stock, and, as they are grown entirely without bottom-heat, they are well furnished with fibrous roots. Mr. Cole's place of business will be known as "The Grove Vineyard," Feltham, and is about half a mile distant from the Feltham station on the Staines and Windsor branch of the London and South-Western Railway.

THOMSON'S TREATISE ON THE CULTIVATION OF THE GRAPE-VINE has reached its eighth edition. A book of this kind making eight editions in twelve years does not need a recommendation—it is past that sort of thing; but the fact must be recorded as of some importance in the history of horticultural literature.

ASSISTANT-DIRECTOR FOR KEW GARDENS.—A sum of £500 has been included in the estimates as a salary for an assistant-director of Kew Gardens. Professor Thistleton Dyer, who has for some time past acted as secretary to Dr. Hooker, has been appointed to the office.

THE EXECUTIVE COMMITTEE FOR THE INTERNATIONAL HORTICULTURAL EXHIBITION AT COLOGNE, which opens next month, informs us that the work is progressing steadily in the Exhibition grounds; the great flower and fruit hall is almost completed, and the hall for machinery will be ready in a short time. The foundations for the glass houses—eight of which have been already announced—are nearly finished. The ground has been prepared, and beds cut out for the roses, flowers, and plants in general in the Exhibition ground joining the Flora. Some of the ground has been already planted, and the plants are flourishing. To guard against the possibility of causing the spread of the Phylloxera, it has been determined to exclude grapes and grape-vines from the Exhibition.

THE ANNIVERSARY MEETING OF THE LINNEAN SOCIETY has been recently held, when the following officers were elected; G. J. Allman, M.D., President; J. G. Jeffreys, LL.D., Treasurer; and Frederick Currey, Esq., and St. George J. Mivart, Esq., Secretaries. The financial condition of the Society is very healthy, and in no year has more been done in the way of publication. The new President delivered an address on the history and development of the Infusoria, in the course of which he showed that the tendency of modern research was in favour of the descent of all existing animal forms from two separate types. It was also shown that particular structures are common to the whole of the members of each group, and that though not necessarily present in the adult stage, they were so at some stage or another of the creature's existence.

THE COLLECTION OF MADEIRA PLANTS formed by the late Rev. Mr. Lowe will be divided between the botanical establishment at Kew and that at the British Museum.

AZOREAN FRUITS.—From the Azores journal, "O Cultivador," we find that, between October, 1874, and March, 1875, there were despatched from the Azores to various ports, chiefly English, 133,306 cases of oranges, excluding Tangierines. Of these 14,446 were sent to Bristol, 56,965 to London, 4315 to Liverpool, and 29,333 to Hull. Of pine-apples, 1189 were imported into Bristol, 5420 into London, 197 into Liverpool, and 1212 into Hull.

TO CORRESPONDENTS.

A. H. A.—If the lawn is overrun with the coarse grass of which we have received specimens, the only effectual course to take will be to pare the turf and burn it, and then either sow grass seeds or lay new turf. This should be done in the autumn. If the grass appears in patches only, remove these patches with a spade or trowel; then place a little fine soil in the hollows formed, and sow lawn grass seeds thickly. Again, if the coarse grass is scattered thinly over the lawn, the tufts may be removed with a small hand-fork, and this may be done without injuriously disturbing the turf. A little fine soil and a sprinkling of grass seeds should be put in the place of every tuft of the coarse grass removed. A suitable mixture of grass seeds may be obtained of the principal firms, such as Messrs. Sutton and Sou's, of Reading.

R. F. P., Chipping Norton.—The specimen was received in such a shrivelled state, that it was quite past identification.

HERBACEOUS PLANTS.—*Lady Inquirer.*—Seeds of all hardy herbaceous plants may be sown with advantage this month. Select a rather shady border, make the surface soil rather fine, and then sow thinly in drills; and if the soil is at all dry, moisten the soil in the drills by pouring water in them. When the plants are about an inch or so in height, transplant into nursery beds and prick them out three or four inches apart. An open and sheltered position should be selected for the nursery beds, as the plants will have to remain in them throughout the winter, and be planted in the borders and beds in March or April of the year following, according to the state of the soil.

CARNIVOROUS PLANTS.—*K. S.*—The plants which are reputed carnivorous, and are said to have the power of digesting flies, meat, etc., are the Side-saddle Plants, or *Sarracenias*; the East India Pitcher-Plants, or *Nepenthes*; and the Venus's Fly-trap, or *Dionæa muscipula*. The majority of the *Sarracenias* require a temperature intermediate between that of the greenhouse and the stove, as also does the New Holland Pitcher-Plant, *Cephalotus follicularis*, which is one of the most beautiful pitcher-plants in existence, and well adapted to the requirements of amateurs, as a well-developed specimen occupies very little space, and may be grown in a lower temperature than either of the *Nepenthes*. One of the *Sarracenias* (*S. purpurea*), is quite hardy; but in most cases it will be found more advantageous to grow it in a pot and keep it in a cold frame. The *Nepenthes* require a high temperature and an abundance of moisture, both at the roots and in the atmosphere, during the greater part of the year. The finest trade collection of *Sarracenias* in the country is undoubtedly that in the nursery of Mr. B. S. Williams, Upper Holloway, and the largest and best collection of *Nepenthes* is that in the nursery of Messrs. J. Veitch and Sons, King's Road, Chelsea. This firm devotes a large house to the cultivation of these plants; and during the greater part of the year it has a wonderfully attractive and interesting appearance, for the collection comprises many hundreds of plants, the majority of which bear several pitchers each.

ENEMIES OF THE APPLE-TREE.—*Maggie Reid.*—The trees are most probably attacked by the larvæ or caterpillars of the Winter Moth (*Hybernia brumata*), which feed upon the buds and flowers, as well as on the leaves. When newly hatched, the caterpillars are very small; but they increase in size with age, and ultimately become half an inch or so in length. They are of a greyish colour when young, and change to a yellowish green by the time they are full grown. About the end of May the caterpillars let themselves down by a thread, and bury themselves in the ground to a depth of two or three inches, and change into pupæ. In November or the following month the perfect insect comes forth, and the females proceed at once to deposit the eggs on the trees. The females are wingless, and must ascend the trees by crawling up the stem. They may therefore be caught by putting a band of some textile fabric round the stem a short distance from the ground, and smearing it with tar or birdlime. The band should be put round the tree at the beginning of November, and additional tar or birdlime smeared over it at intervals as may appear necessary until January. Removing the surface soil to a depth of four inches early in October, and burying it in a deep trench, may be resorted to for destroying the insect in the pupa state. Apple-trees have the leaves frequently eaten by the caterpillars of the "Figure of Eight" Moth (*Episema*

July.

cæruleocephala). The caterpillars make their appearance in the spring, and at once commence their devastations. They are about two inches long when full grown, of a yellowish green colour, and have a bluish head, and one dorsal and two lateral pale yellow stripes. In June they form a case of moss or chips of wood, on the trees, or in the crevices of adjoining walls, and change into the pupa state. The moths appear in October and November, and soon afterwards deposit their eggs on the trees. The removal of the caterpillars by hand picking is the only known remedy that is at all effectual in the destruction of this pest. The caterpillar of the small Ermine Apple Moth, *Yponomena malivorella*, also sometimes do considerable mischief. They devour the leaves in spring and the early part of the summer, and at the same time cover the shoots and branches with thick webs. In these they spin a cocoon, and change into the chrysalis state. About the end of June a white moth appears. The only remedy is to catch and destroy the moth and the caterpillars. As the caterpillars are rather sluggish during the day, it has been recommended to lay a sheet underneath the trees, and tap the branches sharply with a stick, to shake them on to the sheet, when there will be no difficulty in destroying them. Later in the season, apple-trees which have escaped the attacks of the enemies described above, sometimes suffer from the caterpillars of the Brown Moth (*Clisiocampa Americana*). These are hatched towards the end of May, and for six or seven weeks they feed upon the leaves, sometimes completely stripping the trees. The only known remedy is hand picking, which is both tedious and unpleasant. If the trees are badly infested, numbers may be frequently shaken off the trees, and when on the ground, destroyed. As the caterpillars of so many moths feed upon the leaves of the apple-tree, we cannot do more than direct your attention to them, and give a brief description to assist you in their identification, and point to the most practicable remedies.

SALTED LAWN.—*W., East Yorkshire*.—You can do nothing but wait for the rains, which will encourage the grasses that have not been injured by the action of the salt to make a vigorous growth, and obviate the brown patches. The lawn will be more or less unsightly until the autumn, when the turf will again present a uniform appearance. The query was not received in time for answer in the June number; and we cannot undertake to answer queries through the post, however desirous we may be to assist our readers in their difficulties.

EXHIBITIONS TO BE HELD IN JULY.

- 1.—WANSTEAD HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 1 TO 5 (except Sunday).—MIDLAND COUNTIES GRAND HORTICULTURAL EXHIBITION.—*In the Lower Grounds, Aston Park, Birmingham.*
- 1 & 2.—SPALDING HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 1.—ST. PHILIP'S WINDOW GARDEN SOCIETY, BRISTOL.—*Annual Exhibition.*
- 2.—GARDENERS' ROYAL BENEVOLENT INSTITUTION.—*Anniversary Festival at the London Tavern.*
- 3.—SOUTHGATE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 3.—WEST KENT HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 6 & 7.—BRENTWOOD HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 6 & 7.—GRANTHAM AND SOUTH LINCOLNSHIRE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 7.—ROYAL HORTICULTURAL SOCIETY.—*Exhibition of Cut Roses, and Meeting of the Fruit, Floral, and Scientific Committees.*
- 7 & 8.—DURHAM HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 8.—FROME.—*Rose Show.*
- 8.—RICHMOND HORTICULTURAL SOCIETY.—*First Annual Exhibition.*
- 8.—EALING AND ACTON HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 8.—BURY ST. EDMUNDS AND WEST SUFFOLK HORTICULTURAL SOCIETY.—*Summer Show.*
- 8 & 9.—MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—*Special Evening Fete and Exhibition of Table Decorations, etc., at Old Trafford.*
- 8 TO 10.—NOTTINGHAM ARBORETUM.—*Horticultural Exhibition and Rose Show.*



WEIGELIA PURPURATA.

CHOICE FLOWERING TREES AND SHRUBS.

BY ALEXANDER M'KENZIE,

Landscape Gardener, Alexandra Palace, Muswell Hill, N.

(With Coloured Illustration of Weigela Middendorffiana purpurata.)

ENGLISH gardens are, as a rule, sadly deficient in trees and shrubs which, in the course of the season, produce a profusion of flowers, and when in bloom have such a bright and beautiful appearance as to add very materially to the general effect. In planting pleasure-grounds and parks, an undue preference is given to trees and shrubs that are common and do not produce a flower worth seeing, and this in a large measure may be attributed to the fact that but few people, comparatively speaking, are well acquainted with the choicer kinds of ornamental trees and shrubs. Even many of our best gardeners are not so well versed in the matter as one would expect; but this need not cause any surprise, or be taken as in any way reflecting upon their abilities. To become thoroughly acquainted with the finest of our trees and shrubs, especially those remarkable for the beauty of their flowers, it is needful that one should be constantly on the wing, and pay frequent visits to the best nurseries, botanic gardens, and private parks and pleasure-grounds that have been planted out under the superintendence of a first-class landscape gardener; and need it be said, gardeners who pay strict attention to their duties, have but few opportunities for going far away from home. For many years past I have paid rather more than ordinary attention to the class of trees and shrubs under consideration, and in laying out public parks and private gardens that have been entrusted to me, I have been careful to include a fair proportion, and the results are most satisfactory. It is not, of course, desirable that they should be planted out of proportion, or to the exclusion of other good things, such as the choicer evergreens and coniferæ; but there are but few gardens in which a very considerable number indeed may not be planted with advantage.

Previous to pointing out a few of the best, and indicating the situations for which they are best adapted, I would say that I have purposely avoided all reference to roses, rhododendrons, kalmias, and other classes of shrubs that are peculiar in their requirements. These should, of course, have a place in all good gardens; but my object in writing this is to indicate a few meritorious subjects that are but little known amongst the great body of amateur cultivators, and not to those things with which every one is acquainted, and that are justly appreciated.

I will speak, first of all, of the trees which merit attention, and should be grown everywhere. First we have *Æsculus rubicunda* fl. pl., the double-flowered scarlet Chestnut; and as it does not produce nuts, and thrives in smoky districts, it is especially adapted for the neighbourhood of towns.

Amelanchier botryapium, commonly known as the Snowy Mespilus, produces an abundance of white flowers in spring, and is very ornamental, and should have a prominent position.

Amygdalus persica fl. pl., the double-flowered Peach, is one of the finest flowering trees of small size we have, for it is extremely neat and extravagantly showy, and well adapted for second lines in small borders. There are several varieties, but the *crimson* and the *white* are the most effective.

Ca' alpa syringefolia is a grand tree for an isolated position in the park contiguous to the pleasure-grounds, for it has large handsome leafage, and in July and August bears great panicles of white flowers.

Cerasus padus, *C. domestica fl. pl.*, and *C. mahaleb*, are three cherries, profuse in flowering, and very beautiful; the second is the best, and in a small state is very ornamental, in pots, for conservatory decoration.

Clethera alnifolia and *C. paniculata* are two "Snowdrop trees," quite hardy, and valuable acquisitions. These must not be confounded with *C. arborea* and other kinds that are tender, and require to be grown in the conservatory.

Corylopsis spicata is a beautiful Japanese tree, of small growth, the leaves bright green, the wood reddish, and the catkins, which are produced early in spring, yellowish white.

Crataegus oxyantha produces an abundant variety, and the best for small gardens are the *Single Scarlet*, *Double Crimson*, *Double Pink*, and *Double White*. The double-flowered Thorns are extravagantly showy when in bloom, and adapted for single specimens on the lawn, for prominent positions in the shrubbery, and for massing, to produce a distinct effect in park scenery.

Cytissus laburnum is the common Laburnum; *C. alpinus* is the Scotch Laburnum, rather stronger in growth than the preceding, and later in coming into bloom. Both are suitable for lawn or park trees, and also for grouping in the shrubbery borders.

Gleditschia trianthos, the well-known Honey Locust, is a fine town tree, and worthy of a select position in a country garden.

Koelreuteria paniculata is one of the most beautiful trees known. It is of moderate size, has elegant pinnate leaves, the flowers are bright yellow, and followed with large, reddish bladderly pods, which are also ornamental.

Pyrus malus baccata bears an abundance of rosy flowers in spring, and of bright red crabs in the autumn. *P. malus floribunda* blooms very freely, the buds being of a rich crimson, and the expanded flowers white, presenting a charming contrast of colour. *P. salicifolia* has white flowers, and *P. malus spectabilis* semi-double flowers, of a bright red colour in the bud, and pale rose when expanded. These are four of the most beautiful flowering trees of small stature in existence, and should be planted freely in prominent positions.

The finest of the shrubs remarkable for the beauty of their flowers, and that should be planted extensively wherever room can be found for them, are comprised in the following selection:—

Berberis Darwini, *B. dulcis*, and *B. stenophylla*, are all remarkable for neatness of habit, and the profusion of rich yellow flowers produced during the early spring months. They are all well suited for planting in masses at intervals along the front of shrubberies, as they have a good effect, even when not in bloom.

Chimonanthus fragrans is desirable because of its blooming in winter, and the delicious fragrance of its flowers. It requires a south wall for its cultivation. *Cistus ladaniferus*, well known as the Gum Cistus, is one of the finest of dwarf shrubs for a hot, dry bank, or a sunny position on a large rockery; the flowers, which are white, with crimson spots at the base, are quite three inches across, and borne in profusion when the plants are in a suitable situation.

Cydonia japonica may be grown in the form of a bush in the shrubbery, or be trained to a wall or fence, and in every case has a very interesting appearance early in the spring when in bloom. The variety known as *princeps* has deep scarlet flowers, and the double white known as *flore albo* is useful for the sake of variety, although less effective than those with high-coloured flowers. *Cytissus albus* is a neat growing shrub, extremely graceful in habit, bearing a profusion of white flowers in May, and in every way suitable for single specimens on the lawn, or for prominent positions in the shrubbery borders.

Daphne encorum and *D. mezereum* are the most useful of this genus; the first is a low-growing evergreen, bearing pink flowers, and requiring peat; and the other is deciduous, and bears its purplish flowers before the leaves are developed. *Deutzia crenata* and *D. scabra* are two pretty, neat shrubs for front lines, and although they are as cheap as lilacs, they are not often met with in private gardens. *Diervilla canadensis* is closely allied to the Weigelas; the flowers are purplish red, and not unlike those of a small fuchsia.

Escallonia macrantha is very beautiful in warm, sheltered situations, as also is *Embothrium coccineum*, but both are too tender for the neighbourhood of London.

Forsythia suspensa and *F. viridissima* are useful shrubs for front lines, bearing a plentiful profusion of yellow flowers early in the season.

Hydrangeas, of which *H. hortensis*, *H. Otaksa*, and *H. paniculata grandiflora* are the best, are useful for masses in front lines. The first-mentioned is a fine dwarf shrub for front rows, as demonstrated by the examples in the gardens of the Royal Horticultural Society at South Kensington. Some of the groups of shrubs are surrounded with a belt of *Hydrangeas*; and as they bloom superbly every year, they produce a rich effect. They are especially good this year. The second kind mentioned is not well known, and it may be useful to say that it bears globose heads of pink flowers, ranging from ten to twenty inches in diameter, according to the strength of the plants.

Philadelphus coronarius and its double variety bear, during May and June, an abundance of white, sweet-scented flowers; and as they do very well planted at the back of other shrubs, they are

exceedingly useful. *P. Gordonianus* is later than the others, and has the showiest flowers, but they are quite scentless. *Prunus triloba* is one of the prettiest of spring-flowering shrubs; the flowers are in the form of neat rosettes, and of a delicate pink colour.

Syringa vulgaris Charles X., *S. vulgaris* Dr. Lindley, and *S. vulgaris alba*, are, perhaps, the most valuable of the lilacs. The two first mentioned are grand varieties of the common lilac, and should be planted in preference to all others.

The Guelder Rose, *Viburnum opulus*, and the more recently introduced *V. plicatum*, are two strong-growing shrubs, useful for grouping with others in large masses. The last-mentioned has the largest flowers, which also are the purest in colour.

The *Weigelas* are very beautiful in kind climates, where they have a chance of growing to a considerable size, but they are tender in the neighbourhood of London, and further north. They suffer so much from spring frosts when on cold, damp soils, that, in the course of a few years, they perish outright. *W. amabilis*, and its beautiful variety *rosea*, are both well known. *W. Middendorffiana purpurata* is a variety at present but little known in this country, and well deserving of the attention of cultivators resident in sheltered situations, where *Weigelas*, and other plants of a similar character, thrive. The flowers are rich in colour, and well established plants have a most beautiful appearance when in full bloom.

THE ENEMIES OF THE ELM.

BY A PRACTICAL FORESTER.



THE elm, one of the most noble of our park and forest trees, is subject to the attacks of several insect enemies, which, whether they are the cause or the result of a bad state of health, are capable of doing a considerable amount of mischief, and also of hastening the death of the trees that they attack. The enemies with which the elm has to contend in the battle of life, are the larva of *Bostrichus chalcographus*, *B. topographus*, *Cossus ligniperda*, better known as the goat moth, *Hylisimus fraxini*, *Scolytus destructor*, and *Cossonus linearis*. The *Scolytus* and the *Cossonus* are the two foes most to be feared, for they are multiplied at a very rapid rate when they once attack a tree, and the larvæ of the first-mentioned of the two have the power of penetrating the sound hard wood, as well as of feeding on the liber or inner bark, and on the alburnum. The larvæ of the *Scolytus* feed entirely upon the alburnum, and they are perhaps more fatal in their effects, for by eating this away the flow of sap is more or less checked, and in the end the tree, if badly infested, perishes. The *Cossonus* is very small, and as Mr. Humphreys, in an interesting article on the "Insect Enemies of the Elm," in vol. ii. of the *Intellectual Observer*, remarks, "The larva is, as may be conceived from the

size of the perfect insect, very minute, and is a soft smooth grub totally devoid of legs, but it is furnished with considerable muscular power, and with powerful mandibles, with which it at the same time takes its food and perforates its minute tunnel." The trees that are badly attacked with this insect, soon show unmistakable signs of a rapid decay, they lose the power to produce new leaves, and their existence when in this weakly state is brief indeed. For this pest there is no

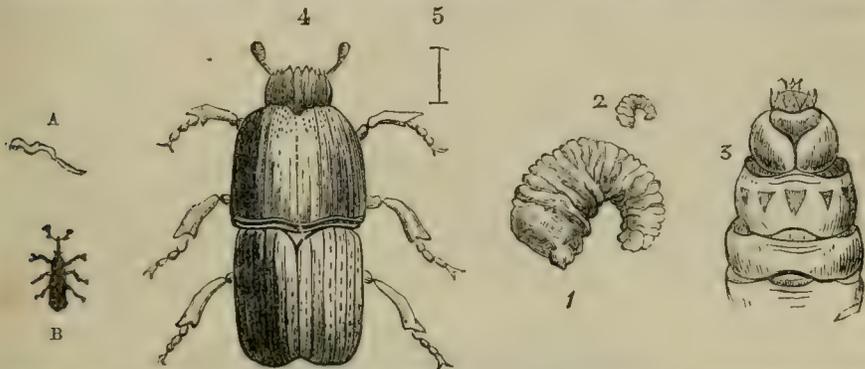


FIG. 1.—A, The tunnel of the *Cossonus linearis*. B, *C. linearis*. 1, Larva of *Scolytus destructor* (magnified). 2, Larva of *Scolytus destructor*. 3, Head of *S. destructor* (magnified). 4, *S. destructor* (magnified). 5, Size of *S. destructor*.

known remedy, and none of the authorities have suggested any means by which the devastations of the larvæ may be checked.

The *Scolytus* is a small beetle, somewhat similar in character to the *Cossonus*, as will be seen on reference to the representations of

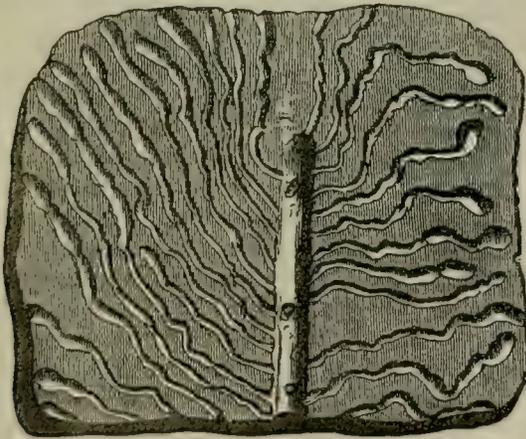


FIG. 2.—Tracks of *Scolytus* on the wood of the elm.

the two insects in Fig. 1. It has the power of penetrating the hard outer bark of the trees, and depositing its eggs underneath; Fig. 2 represents a piece of wood which has been infested with a colony of the *Scolytus*. The female insect has perforated the bark at A, and it has then proceeded to form a tunnel underneath the bark. At B, and C, are rather deep cavities, and these are supplied by some en-

tomologists to be formed for the purpose of affording the female an opportunity to turn round in the tunnel, and beat a retreat should she survive the work in which she is engaged. But they can hardly be for that purpose, and after a close examination of various pieces of wood tunnelled in the manner here shown, it is difficult to suppose that they are provided for any other purpose than as receptacles for the eggs. When the eggs are hatched, the larvæ proceed to the right and left of the tunnel, eating their way as they go, and these lateral channels widen as the larvæ increase in size, and finally terminate in a rather wide and blunt cavity.

In this cavity the larva sinks into a dormant state, and undergoes its change to the winged state. The beetle when fully developed bores its way through the bark and emerges into the open. Its open air existence is exceedingly brief, for the female soon begins to bore her way into the bark to deposit her eggs as in the previous generation. The main tunnel formed by the female is always in an upward direction, and it is usually from two to three and a half inches in

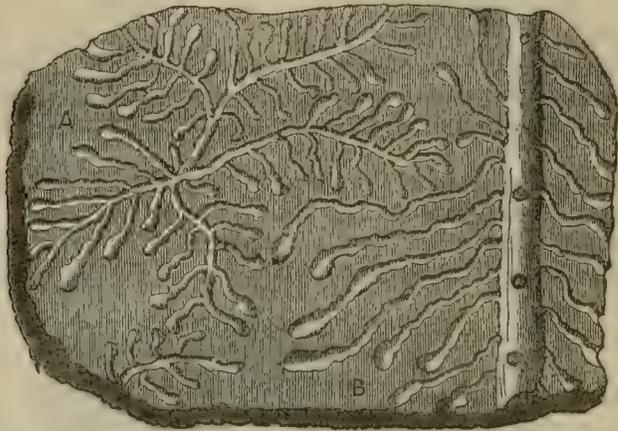


Fig. 3.—Elm-wood, showing tracks of *B. chalcographus* and *B. typographus*.

length. The larvæ feed upon the tree throughout the summer, autumn, and winter, and as they may in the case of large trees amount to many thousands, it is not difficult to conceive the immense amount of injury an army of this beetle is capable of effecting.

The larvæ of various species of *Bostrichus* make branching channels very similar to those formed by *Scolytus destructor*, as a reference to Fig. 3 will show; the lines or channels at A, in this figure, are those of *B. chalcographus*, and those marked B, are formed by *B. typographus*. The last-mentioned species is rather the largest insect of the two; but both are about equal in the injury they do to the trees.

The larvæ of the Stag Beetle and of the Goat Moth also bore their way into the elm as well as into other trees; but, fortunately, neither are sufficiently plentiful to do very much mischief. Were they plentiful they would be more direful in their effects upon the trees than either of the other enemies, for they make holes of large size, and bore their way to quite the heart of the tree; so that if a

tree were to be attacked by a considerable number, it would be very soon killed.

For many years it has been a debatable point whether the attacks of the pests, to which allusion has been made, are the cause or the result of the bad state of health in which elm trees are frequently found; but if the evidence which has from time to time been brought forward is carefully considered, it will be found that it is strongly in favour of the attacks being the result rather than the cause of the disease.

If the trees become unhealthy from any cause, such, for example, as the roots being covered over by hard pavement, or the moisture drained out of the soil by a sewer, or large drain being laid down close to the roots, as is frequently the case in towns and suburban districts, the trees are quickly attacked by their enemies. It is questionable whether they attack trees that are perfectly healthy; and if they do, as Mr. Hibberd clearly proves in the volume of the *Intellectual Observer* already referred to, "the sap would deposit new material, sufficient to hermetically seal up the perforations of the female insect, and that, should the eggs be deposited in a healthy tree, the power of vegetation would annihilate the brood by investing every cluster with vegetable tissue so dense as to cause their suffocation, even if their eggs were hatched; and that event would probably be as impossible as for the larvæ to eat their way either in or out."

In 1862 much was made by those who believed these insects to be the cause of disease in the elm, of the report that a French botanist, M. Robert, had saved a large number of trees by stripping them of their bark: but like many other wonderful reports received from the Continent, there was very little in it, and on proper inquiries being instituted it was found that all M. Robert had done, was to remove a portion of the hard outer bark, and to renew the roots of the affected trees in order to promote a free flow of sap, and a more active vegetation. By the removal of the corky bark, colonies of insects were destroyed, and the flow of sap quickened.

The elm produces its roots near the surface, and requires plenty of moisture, consequently if the roots are covered up in the manner already suggested, or the greater portion of the moisture drained out of the soil, it is impossible for the trees to remain long in good health. Therefore should any of the trees in a line or group become unhealthy, and on examination be found to be infested with the *Scolytus* or the *Cossonus*, they should be cut down, and if practicable, the other trees should be assisted by the application of fresh soil, or by preventing the moisture soaking away too rapidly. There is no dressing that can be applied to the trees for the destruction of their enemies, and to strip them of their bark would simply be to assist in the work of destruction.

FIGS.—At Calamata, in the Morea, large quantities of Figs are grown, about 3000 tons being the produce of last year. They realize about £15 per ton. The demand in England for these figs is very small, owing to their very tough skin. The bulk finds its way to Russia by the Black Sea, or to Trieste for consumption in Germany.

August.

RAISING SEEDLING FUCHSIAS.

BY HENRY CANNELL,

The Nursery, Woolwich, S.E.



HERE are not many amateurs who have turned their attention to the raising of seedling fuchsias, notwithstanding the fact that few other florists' flowers will afford such a good return for the labour, skill, and attention necessary in bringing this work to a successful issue. The only amateur raisers of note at the present time are Mr. Banks and Mr. Bland, and I should therefore very much like to see others take up this very pleasing task, with a determination to raise something really good. We cannot well have too many raisers, provided they do not tread too closely in each other's footsteps, and, in consequence, give us varieties bearing too great a resemblance to each other. By having a large number of raisers there is a much better chance of obtaining varieties that are both good and distinct than when the number is few, because as a rule, each raiser devotes special attention to one or two classes of flowers, and, of necessity, the seedlings bear a very great similarity to each other. Therefore the improvement of the fuchsia is likely to be carried on more rapidly, and floriculture to be more largely benefited by amateurs turning their attention to this work in larger numbers, than is at present the case.

Many of those who have not made fuchsias a special study think that the improvement of these flowers has been pushed to its utmost limits, and that nothing further remains to be done; but I need hardly say that this is a mistake. Years ago—I am unable to say how many—we were told precisely the same thing, and yet immense strides have been made during the last few years. Depend upon it, there is plenty to be done in this direction, especially with the varieties bearing flowers with a white tube and sepals. Surely we must not be satisfied with these, although some of them are very fine. We want varieties of a more free and graceful habit, and bearing flowers of larger size and better shape. I see no reason why we should not have these with flowers quite equal in every way to those of the dark sorts. There is also a possibility of obtaining a quite new type of flower. If we inquire into the history of the fuchsia, we shall find that some remarkably distinct forms have made their appearance in the seed-beds of the raisers, and, in my opinion, at a time when they were least expected. There is, for example, *Venus Victrix*, which Mr. Cripps gave us thirty-three years ago. This is the first variety with a white tube and sepals raised and introduced into cultivation, and for some time it was thought to have quite disappeared, but after great difficulty I succeeded in procuring a plant. This being the first break from the dark varieties, there is more purple in the corolla than in the corollas of the other varieties, and by crossing it with the newest sorts some really fine things may

be reasonably expected. About twenty-two years ago Mr. Storey gave us the first of those with white corollas, which included Queen Victoria, Mrs. Storey, and Lady of the Lake, all of which have now been surpassed; and about sixteen years ago Mr. Banks gave us a decided new colour in Venus de Medici. I should like to see something more done with the hardy sorts, such as Riccartoni, coccinea, and gracilis. Mr. Bland has been successful in raising several really good hardy hybrids, and, for the sake of those who admire fuchsias and have no place in which to grow the tender sorts, I would like to hear of more making their appearance. There are also the winter-flowering species, which of themselves are capable of affording plenty of work during the next ten or fifteen years, for those who are prepared to take them in hand with a determination to do them justice. There is, for example, serratifolia, and the well-known hybrid Dominiana, both of which are capable of immense improvement; and, in addition, there is a robust-growing fulgens, which has flowers of immense size and of a very bright colour, and when it has plenty of space for its development it has a very effective appearance.

I have pointed out what is still to be done in the improvement of the fuchsia to show the amateur that it is no exhausted mine he is asked to work; and I will now give a few directions that will possibly be found useful. Fuchsias are as readily raised by means of seed as an ordinary annual, provided the seed is of good quality. Fuchsia seed is, like that of the Centaurea, very peculiar. You imagine you have a fine lot of seed, and although it has a clean and nice appearance, and is tolerably plump, it has no vitality in it, and of course is quite worthless. To make sure of seed that will grow, and also produce good varieties, the amateur must save it himself. No one can save fuchsia seed with a fair prospect of obtaining a price that will compensate him for the labour he will have to bestow in bringing it to perfection. Fuchsias produce very little seed indeed, and when cleaned and dried it is remarkably light in weight. Indeed, the quantity obtainable from a large house filled with plants is so ridiculously small that no one, excepting it be an amateur with plenty of time on his hands, can engage in saving it for commercial purposes. Some people are astounded when told that the seed of some florists' flower has been sold at four or five guineas per ounce; but either of these sums is nothing as compared with the value of fuchsia seed; for the latter, provided it has been saved from first-class varieties and will germinate, is worth at least fifty guineas per ounce.

Apart from the difficulty in obtaining first-class seed, the amateur who is desirous of raising improved varieties must save it from flowers that have been carefully fertilized with pollen obtained from other flowers of good quality, or possessing some distinctive characteristic. When the ordinary varieties are employed, both as pollen and seed-bearing parents, those with the finest shaped and the most highly-coloured flowers only should be selected; but when it is desired to effect any particular cross, or to raise a distinct type, the selection of varieties must be left entirely to the judgment of the

raiser. I would strongly advise amateurs to do their best to raise varieties distinct in character from those we already have in large numbers, because of the greater interest they will feel in the work, and the greater likelihood of their raising something really worth having. The high-bred varieties, as in the case of other florists' flowers, are very shy in producing seed, and very little, even with the greatest care in fertilizing the flowers, will be obtained from them. Up to the present time, the best results have been obtained by crossing the various dark varieties together, and the light varieties together. Dark varieties have been crossed by the best raisers with light ones, and *vice versá*; but in no case that has come under my notice have the results been satisfactory. The fertilization of the flowers should be commenced early in the summer, to give the seed plenty of time to be well ripened by the autumn.

When the seed is thoroughly ripe, gather the pods and lay them in a sunny position for a few days. To separate the seed from the pulp, crush the pods between the finger and thumb, and well wash in clean water. Some care will be necessary in doing this, or a proportion of the seed will be lost in removing the pulp. After the seed is thoroughly clean, lay it in a shallow saucer to dry, and then wrap in paper and put it by in a drawer until the time comes for sowing it the following spring.

I shall not say much about raising the seedlings, for this is the most easy part of the work. Prepare a sufficient number of five-inch pots, by filling them about half full of crocks, and then filling the remaining space with fine sandy soil. Make the surface level, sprinkle with tepid water and sow evenly over the surface. Cover lightly with fine sandy soil, and place on a brisk hotbed, or in a pit or house in which the temperature is sufficient to cause the seed to germinate quickly. A temperature of 70 deg. or 75 deg. is perhaps the most suitable.

Immediately the young plants are large enough to handle, prick them off into shallow pans or into pots prepared in the same manner as the seed pots. They will require rather careful attention at this stage because of their tenderness; but if they are kept rather close and in a shady position, they will soon become established and commence to grow freely. When the plants are about three inches in height, and before they have become drawn from overcrowding, pot them off singly, and use three-inch pots and a light rich compost, the latter to consist of turfy loam, leaf-mould and silver-sand. They will not require any manure in the compost at this stage, as it is not desirable to encourage a luxuriant growth. After they are potted off singly, they should be managed in precisely the same manner as plants raised from cuttings. Those which make a strong growth must be shifted into six-inch pots as soon as more root-space is required, and the smaller plants should be put into pots one size less, and pots of the sizes mentioned will be sufficient to carry them through the season.

A portion of the stock will bloom in the course of the season, and all that are of a promising character should be retained for the purpose of submitting them to further trial the following season.

Those also which do not bloom must be put by, but all that are utterly worthless should, of course, be destroyed. Such as are to be preserved over the winter should be placed in a light position and kept rather dry at the roots towards the autumn. In the spring prune them moderately, reduce the ball of soil, and repot. The second season there will be no difficulty in determining which are worth keeping. To avoid unnecessary labour and to make way for other seedlings, I would strongly advise the amateur to destroy all that are not equal to those already in cultivation at the earliest moment possible.

NEW STOVE AND GREENHOUSE PLANTS.

BY GEORGE GORDON.



THE liberal prizes offered at the great exhibitions held at the Crystal Palace, Manchester, and South Kensington this season, served a very useful purpose in bringing prominently before the public the most promising novelties introduced by the principal nurserymen, who devote special attention to this branch of their business. The prizes offered were liberally responded to, and a considerable number of new plants were staged, and an excellent opportunity afforded for purposes of criticism and comparison. There is this season no lack of novelties, and the majority appear to be of exceptional merit in their several classes. But unfortunately the plants now in course of distribution for the first time consist almost exclusively of those requiring the temperature of a stove for their successful cultivation. This is to be regretted, as it limits the area of their cultivation, and places them quite beyond the reach of the majority of amateur cultivators.

ORCHIDS are but sparingly offered, and these few are exceptionally good. One of the best of these is *Odontoglossum Roezli*, a lovely species, introduced from New Granada. The flowers are large, perfectly flat, the sepals and petals white, with purple blotch at the base, and the labellum white, with yellow blotch at the base. There is a pure white variety, known as *O. Roezli album*, and it is really exceedingly beautiful. This is not yet "in commerce," that is to say, it has not yet been offered in the trade catalogues. Most of the nurserymen have it, and there are several fine examples of it in Mr. Day's magnificent collection at Tottenham. *O. vexillarium*, sent out last year, gains in popularity, and commands about double the price at which it was first offered, the minimum price now being five guineas. It is certainly one of the finest orchids we have; the flowers are very large, the labellum being quite three inches across, and are produced in spikes of five or six each, and sometimes as many as three spikes are produced from one pseudo-bulb; the flowers are of a pleasing shade of rose-lilac, and are wonderfully attractive. *O. Warscewiczii* is similar to the latter in growth, but the flowers, which are rather smaller, are of a creamy colour, with a

dark blotch at the base of the sepals and petals. These all partake of the general character of *O. phalænopsis*, and require a rather higher temperature than the other *Odontoglots*. They succeed most satisfactorily with the *Cattleya* and *Lælias*. *Cattleya gigas* is a spring flowering species of great merit, the flowers very large, the sepals and petals soft rose, and the labellum dark purplish red. *Masdevallia Davisi* is the most recent introduction to this most interesting and valuable genus, valuable because the plants can be grown in a cool house, and by amateurs with but little expense in orchid culture, and produce flowers of great beauty. This is in the way of *M. Harryana*, and has flowers yellowish white outside, and brilliant orange inside.

FERNS are not numerous, but several interesting kinds are offered. Foremost amongst these must be placed *Adiantum gracillimum*, unquestionably the most beautiful of all the Maidenhair ferns. It is very similar in character to the well-known *A. cuneatum*, but the pinnæ are much smaller; they are, indeed, so small, and the plant so light and elegant, that a specimen may be likened to a cloud of gauze. Its fronds will be found of special value for bouquets and for dressing epergnes, because of their lightness and airy appearance. In striking contrast to this is *A. Seemanni*, which has pinnæ three inches long and two inches broad; it is a very fine fern, well adapted for specimen culture. *A. speciosum* is of semi-scandent habit, has very large tripinnate fronds, and is worthy of a place in the most select collection, and well adapted for specimen culture for exhibition purposes. *Pleocnemia Leuzeana* is a remarkably handsome arborescent species, introduced from the Philippine Islands by Mr. W. Bull, of the King's Road, Chelsea. It has a short thick trunk and large spreading fronds, which attain a very large size on fully-developed specimens. It is very beautiful when stemless and in a small state, and as it is, comparatively speaking, very cheap, it can be strongly recommended to the notice of amateurs.

FLOWERING PLANTS are very few in number. There are, in fact, hardly any flowering plants beyond the soft-wooded things and the orchids. *Dipladenia Brearleyana*, which formed the subject of the coloured plate in the FLORAL WORLD of last month, is undoubtedly the most important, and can have the heartiest recommendation. *Anthurium candidum* is an elegant plant, with ovate-lanceolate leaves, from six to eight inches in length, and producing a profusion of white spathes. It is hardly an amateur's plant, and is not entitled to a place elsewhere than in a stove of large size. *Begonia Model* and *B. Excelsior* are two good additions to the list of tuberous-rooted begonias, which is now very lengthy. Both have flowers of large size, those of the first-mentioned being of a delicate rosy blush shade, and of exceptionally fine form. The other has flowers of a bright cinnabar-red, and with rather long petals. *Amaryllis Leopoldi* is a grand amaryllid, introduced from Peru. The flowers are of immense size, measuring, when fully developed, quite seven inches across; they are, in fact, larger than those of any other amaryllis in cultivation. The flowers consist of six broad obovate perianth segments, the lower half of which is a clouded crimson

colour, whilst the tips are creamy white. It is very bold and handsome, and whenever exhibited has attracted a large amount of attention.

ORNAMENTAL-LEAVED PLANTS are, as usual, exceedingly plentiful, and consist almost exclusively of those belonging to the stove. One of the best of those hardy enough in constitution to admit of their being grown in the greenhouse, is *Anthericum variegatum*, introduced by Mr. B. S. Williams, of Upper Holloway, from the Cape of Good Hope. The foliage is of a bright grassy green, beautifully striped and margined with white. It is of medium growth, very elegant in outline, and well adapted for the decoration of the dinner table. Several new *Dracenas* are offered, and those which are the most distinct and beautiful are *D. hybrida*, a medium grower, with the leaves beautifully variegated with deep rose and creamy white, the latter frequently suffused with rose; *D. Levangeri*, a strong-growing form, the leaves gracefully arching, and freely variegated with rose; *D. gemma*, a very small grower, distinct and elegant in character; *D. rubella*, a richly-coloured form, of robust growth and upright habit. *Crotons* are not so plentiful as for some years past, and neither of those now being offered for the first time will be required, excepting it be for very large collections. *C. majesticum* and *C. spirale*, sent out last autumn, are two magnificent forms, that should find a place in the smallest stove. Some very distinct *Crotons* have been exhibited this season, but as they will not be distributed until next season, it is not worth while to say anything further about them. A few fine Palms have been introduced, and those most valuable are *Astrocaryum filare*, a fine species of small slender growth; *Dæmonorops ornatus*, a beautiful species, with finely-cut pinnate leaves; *Desmoncus granatensis*, a novel form of considerable merit; and *Martinezia leucophæus*, a handsome dwarf species. These palms in no way supersede the best of those now in general cultivation, and are now recommended simply to those who have already a good representative collection.

STOCKS FOR CONSERVATORY DECORATION.

BY THOS. TRUSSLER,

Nurseryman, Edmonton, N.



STOCKS, when well grown, whether in the open border or in pots, seldom fail in being heartily appreciated; but as a rule they are more highly esteemed when grown in pots, for the embellishment of the conservatory during the spring months. The flowers, through their being protected from the weather, are remarkable for their freshness and richness of colouring, and are so powerfully fragrant, that a dozen plants or so are sufficient to fill a medium-sized structure with their grateful perfume. And as they are not difficult of cultivation, amateurs may take them in hand with the full assurance of insuring satisfactory results.

August.

The most suitable time for sowing is from the 1st to the 15th of August, as there is then time for them to become strong, without attaining a larger size before winter than is desirable. There are four distinct colours, all of which should be grown. These are the *Intermediate Scarlet*, *Intermediate White*, *Intermediate Mauve Beauty*, and *Intermediate Purple*. The white and the scarlet, so-called, are the two most useful colours, and if two are considered sufficient, these should have the preference. Mauve Beauty represents a new strain of these fine stocks with large and exceedingly double flowers, of a delicate mauve colour. Seed of the several colours saved from good strains, should be procured, as common seed, sold at a few pence per packet, produces a very large percentage of single flowers, and the cultivator's labours are, to a certain extent, wasted. Sow in pans or shallow boxes, each colour separately, and place in a frame until the seedlings are nicely above the surface, and then either draw the lights off altogether, or remove the seed-pans out of doors. The soil used for filling the seed-pans should be rather light and sandy, and the best compost for the purpose is that prepared by incorporating together loam and leaf-mould, in the proportion of one part of the manure to every three parts of the loam. Sow thin, to avoid the necessity for potting the seedlings off before they have become strong.

As overcrowding is injurious to stocks at this stage, pot them off as soon as they begin to touch each other, or when they are furnished with three or four leaves each. To avoid any unnecessary labour, transfer them direct from the seed-pans to the pots in which they are to bloom. Five and six-inch pots are the most suitable, and these should have a layer of crocks in the bottom about an inch in depth. The drainage must be covered with a little of the roughest portion of the compost, and when this has been done, fill the pots firmly, and to nearly level with the rim with the prepared compost. The latter should consist of one part well-rotted manure or leaf-mould, and good turfy loam broken up somewhat roughly, the proportions to be the same as advised for the seed-pans. Lift the plants out of the pans with a thin piece of stick, and dibble them in the pots, at the rate of two to the five-inch and three to the six-inch pots. Press the soil firm, and if the pots are not quite full enough when the plants have been dibbled in, add a little more. Water moderately to settle the soil, and as it will be some time before the pots will be well filled with roots, the water must at first be applied sparingly or the soil will become sour.

The *Intermediate Stocks* are rather hardy, but not hardy enough to withstand the severity of an ordinary winter, and must have protection. A frame from which the frost can be excluded, either by means of fire-heat or a covering of some kind, is the most suitable place for them during the winter, as in this they can be placed near the glass, have protection from frost, and from an excess of moisture, which is extremely hurtful to them. In February, they should be removed to the greenhouse, and have a position allotted them where they will be near the glass. From the greenhouse, they

can be draughted to the conservatory or the drawing-room window, as they come into bloom. I would add, in conclusion, that the plants bearing single flowers should be drawn out of the pots as soon as the character of the bloom can be seen, as the decorative value of the single flowers is very small indeed.

THE OTHER SIDE OF THE WALL.



It will be observed that fruit walls are usually furnished on one side only, and it will be agreed that they ought to be furnished on both sides. In a proper fruit garden, as a matter of course, trees are planted on both sides, and then such proposals as we intend to make are simply not wanted. But we will suppose that the reader has a wall on one side only of which fruit-trees are trained. If the other side is not exposed to destroyers and marauders, as it must be if skirting a public road, it will pay to clothe both sides with fruit-trees, and the question arises how to do it? Before we enter upon that question, however, it is proper to remark that the aspect of the wall is of some consequence, though of far less consequence than those who have had but little experience would suppose. Of course a wall facing south will on the other side face north, and the other side is then of small value. But almost any aspect, except due north, will serve for the trees that are usually planted on walls; but on the cold side the fruit will not ripen so soon as on the warm side.

To come to business, then, we shall state a case. A wall enclosing a square houseyard, has, of course, four aspects, and in this case they are south-east, north-west, south-west, north-east.

The south-east aspect is planted with peaches and nectarines, which are trained in the usual way, and produce abundance of fruit. At certain spots narrow slits have been cut quite through the wall, by means of hammer and chisel, between the bricks, and through these holes the points of young branches have been pushed. These branches have lengthened, and in the course of years have quite clothed the north-west side of the same wall. Such a proceeding does not distress, it helps the tree, as we know by the philosophy of extension, and it moreover enables a tree to do double work with one set of roots, to the advantage of the tree, as well as its owner; for the more a tree is allowed to spread, the more healthy will it be.

The south-west wall is clothed on the south-west side with peaches and plums. This wall is pierced in like manner; but as the other side faces north-east, it would not be wise to bring the peaches through, so the plums are alone carried to the other side. Owing to the immense vigour of the plum-trees the other side is quickly covered, and at the moment of writing this, the plums on the north-east side are as plentiful as on the south-west side, and will ripen perfectly, though a little late.

The north-west aspect is planted with Morello cherries, which are taken through in like manner, but for these the perforations are mostly at the bottom of the wall, and each branch once through and established, is trained out as a separate tree, fan fashion. This plan is followed, because of the peculiar growth and pruning of the Morello cherry.

The north-east wall is planted exclusively with that fine dessert pear, *Passe Colmar*, which usually bears abundantly, and ripens its fruit perfectly in this unfavourable aspect. This wall is not perforated, but the branches of the pear-trees are bent over the top and trained down; and the south-west side thus clothed by reverse training, is at the moment of writing this so densely clothed with fruit, that we fear for the trees, unless the crop is quickly and severely thinned, as, indeed, it ought to have been when the pears were at first fairly visible.

Thus four walls serve the purpose of eight walls, as regards productive surface. But it may be asked, why not plant on both sides? To this proper question it may be answered, in the first place, that if one set of trees planted outside all round will suffice, it would be a folly to plant two. And again, it may be said that the utmost possible extension of a tree should always be aimed at, for nine-tenths of all the wall-trees are rendered unhealthy by excessive pruning. But finally, in the case before us, the yard is attached to the domestic offices, and in part is used for drying clothes, and such like. It is nicely paved, and it would be inconvenient to have trees planted in it. Many readers of the *FLORAL WORLD* may be similarly circumstanced, and may be glad of this hint for making a fruit-wall do double duty. S. H.

SMALL BIRDS FOR THE HOUSEHOLD.

BY THE PRISONER'S FRIEND.



PAPER of mine in the March number of the *FLORAL WORLD*, treated of the parrots that are best adapted for domestication in dwelling-houses. In consequence of its appearance I have received a number of letters, in which I am asked to write more on the same subject, and I am in a difficulty how to harmonize politeness with my own convenience, having but little time for writing, being utterly destitute of experience in the use of the pen, and moreover having but a poor opinion of my capacity for teaching. But I will do my best, hoping to be useful, and to be forgiven for the shortcomings that are certain to be only too visible.

Certain correspondents who take an interest in cage birds, suggest that some general advice as to selecting them would be acceptable. I shall begin by saying that the fewer cage birds in any house the better, as a rule. To the amateur collector I have nothing to say. He or she will take in hand all sorts of birds, and perhaps

never tire of the pastime, or, it may be, soon find that it is a plaguey pastime, and quickly give it up. I can remember when my house was full of cage birds, and birds that lived out of cages, the trouble entailed in feeding and cleaning was immense, but success attended our labours, and the collection was the theme of universal praise. But at a certain moment we had to leave home together for a considerable length of time, and we made the best imaginable arrangements for the care of our large feathered family, but the end of it was a dreadful wreck, and we have not had the courage to begin again. Strange to say, when, on returning home, my husband looked at the empty cages, and began with a half-broken heart to do something to save the few birds that were left, he had the misfortune to cause the death of a bird that he valued more than all the rest. This was a skylark, whose song he had modified to his own liking by piping to it, and great was his joy to find this bird amongst the few that had survived the neglect which had ruined the collection. The bird looked dejected, so he got ready another cage for it, with a nice fresh turf and such trifles of comfort as loving hands alone can find, and he tenderly took the bird from the dirty cage it was in, to transfer it to a nicer home. Whether he was too gentle or somewhat unnerved by the dreadful spectacle of dead birds and empty cages, it is impossible to say, but the tragedy was the same: the bird sprang from his hand and went up like a rocket, struck the ceiling, and fell at his feet as dead as a stone. If the skilled and experienced in bird-keeping have such accidents, the beginner in the perilous business must not expect to escape. But there is a right as well as a wrong way to begin, and I am satisfied that no one should enter into bird-keeping in a large way until they have a year or two of experience in the management of a canary, for to manage one bird well gives a key to the management of many.

Having made this beginning, it will be well to make further acquaintance with birds of the same family; that is, the family of the finches. It should be impressed on the mind of the beginner that the finches are the easiest of all to keep, and the most lively and sociable as cage birds. As a rule, all they want is dry food, and vegetables that need no preparation; but the soft-billed birds must have pastes and compounds, and the result is a considerable amount of mess and bother. And what finches would you recommend? some one will ask. The Chaffinch, Goldfinch, Linnet, and Siskin constitute an extremely interesting collection—all seed-eaters, all singers, all pretty, lively, healthy, companionable, teachable, and long lived. The siskin is a darling bird, although not very musical. Its comical movements and ridiculous song would drive a frown from any brow, and almost cause a marble bust to smile. But there ends the list of the most desirable finches. They thrive on canary seed, millet, and rape; they want regular supplies of vegetable food, such as lettuce, groundsel, chickweed, shepherd's purse, or wild turnip. I have lately seen in a captain's cabin, a sweet little canary that was purchased in Japan, and has been in the ship four years without being once removed. And how does its loving owner find it in fresh vegetable food? you will ask. Oh, in a simple pretty manner. He sows a

handful of wheat or any other dry corn, or a spoonful of mustard seed, on a great sponge that is fitted in an ornamental jar, and presently the sponge becomes a green field, and the little dear has the delightful change of diet, without which, in all probability, it would cease to live.

When you have become thoroughly accustomed to the five finches I have advised upon, there are others worth attention. The Bullfinch is one of them. It is marvellously teachable, and when taught must be very carefully kept up in its lessons, and prevented from spoiling them by hearing other birds. A piping bullfinch for which I paid a large sum of money, because of its superb rendering of the Scotch air "Rest thee, babe," which had been taught it by means of a flageolet, actually incorporated with the tune the squeak of a wheelbarrow, which it heard every morning early, and of which I was in happy—nay unhappy—ignorance until the mischief was done. But I got through the difficulty. I imposed on a very near and dear friend of mine who used to whistle like a flute, to teach the bird another tune, and he taught it "Sweet Jenny Jones," having a great fancy for that tune, because he had so often enjoyed the performance of it by the Lancashire bellringers, and the harpers of Wales. A piping bullfinch is an elegant present for a friend, but before you select such a present, be somewhat sure the friend will take proper care of the bird. If you do not know how to secure a first-rate bird, send to Mr. Hawkins, Bear Street, Leicester Square, for he imports selected birds that are perfect in three tunes. I wish the Germans would not teach them with the bird organ, for it does not impart a sufficiently true tone to the voice; but there, if a bird sings passably well it's a wonder, and if we must pay thirty shillings for such a bird, the money, I think, is well spent.

A piping bullfinch should be fed on poppy seed, a very little hemp, and a scrap of dry thin biscuit twice a week, with a little vegetable food every day. If you give your piping bullfinch much hemp seed, you will soon have to pipe yourself—it may be because the bird has ceased to sing, and it may be because it has ceased to live.

Another interesting bird is the Hawfinch, an impudent, comical fellow, with a sort of roguish look about him. I was rather startled one day to hear that my tame hawfinch, a very curious but affectionate bird, was known below stairs as "the thief;" and I must say the moment I heard the word I saw the thief in him; he bore some resemblance to the "Artful Dodger" in Mr. Cruikshank's wonderful illustrations to "Oliver Twist." Like the bullfinch, this is a greedy bird, and will die of fatty heart if indulged with much nourishing food. Rape and hemp are suitable food, but much of the latter will soon make an end of it.

The Crossbill I consider an extremely interesting bird, and every one will agree that it is beautiful. It keeps up a pretty piping all day long, is always in action, a ludicrous fidget, and in all its ways, as well as its voice and appearance, resembles a parakeet. If you can see your bird before you buy it, select one with a fine red breast, for then you will have a young bird not reared by hand, and with

the natural colour. You will have also the natural ways, and altogether a pretty feathered bit of the wild northern forests. It requires hemp, rape, and pine or fir seeds, and, in the season, elderberries. A fresh ripe fir cone affords it a rare treat, and to see it pick out the seeds is very amusing.

If you want another hard-billed bird, take the Redpole. But I confess, it is not much of a bird. Probably I should never have kept such a stupid little thing if a little nephew of mine had not shown his first taste for sport by trapping them, and then horrifying me by selling them. Having a young birdcatcher in the family, I was compelled to buy, but I never could be enraptured with a redpole.

When we enter upon the keeping of birds that require prepared foods, we begin to experience the agonies of the aviary. It is easy work, I know, to keep a thrush or a blackbird, or a skylark, but it is not easy to all alike, and no one should begin who is not prepared to go on, for it is dreadful injustice to heaven to treat a bird unkindly. The Thrush, Blackbird, and Skylark may, however, be kept in the same house conveniently if they can be far separated, for they are loud in their utterances. The paste which best suits these birds is one compounded of stale bread soaked with boiled milk, with twice as much of the finest barley-meal, well beaten together. Many odd things answer for a change, as, for example, a little grated cheese, a little soft fat from a boiled leg of mutton pressed into a paste with meal, or grated carrot and bread soaked in milk. For the lark, a little grated leather must be added to the paste occasionally. As for myself, I will never again keep any of these birds, for the trouble is more than the pleasure is worth. To be sure, I am not shut up in a town, where the only bird music must be derived from a wire cage. The thrushes so abound here, that my husband says it is dangerous to walk about, because of the risk of breaking one's neck by tumbling over them, and we have all the birds that belong to the country, the nightingale not excepted. The mention of the Nightingale reminds me to say, that this wonderful songster, and its near relative, the Blackcap, are both most difficult to keep. We have had our experiences, and our pleasure and pains with these as with others, and heartily advise that only those who have a peculiar gift in bird management should have anything to do with them.

You will think it strange, perhaps, that after setting aside so many as undesirable, I should wind up by recommending as a household bird the Robin. Not one of the troublesome birds has amused me so much, and we have had several robins. Be sure you begin with a bird reared from the nest, or taken very young, and you must pay a good price for it. Birds caught when mature never take to imprisonment kindly, and are miserable as long as they live, which, generally speaking, is not long. Happily, the familiar redbreast will eat almost anything. For a general food, the paste just now recommended for larks will answer, but he likes cheese, scraps of tender meat, and very small crumbs of bread, elderberries, minced fat free of fibre, and, above all, meal-worms. Water he must have to drink,

of course, but a robin will not thrive long if it cannot bathe as it pleases, and a rare splashing it will make if allowed.

The most enjoyable way to keep a robin is to allow it to leave the cage and fly about the room all day, and at night coax it into its cage with a meal-worm or two. Bob will go in for his meal-worm and keep an eye on the door. You must be gentle. When he has picked up the worm put as a decoy, throw in another at the front of the cage to take his attention from the door, and then softly shut him in. A robin in a room must reign alone. Any bird competitor will ensure quarrelling, and it may be bloodshed. Bob is the tenderest and most engaging bird in all the world until another bird dares to share the apartment with him, when he is seized with a dreadful desire to taste the blood or even see the brain of his competitor, and a fight is sure to follow.

When loose in the room is the best time for Bob to have his bath, and he will rush into water, whatever sort of vessel it may be in. Nay, he will *imagine* water sooner than go without his bath. I have seen a bird of mine perch on the slippery top of a large china jar, and the coldness and glisten of which suggested to him that he might now have his bath. Then he would stoop into the imagined water, throw it over his back, and then allow his wings and feathers to drop as if really wet, and finally he would go on the edge of the fender to dry himself at the fire, though a cold, dry, slippery surface of shiny porcelain was the nearest imitation of water he had enjoyed.

The song of the robin suits a room admirably; it is soft, rich, and melodious. When a bird is used to a room, it usually passes much of its time on the curtain-pole or some similarly high perch, whence now and again it sends forth a delightful trill. But it will come down to dinner, and must really be allowed to behave as it pleases on the dinner table.

THE POTATO IN 1875.



THE phenomena of the potato field have proved interesting at least this season, and we very much fear the few examples of defective growth we have thus far observed, will at last culminate in a general failure. We are writing on the 15th of July; the rain is raining with a vengeance; for more than fifteen hours it has rained heavily and continuously in our green valley of the Lea, where, we are bound to observe, the rainfall, taking the year through, is a trifle less than the London average. A wet summer means devastation of the potato crop, and we fully expect that the too well known disease will prevail disastrously on all the heavy lands. But our readers, probably, care little for our speculations, though, as a matter of course, they will be interested in the facts that have come within our cognizance.

The month of May was characterized by unusually bright, dry, hot weather. The potatoes made splendid progress. They were in no serious degree injured by late frosts. The prospect, as

regards the potato crop, was splendid; but a flash of lightning struck the flag. In other words, a strange blight appeared. It was not general, and it did not seriously injure the crop; but it was curious. Here and there in the field a plant or a group of plants appeared as if smitten with some killing malady. The whole of the growth above ground was shrunk, and the usual symptoms of potato disease were not apparent. The microscopists were very busy. They found traces of peronospora, protomyces, ascomyces, sepedonie, and other fungi; but as they could not explain that the fungi caused the shrinking, they got out of the difficulty by designating the shrinking (with happy vagueness) a *New Disease*.

At this juncture, having examples of the shrinking in our plantations at Stoke Newington, we began to look into the matter, and, on lifting a few plants, the case was completely and lucidly explained. The roots were crowded with wireworms and other insect plagues; the underground stems were pierced, channelled, and barked by the same pests. On making careful microscopic examination of the withered leaves, we found there were just such traces of fungi as are common to withered leaves in a general way, for when leaves die, fungi take possession of them, and make a banquet of decay. We were confirmed in our opinion that wireworm was the cause of the so-called "new disease" when we made a careful examination of the plantations of our friend Mr. Peter McKinlay of Beckenham. It is true he had but little of the plague to experiment upon; but that little was enough. On lifting the blighted plants, we found wireworm boring the tubers, peeling the stems, and piercing, as with gimlets, the most vulnerable part of the plant, that is at the "collar," or where the ground line crosses, a point which gardeners describe, happily, perhaps, as "between wind and water." In a letter to the *Times*, published July 1, we stated the case as clearly as was in our power, saying that, up to that date, there was no new disease, and, in fact, no disease at all; but that wireworm, co-operating with most unseasonable heat and drought, afforded all the explanation needed as to the occasional collapse of the potato plant in the sunny month of May.

The representatives of the Royal Horticultural Society ought, we admit, to have made the discovery. They are commissioned, not only by the Society's supporters, but by the public generally, to take the lead in such matters. As they did not, but, on the other hand, went on pottering with microscopists, they allowed to drift into the hands of a heterodox outsider a discovery that should have been their own. Strange to say, wireworm does not exist in the Society's gardens at Chiswick. Not one of the official reports makes mention of such a thing. The great authority up there, Dr. Hogg, who is now very deservedly exalted to the post of Honorary Secretary, has never yet mentioned wireworm, and it may be that, in common with Mr. Berkeley, who also has past the meridian of life, his sight is less keen, and his capability of conviction not so delicate as in days gone by. However, a few folks not blessed with official appointments under the ægis of the Royal Horticultural Society, have arrived at the conclusion that the shrivelling that followed the

unusual heat of May was the result of the attacks of wireworm and other insect plagues. We find Messrs. Carter and Co., the eminent seed growers; Mr. McKinlay, the very first of amateur potato growers in the country; Mr. Taylor of Fencote; Mr. Challis of Witton House, Salisbury, Mr. Serjeant of Weybridge, Mr. Henderson of Walthamstow, and many others, testifying that the shrivelling was the result of the plant being eaten underground, and that the wireworm was the principal offender. But why should so exceptional a case occur? It was not exceptional. It has been observed time out of mind, but acquired distinctive importance this year owing to the exceptional heat and drought of the month of May. The marauders kept below the ground for the sake of coolness and moisture, and the plant suffered in a more than ordinary degree, because the heat was such that evaporation from the leaves made a greater demand upon the roots than the damaged stems could endure. The fountain was nibbled in the centre, and it could not play as required. When the June rains came, many of the shrunken plants recovered, thus proving that they never were diseased at all.

But those June rains have developed the old disease. This was to be expected. The murrain is sure to appear if the ground is cold and wet when the potato is in process of forming or ripening its tubers. The big wigs of the Royal Horticultural Society discovered a New Disease. They next discovered that the new disease was the old disease known as Curl. The next step was to discover that the Curl was only the Murrain in a new form. Let us wait; they are bound to discover that potato disease is not the fault of the sun, but of the moon and stars and planets, and at that point a black cloud will obscure the heaven at Chiswick, and we shall all be left in the dark if we trust such pretentious guidance. The old disease is raging beyond all doubt, but it is not the consequence of the growth of a fungus on the plant, but of cold and wet. His Majesty King Sol has hid his face behind the heavy cloud of vapours, and the potatoes are dropsical through too much wet and too little sunshine.

It remains to be said that Mr. Worthington Smith, a painstaking microscopist and mycologist, believes he has discovered the resting spores of *Peronospora infestans*, the fungus which is invariably associated with potato disease. This discovery requires confirmation, and it is fraught with important results. For the present, it appears to us to be a matter of immense interest to microscopists, but of the smallest consequence to the cultivator of potatoes.

S. H.

GRAFTING PEARS ON COTONEASTER STOCKS.—The *Illustration Horticole* records some experiments of Dr. Bretenneau, the celebrated physician of Tours, and an enthusiastic amateur gardener, on the grafting of distinct genera. He has successfully tried grafting Pears on Cotoneaster affinis and on Amelanchier. The results were very curious and interesting, and were crowned with success; but similar experiments on the evergreen species, *C. buxifolia* and *C. microphylla* failed.

THE GLORY PEA.



YOU say, in your "Amateur's Greenhouse," the "Clianthus Dampieri" is from New Zealand. This is an error. The New Zealand Clianthus is a shrub. I have grown it in my garden for several years, and prune it every winter. Neither foliage, flowers, nor brightness of colour approach near to our Clianthus. You call it the Glory pea; it well deserves the name; we call it the Sturt Pea, after Capt. Sturt, the explorer, who first brought the seeds to Adelaide thirty years ago, in many places from two hundred and fifty to eight hundred miles from Adelaide. It grows wild, like your English vetches, covering hundreds and thousands of acres, cattle and sheep feeding and fattening on it. We find the seeds germinate in sandy soil very readily; but on many of our native seeds we have to pour *boiling hot water* at night and soak them till morning. The country around Adelaide brings the most lovely flowers and shrubs to perfection. You should see our Botanic Gardens, under the care of Dr. Schomburgk, brother of Sir R. Schomburgk, the discoverer of the Victoria Regia Lily, you would pronounce them worthy to be numbered amongst the most lovely public gardens in the whole world. We have about three thousand acres of public park-lands surrounding our beautiful city, and to the east a noble amphitheatre of lovely hills embraces us, the gulleys supplying us with the finest vegetables all the year round.

We produce the most glorious fruits, rich, ripe grapes, worth £3 10s. to £4 10s. per ton. Apricots, figs, peaches, loquats in the greatest abundance from October to April. The oranges are now ripening; all the good kinds are grown—Mandarines, Navel, Maltese blood, Paramatta, etc. Our pears melt in your mouth. We have a glorious land. Strangers say our summer is hot; if so, it is healthy. The fact is, we have not twenty-one days of really unpleasantly hot weather all the year. I am only a plain man of business, so I can't talk dog Latin and give you the names of our native plants, or I would do so. If you will accept the few enclosed seeds of the white Sturt Pea, you are heartily welcome to them. The sort, originally, I believe, came from the neighbourhood of Nicholl Bay, on the north-west coast. Some of them come nearly white with us, others white-striped or variegated. Don't give them too much water. With us they flower through August, September, October, and November.

I wonder well-to-do Englishmen don't make up their minds to spend a few hundred pounds in a year's holiday in visiting the Australian colonies oftener than they do. We are really the wonder of the century.

4, Hindley Street, Adelaide.

E. EDWARDS.

AN INTERNATIONAL HORTICULTURAL EXHIBITION FOR 1877 is now under consideration. A meeting of the leading horticulturalists was held at St. James' Hall on July 21.

August.

FLOWERS FOR CHURCH DECORATION.

BY CAMILLE BONDEAU.



RAY do not allow any of the vexed questions of the day to interfere with your perusal of my humble paper. I will not tell you whether I belong to High Church, Low Church, Broad Church, or no church, for it cannot matter. It is, however, a fact that I supply, according to my means, a few flowers occasionally for the decoration of our parish church. It happens that *all* the festivals for which flowers are required occur at times when they are scarce: hence the interest that attaches to providing them.

For Christmas there are, of course, evergreens, and such like. I have for many years grown a large patch of *Helleborus niger*, which I have covered with common frames in November, and by this means I am enabled to supply our church with an abundance of Christmas roses. In the greenhouse I grow a lot of Chinese primulas, which are generally in flower at Christmas; but I find I cannot thoroughly depend on cutting freely from them. A few camellias and azaleas I can always secure, but never so many as I would wish; for I cannot afford to force, in the proper sense of the word.

For the Easter dressings I have a plant that is equal in value to the Christmas rose. It is the old trumpet-lily, or *Calla Æthiopica*. Of this I have about thirty pots, and I have cut as many as sixty flowers at one time for Easter dressings. A few of the large, handsome leaves must be cut with the flowers, to back them up. Another method of providing cheap flowers for this season is to plant out in a sheltered spot all the tulips and hyacinths that have done duty as pot-plants; but it is well also to buy a few cheap bulbs, and plant them close in boxes, so as to ensure some flowers of fine quality to spice up the smaller spikes that come from the old bulbs. Easter, being a moveable feast, must be thought of in good time in respect of flowers grown expressly for it.

For the harvest festival I have also a leading, cheap, and useful plant. It is the old ribbon-grass, *Phalaris arundinacea*, the leaves of which are elegantly striped with creamy white. I have been asked by many how I managed to supply such lovely bunches, which have proved so eminently effective in our church decorations. Generally speaking, the plant is quite worn-out and shabby at the time of harvest. Well, to reply. I have a long line of this grass in the kitchen garden, and it has a splendid appearance in the early summer, but becomes coarse when it runs up to flower. I allow it to flower, but do not allow the seed to swell; for as soon as the bloom is nearly perfect, I have it all cut over close to the ground. Very soon a new and delicate growth appears, and I have a grand supply by the time it is wanted for the harvest dressings. I also find *Sedum fabarium* (or *spectabilis*), *Asters*, *Dahlias*, and *Gladioli*, extremely useful, unless the season is unkind; and as to that in the shortening days, we must take our chance.

THE GARDEN GUIDE FOR AUGUST.

Far from mankind, my weary soul, retire,
 Still follow truth, contentment still desire.
 Who climbs on high, at best his weakness shows,
 Who rolls in riches, all to fortune owes.
 Read well thyself, and mark thy early ways,
 Vain is the muse, and envy waits on praise.

Wav'ring as winds the breath of fortune blows,
 No pow'r can turn it and no pray'rs compose.
 Deep in some hermit's solitary cell,
 Repose, and ease, and contemplation dwell.
 Let conscience guide thee in the days of need ;
 Judge well thy own, and then thy neighbour's deed.

What heav'n bestows, with thankful eyes receive ;
 First ask thy heart, and then through faith believe.
 Slowly we wander o'er a toilsome way,
 Shadows of life, and pilgrims of a day.
 " Who restless in this world, receives a fall ;
 " Look up on high, and thank thy God for all !"

CHAUCER.



ANNUALS to stand the winter to be sown now on poor hard ground, or in pans filled with poor soil. The sorts to sow now are Candytufts, Nemophilas, Collinsias, Escholtzias, Erysimum, Clarkias, Convolvulus minor, Godetia, Larkspur, Lupinus, Poppy, and Schizanthus.

BEDDING PLANTS should during the month be propagated for next year's supply, and the cultivator should determine from present effects and the aspects of new plants not yet used in quantities, what will be required next year, so as to avoid crowding frames and pits with useless subjects, and to secure sufficient of those that will be required. As almost everything will strike now from young shoots, a good stock may be got up in time to harden off for the winter.

CAMELLIAS must have constant attention. Many old plants will be found wanting water, and the best way to deal with them will be to plunge the pots to their rims in a tub of water for half an hour, to thoroughly soak the ball through. If allowed to continue very dry now that their buds are set, the buds will fall off. Young plants that have not quite filled their pots with roots must be only moderately watered.

CELERY to be earthed up with care after a heavy rain or good watering ; take care the mould does not find its way into the hearts.

CHRYSANTHEMUMS require special attention now ; pompones to be topped for the last time ; large flowering kinds not to be stopped any more ; all to have sticks and ties if needful ; and plants intended for exhibition to have the surface mould removed from the pots, and a mulch of sheep or deer's dung, or fat half-rotten dung from a cucumber bed.

CUCUMBERS that have been in bearing throughout the summer will shortly begin to fail, so those who want a succession of fruit must be on the alert. Sow or strike cuttings, the latter to be preferred, and get ready to make up new beds. Old plants still in vigour must have the help of linings, and be covered with mats at night. Beware of mildew ; if it once appears, remove the affected leaves, and give the plants a sprinkling of sulphur.

EVERGREEN SHRUBS may towards the end of the month be moved with the best chance of success, whether they be large or small. As to evergreens, such as hollies, aucubas, laurels, Portugal laurels, laurustinus, arbor vitas, etc., they have all done growing, their wood is hard, and if lifted about the end of the month will make fresh root while the surface soil is in the best condition of warmth and moisture of any period of the year. Where new gardens are being laid out, the gain of three months upon the ordinary planting season is no small matter, as it enables the planter to have the chief operations finished at a time when the men enjoy the work, and the proprietor is enabled also to enjoy the result, and all to the advantage of the plants.

GREENHOUSES to be cleared out and cleansed, and if needful repaired and painted, and made ready for re-stocking. All woodwork and brickwork should be scrubbed, and the latter lime-whited, and all holes stopped with cement.

HOLLYHOCKS, where they are uninjured by the disease, are now coming into full beauty, and must have every attention necessary to keep them so. See that they

are loosely but safely tied to their stakes, as a smart gale will sometimes snap off the best spikes.

HYACINTHS AND OTHER SPRING BULBS for an early bloom will have to be potted shortly, and preparations must at once be made to secure plenty of good turfy compost in a sweet and friable condition.

LILIUMS in the borders, that have done blooming, should be taken up, the offsets removed, and the large roots for flowering next year be planted again directly where they are to bloom, and with a shovelful of rotten manure and grit or some sound fresh compost added for every clump. Plant the offsets also at once in the reserve ground. Choice *Liliums* in pots to have abundance of water until done blooming; after that the supply of water to be diminished, but not hastily; and as soon as the foliage shows signs of decay lay the pots on their sides on a sunny shelf in a greenhouse, to make sure of ripening the bulbs; let them remain in the pots a month, and then shake them out and repot them.

MUSHROOMS may be raised in plenty in old frames or at the back of a shed. Get together a good heap of short manure that has not been fermented; spread it out, and turn twice at intervals of a week; then add turfy loam in the proportion of one-sixth, and make up the bed eighteen inches deep, beating it down well as the work proceeds. Let it remain there till there is a brisk heat, then insert the spawn in pieces of the size of an egg about four inches apart, and cover the bed with two inches of fine loam or rotted turf.

ORCHID HOUSE requires now some revision, so as to separate plants that are going to rest from those that are still actively growing. Encourage growth in young specimens recently potted, but as the growth of any orchid appears to be completed, gradually withhold water, and remove them to a cooler part of the house.

PANSIES to be propagated now in quantity for planting out in October, and to pot for early blooming in pits in spring. Those lately struck to be planted out in beds of turfy loam, with a liberal admixture of sand and charred rubbish, but very little animal manure.

PELARGONIUMS of all kinds that have been cut down and have made new shoots an inch long must be repotted. Remove the outside of the ball and trim in the roots slightly, so as to get them into small pots. Those potted a month ago now want a shift. Take care to have a sound compost; the use of light sandy composts has much to do with the long joints and weak flower-stems we notice at the shows.

PINES swelling their fruit to have frequent supplies of liquid manure, and abundance of atmospheric moisture. Young plants to stand the winter, for fruiting early next year, had best be removed from those swelling fruits so as to keep them drier and more freely ventilated.

ROSES lately budded to have the ties loosened. Where buds have failed, others may be inserted either on the stems of young stocks or on suitable shoots lower down than those previously worked. Prune pillar *Roses*, so as to remove a moderate amount of both old and young wood; that left to be its full length, and at such regular distances that there will be good symmetrical heads next season. Short cuttings of *Chinas* and *Perpetuals* will root now in the open ground under glasses.

SPINACH.—Round-seeded sown at once will yield a nice supply to vary the produce of the season. Sow also *Flanders*, to stand the winter.

STOVE PLANTS must be prepared betimes for the winter by gradually withholding water from such as have completed their growth, and exposing as much as possible to air and sunshine all hard-wooded plants, that the growth of the season may be completely ripened.

STRAWBERRIES.—Now is the best time in the whole year to make new beds, to ensure good bearing next year. If rooted runners are plentiful, take the best only, and destroy all the weak ones; but any varieties it is thought desirable to propagate to the utmost, sort the runners as to sizes, planting the forwardest and strongest in beds to bear, and the late weaker ones in separate beds for stock; these latter will probably not bear till the year after next, and then will be strong plants. *Strawberries* to fruit in pots next year ought by this time to be strong, and in need of a shift. The soil should be strong loam, well chopped over, with rotten manure, and the plants to be potted very firm.

Sow collards, prickly spinach, turnips, and radishes.

WINTER GREENS to be planted out as fast as ground becomes vacant.

NEW BOOKS.

HIGH-CLASS KITCHEN GARDENING. By WILLIAM EARLEY (Bradbury).—An extremely neat, compact, and distinctive treatise on the higher departments of vegetable culture. It is not only a practical, but a readable book, although the object of the author everywhere is to convey the utmost possible amount of useful information in the fewest possible words. It would be scarcely fair to quote from a work which any one can obtain for a few shillings, and we are content, therefore, to advise all of our readers who need such a book to order it at once.

A HISTORY OF BRITISH FERNS. By EDWARD NEWMAN (Van Voorst).—A "people's edition" of this well-known book is certain to meet with a proper reception. The beauty of the octavo edition is not altogether lost in this cheap reprint, for there are many excellent figures that indeed are not pictures, but will serve as well for such as require the book for genuine work and not simply as an adornment of the table.

CHAPTERS ON SOUND FOR BEGINNERS. By C. A. MARTINEAU (Groombridge).—It is quite a rare occurrence to meet with a book on a profoundly interesting scientific subject labelled, "for beginners," and find it the equal of the book before us. It is a strange article of popular faith that a small amount of knowledge suffices for one who proposes to teach, and hence very much of the world's teaching has to be untought in the case of those who resolve to be possessed of real knowledge. These Chapters on Sound are evidently the work of a man thoroughly versed in the subject, and who, moreover, has the rare gift of conveying his knowledge in a most simple and agreeable manner, without any admixture of namby-pambyism. It will be found a capital book for the boys as the long nights return, and especially for young people of both sexes when home for the holidays, for it is full of philosophical experiments that may be performed without danger and with pretty and inexpensive instruments.

THE POTATO DISEASE, AND THE CURL DISEASE IN POTATOES. By ECCLES HAIGH (Philip).—A well-written and well-directed essay, which, by an accident of the season, has acquired considerable importance. As books on this subject abound, we must say that this is better worth attention than nine-tenths of the whole number.

A GENERAL CATALOGUE OF STOVE, GREENHOUSE, HARDY, AND BEDDING PLANTS. By W. ROLLISON AND SONS, Tooting.—We are content, as a rule, to announce the catalogues sent us, and say nothing of their respective merits. But an exception to the rule we must make in the present instance. This catalogue of the celebrated Tooting nurseries forms a handsome octavo volume, being well bound and interleaved, and every way fit for a permanent place in the library. The printed matter extends to 176 pages, of which the index fills no less than nine pages. That such a catalogue should be given away freely is not to be supposed, but we are not informed as to the proper mode of obtaining it by persons not known as customers of the firm. In such a case, we think a nominal charge should be made, and plainly stated on the title-page. Thousands of plant lovers would be glad to buy such a list, and yet might be too considerate to ask for it as a gift.

THE COUNTRY GENTLEMAN'S REFERENCE CATALOGUE.—This is a bookseller's catalogue on a new plan, and especially adapted for those who are readers of books on rural affairs. It contains the titles, with brief descriptions and prices, of the best books on such subjects as Botany, Brewing, Gardening, Etiquette, Cookery, Horses, Dogs, Game, etc. etc. The publishers are Messrs. Horne and Co., 50, Edgeware Road, London, W.

MAY'S BRITISH AND IRISH PRESS GUIDE (F. L. May and Co., 160, Piccadilly).—A well arranged and copious key to the newspaper press. It may be obtained for one shilling.

MR. WORTHINGTON SMITH has been awarded the Knightian medal by the Royal Horticultural Society, in recognition of his labours in the discovery of the resting spores of the potato fungus, *Peronospora infestans*.

August.

HORTICULTURAL AFFAIRS.



THE JULY EXHIBITIONS of the great Metropolitan and other principal societies have been chiefly devoted to Roses and other cut flowers and fruits. The rose shows of the Royal Horticultural and the Royal Botanic Societies were exceedingly poor as compared with those held at Birmingham, Hereford, Oxford, Nottingham, and elsewhere. The exceptionally wet weather interfered very much with the success of the July exhibitions, as it has with all gatherings in any way dependent on the weather.

THE PELARGONIUM SOCIETY held its first exhibition on July 21, in the gardens of the Royal Horticultural Society at South Kensington, and as the prizes offered were liberal, the competition was spirited, and a good display of the several classes of zonal pelargoniums was the result. A few novelties were exhibited, but they were not of any great importance. The annual meeting of the society was held the day after the exhibition in the Chiswick Gardens of the Royal Horticultural Society, and in the evening the members dined together.

THE FRUIT PRIZES offered by Messrs. J. Veitch and Sons, for competition amongst the gardeners of Great Britain on the 21st ult., resulted in one of the finest displays of fruit seen this season. The collection of fruit, the pine-apples, grapes, peaches, and nectarines were all alike remarkable for their splendid quality. The fruit was arranged in the South Kensington Gardens of the Royal Horticultural Society, and in combination with the pelargoniums, and the large number of miscellaneous contributions, proved a very interesting exhibition.

THE CARTER CUP, offered by Messrs. J. Carter and Co., the well-known seedsmen, etc., for the best collection of vegetables was, in the competition on July 7, awarded to the Marquis of Exeter. The cup is of the value of fifty guineas, and the most valuable prize ever offered for vegetables, and in addition money prizes of £10, £7, £5, and £3 were awarded. The £10 to the gardener of the winner of the cup—Mr. Gilbert, one of the most successful cultivators of vegetables we have—and the other amounts, constituted the second, third, and fourth prizes.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION held its thirty-second anniversary festival at the London Tavern on July 2, under the presidency of Robert Broadwater, Esq., Master of the Fruiterers' Company. The attendance was not so good as usual, and the horticultural element was but weakly represented. We are glad to say, however, that the financial results were eminently satisfactory.

A NEW HEATING APPARATUS.—Mr. Joseph Gadsby, of Metheringham, has, we learn from the *Gardeners' Chronicle*, brought out a new invention for heating greenhouses, rooms, shops, &c. The apparatus consists of a very ingenious boiler heated with one burner of a petroleum lamp; to this boiler is attached 18 feet of metallic piping, which becomes so hot through the whole length that you cannot bear the slightest pressure of the hand upon it. The heat is spent in its operation on the boiler, so that there is neither smell nor smoke, and so very little heat escapes that you may bear the naked hand on the escape pipe. Mr. Gadsby has one in working order on his own premises, which may be seen at any time, Sundays excepted. He has not yet ascertained the length of piping it will heat, or the quantity of oil it will burn in twenty-four hours, but the heat is sufficient to keep out frost in winter or ripen a late crop of grapes. Mr. Gadsby lights the lamp at 8 p.m., and the water is raised to near boiling point within half an hour, after which the flame is reduced to a given point, at which it is kept until 7 o'clock in the morning. There is no diminution of heat, nor any further trouble.

THE EVENING FETE of the Royal Botanic Society held on July 14, was well-nigh a complete failure, owing to the continual downpour of rain during the day and evening. Only about 3000 were present, but had the weather been favourable there would have probably been 10,000, as nearly 7000 tickets were sold before the day. There was a good display of table and side-board decorations, bouquets, and hanging and other baskets. The judges for table decorations were Miss Annie Hossard, Captain Raikes, and Mr. W. Thompson. The gardens were brilliantly illuminated by variegated lamps, and at intervals by the electric light and coloured fires.

THE ROYAL HORTICULTURAL SOCIETY is now in a fair way of overcoming some of its difficulties, for the remaining Kensingtonian members of the council completed their resignations at a special general meeting held July 8. The principal trade exhibitors united in making a grand exhibition on the 21st ult.

THE INTERNATIONAL FRUIT EXHIBITION which is to be held at Ghent from the 19th to the 24th of September, in connection with the annual meeting of the Pomological Society of France, bids fair to prove a great success. The *Bulletin d'Arboriculture* contains the full programme and regulations, from which we learn that there are three committees: one for the Exhibition, with M. Ambrose Verschafelt as chairman, and M. Burvenich secretary; one for the Congress, with Prof. Kickx as chairman, and M. Pynaert as secretary; and one reception Committee, to arrange for banquets, excursions, etc., of which M. Pickaert Echevin, of Ghent, is chairman, and M. Van Hulle secretary. The President is M. le Comte de Kerchove de Denterghem, Burgomaster of Ghent, and the general secretary is M. Rodigas. All communications should be addressed to M. Burvenich. There are seventy-one classes in the schedule for various fruits, with gold, silver, and bronze medals for prizes. The Congress will be under the direction of the Pomological Society of France, and will devote its attention specially to fruits sent for study and comparison, to the best modes of training, and to various other matters appertaining to fruit culture.

THE BRITISH BEE-KEEPERS' ASSOCIATION'S Exhibition at the Crystal Palace last year was so successful that the committee has been induced to announce a second exhibition to take place this year. The work already done by and through the means of the Association has awakened throughout the United Kingdom so great an interest in bee culture that the committee trust the industry will in a little time acquire as great attention and be as much valued for the poor man's harvest as it already is on the continents of Europe and America. About £100 has been allotted for the prize schedule now announced, which the committee hope will be subscribed by the friends of the movement. The committee only await the financial means to extend their operations in various ways that have been pointed out as desirable. Mr. John Hunter, Eaton Rise, Ealing, Middlesex, is the honorary secretary.

INSECTIVOROUS PLANTS.—At a recent meeting of the Edinburgh Botanical Society, Dr. Balfour read notes of experiments he had been making on *Dionæa muscipula* and allied plants. These experiments confirmed the suspicions entertained by Ellis, Curtis, Hooker, and Darwin that the *Dionæa* is a carnivorous plant. Dr. Balfour classified the facts he had observed in regard to it under the heads of irritability, contraction, secretion, digestion, and absorption. The irritability, it seems, is resident in certain delicate hairs, so placed on the surface of the leaf that no insect can avoid touching them in crawling over. Dr. Balfour touched with a needle every other part of the leaf, and no response followed; but no sooner was the point applied to one of these hairs than a contraction of the leaf ensued. Chloroform dropped on a hair caused the leaf to close like a winking eye, but water had no such effect. It was only when the object seized was capable of affording nutrition that the contraction continued for any considerable length of time. A piece of wood was soon released, and so was a dried fly; but when a live fly or caterpillar or spider was enclosed the contraction lasted, on an average, for about three weeks. The leaf at the same time, gave out a viscous acid secretion. This appeared to be only the case when an insect was captured, and it was always present on such occasions; but whereas with a fat spider it was abundant, with a shrivelled fly there was very little. The notion that any nourishment was obtained from insects so enclosed has been controverted; but Dr. Balfour pointed significantly to the facts, that young plants of *Dionæa* under bell-glasses had been found not to thrive so well as those left free, and that while a piece of leaf wrapped in another leaf became putrid, a piece enclosed by the *Dionæa* remained perfectly inodorous, but soon lost its red colour, and was gradually disintegrated more and more till it was reduced to pulp.

BLANCHING ENDIVE.—A writer in the *Moniteur Horticole Belge* states that endive may be blanched successfully by being planted in very well-prepared soil at six inches apart instead of in the usual more open way. When established, each bed is enclosed with planks eight inches wide, set on edge, to prevent the outer plants spreading. When vigorous growth commences, the plants are pressed close together and blanch without further attention, as the leaves are not injured,

August.

as they sometimes are in tying, and they keep much better in the blanched condition.

CURRENTS.—From Patras, the head-quarters of the Currant produce, we learn that the crops during the past year have been highly satisfactory—the yield was 61,992 tons against 57,541 tons in 1873. The price for common quality averages £16 per ton free on board, and £25 for choicest descriptions, which averaged about ten per cent. less than was paid for the crop of 1873. Of the above total yield the United Kingdom took no less than 44,327 tons. It is said that the increase in the Currant crop is due to the very large extent to which waste land has been cultivated in the Morea during the past ten years. The Currant plant requires seven or eight years to come to its full bearing, and it is reckoned that with favourable weather the crop of the Morea will soon reach 80,000 tons. It is satisfactory to learn that no signs of the Phylloxera have yet been observed on the Currant vines, but it is nevertheless considered advisable not to import cuttings of Grape Vines from France, for fear of introducing the scourge.

IMPROVEMENTS IN HORTICULTURAL IMPLEMENTS.—Agriculture and horticulture should ever go hand-in-hand; therefore it is appropriate that Messrs. Ransomes, who are so well known in connection with agricultural machinery, should be known in connection with our garden implements. We refer to Messrs. Ransome's Automaton Lawn Mower, which is now, perhaps, as perfect a machine as can be made. The latest improvements are as follows:—The handles can be raised or lowered to suit the height of the person using the machine; either corrugated or plain front-rollers can be supplied at pleasure; extra side-rollers are sent with every machine, free of cost, for cutting long grass; an arrangement is provided for leaving the cut grass on the lawn behind the machine, or delivering it into the box in front, as preferred. The knives are made of steel and iron rolled together, giving a sharp cutting edge, which does not wear round and blunt, but the iron wears away, and leaves the keen steel edge always thin; they are also speeded, so that the cutting is almost continuous, and no ribs are left on the lawn. The materials and workmanship are of the highest class, and the "Automaton" maintains the same reputation as Messrs. Ransome's other manufactures.

TO CORRESPONDENTS.

SHAKESPEARE'S WALLFLOWERS.—To every correspondent who forwarded a directed envelope, a small pinch of seed has been forwarded. The long and continued rains delayed the ripening, lessened the quantity, and prevented our sending it in the pod; for to make sure of sufficient, we had to ripen it artificially. We advise that it be sown at once, or be saved until April next.

NAMES OF PLANTS.—*Inquirer.*—Caper Spurge, *Euphorbia lathyris*. You might manage with the frame you propose, but we do not like such little things.—*W. B.*—The pretty red-berried plant is *Nertera depressa*.—*W. Simpson.*—*Grislinia littoralis.*—*R. W. B.*—1. *Rhododendron jasminiflorum*; 2. *Statice profusa*; 3. *Cotoneaster thymifolia*. The others are imperfect samples, that we can make nothing of.

PRIMULAS, ETC.—*A. W. B.*—The beautiful primulas from time to time reported on as raised and exhibited by Mr. R. Dean may be heard of by writing to him at Ealing, London, W. It is not likely he will sell seed. Very few raisers of first-class plants ever sell seed; for the truth is, the seed they have carefully fertilized, they want for themselves; and as for the chance seed, it does not usually pay to save it. The only way to insure a good strain of any class of plants is to work it up by years of patient practice, as the masters do, or else buy plants. To obtain a really first-class strain from seed at one bound is simply impossible.

CROCUSES FROM SEED.—*A. W. B.* says, if the seed of the crocus is sown in a quiet corner, and kept free from weeds, the bulbs will flower the second year superbly; and if the seed was saved from mixed colours, the bloom of the seedlings will present a delightful variety. In *A. W. B.*'s garden crocuses are produced from seeds by the thousand. The seed must be dried before sowing it. This cor-

respondent adds: "In this garden ranunculus will never bloom, and in a friend's garden, where they are splendid, the crocuses last only one year. Is it a fact that the two flowers will not do in the same garden?" It is a fact that they do in the same garden with us, and we could name thousands of gardens in which ranunculus and crocuses thrive in the most satisfactory manner side by side. The case put by our correspondent, no doubt, admits of a very simple explanation, which we think we could give, though we know nothing of the gardens which furnished the case.

DOUBLE NARCISS.—Can you tell me the reason why my double white narcissi always fail to open their blooming buds? Every year they throw up buds in profusion, but they never expand. They are planted in a very sunny south-west border, and have been undisturbed for years, and, in consequence, are now in large clumps, and would be beautiful if the buds would open; instead of which they turn brown and flabby, and wither. I have hitherto attributed their failure to the spring frosts, but this cannot be the cause this year, as we have hitherto been remarkably free from frost. I have watered them well, and yet the whole plant hangs down limp, apparently needing moisture. Can the locality be too hot for them? Would they be benefited by being moved into the shade? And what would be the best season for moving them?—*Constant Reader*. [The situation is evidently too hot and dry, and to remove them would probably improve the case. It is seldom frost injures any kind of narciss, but sunshine is decidedly hurtful. Our collection of 120 varieties is on a border facing east, where the morning sun shines gaily, but the narcissi are completely screened from the mid-day sun by trees. Remove your clumps at once to a rich, moist, shady situation, and have the ground deeply dug and well manured for them. If the clumps are large, divide them.]

SAMPLE OF PEAT.—*Amateur*.—It is impossible for us to declare, on seeing a teaspoonful of peat, whether it is fit for plant growing or for any particular department of plant growing. If you had told us what wild plants you saw growing in it, we might hazard a fair guess as to its value. The sample appears to us to represent a sour and comparatively worthless bog soil, but we really are not sufficiently clever to tell you what is its horticultural value.

Prestwick.—Probably a weak solution of salt and water will cleanse the cabbages of the insects that infest them.

NAMES OF PLANTS.—*Philip*.—*Deutzia crenata*. The splitting of the pears can only be prevented by lifting the trees and planting them on stations. You put ten questions in a lump; if all our readers were equally unreasonable, we should order a balloon and steer for the moon.—*Stourbridge*.—*Bignonia venusta*.—*M. S.*—*Ruscus aculeatus*.—*T. P. P.*—1, *Artemisia argentea*; 2, *Helianthemum vulgare*.

VARIOUS.—*W. Cox*.—Yours is a case of shanking, the result of something wrong at the roots.—*W. S.*—Common zonals will strike well in any sandy compost, and pots or boxes may be used at your convenience.—*M.*—There are many species of *Eupatorium* in cultivation. Yours that flowers in March is probably *E. ageratoides*, and the other *E. riparia*.—*W. P. Snell*.—Your seedling cucumber has a fine deep green colour, attains a large size, is distinctly ribbed, has a few obscure white spines, and is tender and well flavoured. When it arrived we had an opportunity of comparing it with several standard sorts, and found it first-rate every way.

W. H. A.—We do not know of any agent for Irish peat charcoal. Try Barr and Sugden, 12, King Street, Covent Garden.

STRAWBERRIES.—*J. C. B.*—It is impossible to tell you which are the best two sorts to grow, and it is our rule never to tell people where to go to buy anything that has become a common article of trade. If you will refer back you will find abundant information on strawberry culture. As you want two first-rate sorts to begin with, we recommend you to secure *President* and *Frogmore Late Pine*.

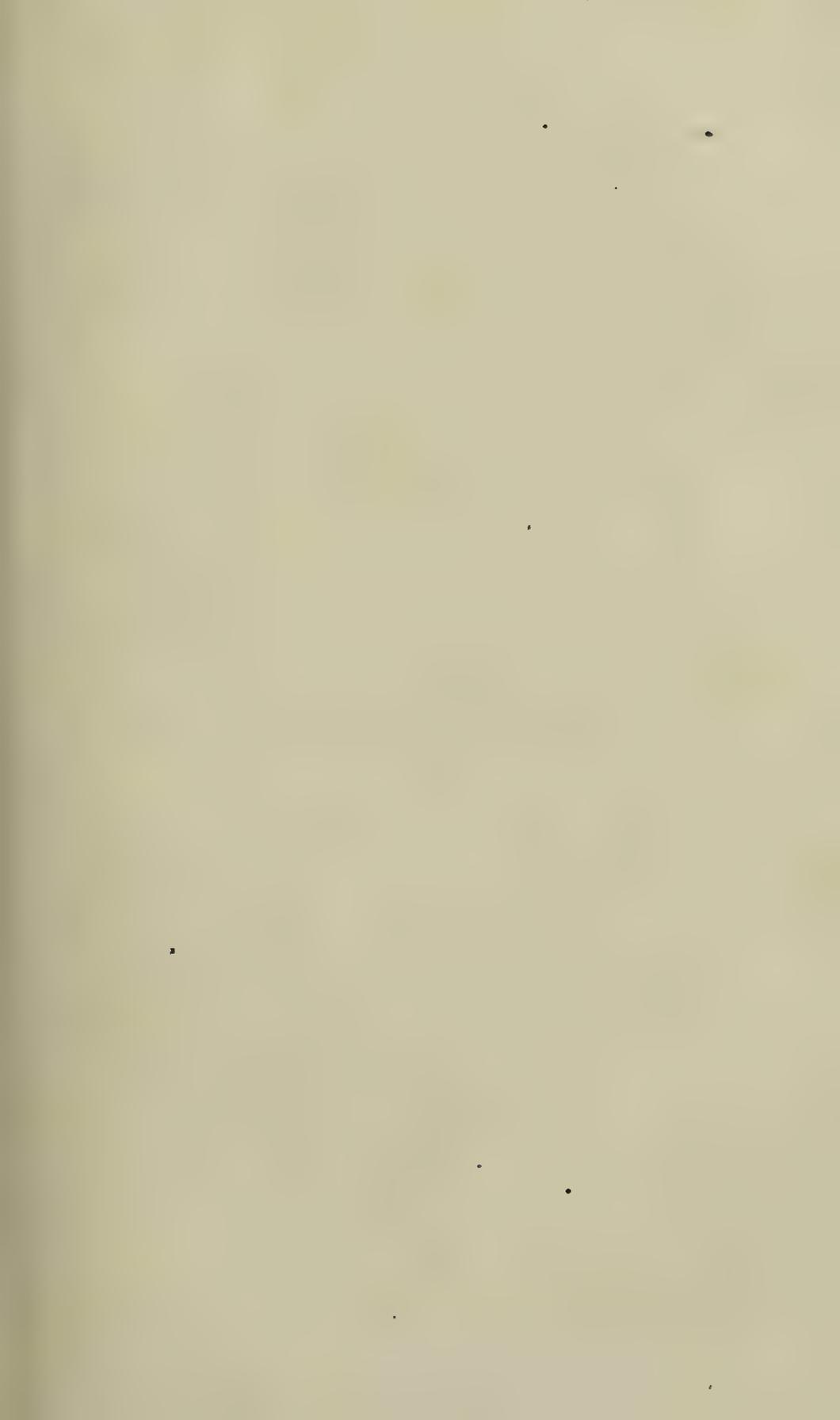
BOOKS.—*E. Roberts*.—The following will constitute a good handful to begin with—Hemsley's "Handbook of Hardy Trees and Shrubs;" Thompson's "Gardener's Assistant;" Deakin's "Florigraphia Britannica;" Hibberd's "Amateur's Greenhouse;" and "Amateur's Rose Book;" Sutherland's "Herbaceous and Alpine Flowers;" Smith's "British and Foreign Ferns;" and Williams's "Orchid-grower's Manual."

EXHIBITIONS TO BE HELD IN AUGUST.

- 2.—PETERBOROUGH HORTICULTURAL SOCIETY.—*Annual Summer Exhibition.*
 4.—ROYAL HORTICULTURAL SOCIETY.—*Meeting of Fruit and Floral Committees.*
 4.—WESTON-SUPER-MARE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 5.—NEWPORT AND COUNTY HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 6 & 7.—MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—*Exhibition of Carnations, Picotees, and New Plants.*
 6 & 7.—CHEADLE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 7.—ROSENDALE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 10.—CLAY CROSS HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 10.—SOMERTON COTTAGERS' HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 12.—CANTERBURY HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 18.—ROYAL HORTICULTURAL SOCIETY.—*Meeting of Fruit and Floral Committees.*
 19.—READING HORTICULTURAL SOCIETY.—*Autumn Exhibition.*
 19.—SUTTON AND CHEAM HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 20 & 21.—BIRCH VALE AND NEW MILLS HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 24 & 25.—ALEXANDRA PALACE, MUSWELL HILL.—*Exhibition of the Metropolitan Floral Society.*
 25 to Sept. 26.—COLOGNE.—*International Horticultural Exhibition.*
 25.—ISLE OF THANET HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 26.—ROYAL HORTICULTURAL SOCIETY OF IRELAND.—*Great Autumn Exhibition.*
 26 to 28.—DUNDEE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 27.—BISHOP AUCKLAND HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 28.—WAKEFIELD HORTICULTURAL SOCIETY.—*Annual Exhibition.*
 31.—BANBURY HORTICULTURAL SOCIETY.—*Annual Exhibition.*

TRADE CATALOGUES.

- JAMES COCKER AND SONS, SUNNY PARK AND FROGHALL NURSERIES, ABERDEEN.—*General Spring Catalogue of Soft-wooded Plants.*
 H. CANNELL AND CO, 48 & 49, KING STREET, WOOLWICH, S.E.—*Illustrated Prospectus of the Victoria Hot Water Circulator.*
 ALEXIS DALLIERE, GHENT, BELGIUM.—*Catalogue of Azaleas, Camellias, Rhododendrons, New and Ornamental Plants, etc.*
 LOUIS VAN HOUTTE, GHENT, BELGIUM.—*A Catalogue of Stove and Greenhouse Plants.—Also Catalogue of Bulbs.*
 NEW PLANT AND BULB COMPANY, COLCHESTER.—*Retail List of Filmy, Tree, and other Ferns, Orchids, etc.*
 PINE-APPLE NURSERY COMPANY, MAIDA VALE, EDGWARE ROAD, W.—*A Descriptive Catalogue of Stove and Greenhouse Plants, Roses, etc.*
 WILLIAM ROLLISSON AND SONS, TOOTING, S.W.—*A General Catalogue of Stove, Greenhouse, Hardy, and Bedding Plants.*
 ANT. ROOZEN AND SON, OVERVEEN, NEAR HAARLEM, HOLLAND.—*Catalogue of Hyacinths, Tulips, Crocuses, etc.*
 THE THAMES BANK IRON COMPANY, OLD BARGE WHARF, UPPER GROUND STREET, LONDON.—*Trade Price List.*





NEPTERA PERISSA.

THE FAIRY ORANGE MOSS.

(With Coloured Illustration of *Nertera depressa*.)



THE charming little plant which we have ventured to call the Fairy Orange Moss, and which has been named by Banks (*Gartnfr.* I., p. 124) *Nertera depressa*, has become such a general favourite that many of our readers, we feel assured, will be pleased to see its portrait, accompanied with a few words on its history and cultivation.

Nertera depressa has been described as a duckweed, but it is a member of the natural order Rubiaceæ, an order in which is comprised many genera that enjoy high fame in gardens, as, for example, muscænda, cyrtanthus, gardenia, cinchona, luculia, bouvardia, rondeletia, and many more good things. The plant is quite worthy of such respectable relationships, and is likely to become one of the most popular of the important order to which it belongs.

Though nearly hardy, the Orange Moss requires peculiar treatment. It is a native of the bleak, cold Antarctic mountains throughout the Southern hemisphere, and consequently has a good constitution; but it is only in kind climates that it may be considered a proper subject for planting on an outdoor rockery. Its proper place during winter is in a cool house or frame, where it must be kept near the glass, and have plenty of air; but from June to September it should be planted or plunged in the open border, both for the ripening of the fruit and to maintain the plant in perfect health. This mode of procedure, renders it the more useful, for it may be grown in quantities for employment in carpet bedding, and, indeed, it is one of the most charming bedding plants in the world when densely covered with its tiny orange-coloured fruit. For the drawing-room table, also, it is invaluable, and endures without harm the confinement for a few hours, during which time it may be protected from the drying effect of heated air, and also from dust by covering it with a bell-glass.

The figure, for which we are indebted to "Flore des Serres," t. 2167, represents the plant most faithfully. The growth is dense and tufted, the leaves are thick in texture, closely packed and moss-like. The flowers, which appear in May, are of a yellow-green colour, and altogether unattractive; but the globose fruit follows, and then the plant is marvellously pretty. It is like a tuft of moss besprinkled with miniature oranges, hence, for the sake of our lady friends, who tell us that *Nertera depressa* is hard to pronounce and impossible to remember, we have named it as at the head of this article.

STANDISH MEMORIAL.—It is proposed to commemorate the public labours and private virtues of the late Mr. John Standish by means of a memorial, for which subscriptions of 21s. each are invited by Mr. H. J. Veitch, Royal Exotic Nurseries, Chelsea.

ROSES IN 1875.

BY GEORGE GORDON.



ROSARIANS may fairly claim 1875 as one of their great years, for there has been an abundance of blooms of the most excellent quality, and a series of rose shows quite unequalled as regards their extent, the spirit with which the principal prizes were contested, and the excellency of the flowers throughout. In no previous years have we had such a magnificent series of exhibitions as in the season through which we have just passed; and in no year have the blooms, in the hands of amateurs and trade growers alike, presented a greater degree of uniformity. Yet it was feared at one time that the roses would be but little better than they were in 1874; the weather early in the season was by no means congenial to a healthy development of growth, for the weathercock pointed persistently to the east, and there is nothing more trying to the tender growth of the rose, or, indeed, any other tree, than a prevalency of cold easterly winds—certainly there is nothing more favourable to the development of the aphid and mildew, two of the most persistent foes of the roses. The drought continued, and a period of brilliant sunshine and great heat assisted the aphid to make such headway that amateur rosarians began to be troubled about their blooms, and some of my friends who have to do with light soils were quite ready to give way to despair, when at last the rains welcome to all classes of cultivators came. These, if they did not wash away the blight and the mildew, helped the trees to make vigorous progress, and grow out of them, as it were, and a good display of bloom was hopefully looked forward to. From the time of the blooms beginning to open until the exhibitions were all over—and over they are now—we had no excessively bright or hot weather to hasten unduly the expansion of the flowers, but sufficient warmth and sunshine to ensure their development, and no more. The rains were very trying to the competitors at the later exhibitions, and numbers of the best flowers were undoubtedly rendered unrepresentable, and more than one of the leading exhibitors of “seventy-twos” were compelled to stage blooms that bore unmistakable evidence of having been impaired by the weather.

The two great events to rosarians this season were undoubtedly the gatherings at the Alexandra Palace and the Crystal Palace. The exhibitions at Birmingham, at Hereford, and at Nottingham were remarkably good, but the first and the last of these formed a part of a general exhibition, and lacked individuality, and the other was of less extent than either. It is not necessary to make a comparison between the exhibitions held at the two palaces, for both were remarkable for their extent and the severity of the competition. At the Alexandra Palace close upon five thousand trusses were exhibited, and there were but few of the varieties suitable for

exhibition purposes that were not represented. The stands of blooms were arranged in double lines on each side of the grand central hall, which is upwards of three hundred feet in length, and between each double row of stands Mr. Mackenzie had placed a sufficient number of fine foliage plants and ferns to cut off the view across the table, and at the same time form a background to each line of stands. In addition, a few nice specimens of *Robina inermis*, commonly known as the mop-headed acacia, were placed at regular intervals, and their pleasing green foliage had a very refreshing appearance, in contrast with the glowing masses of colour contributed by the roses. At the Crystal Palace the stands extended in four lines, from the centre transept to the fountain at the tropical end, and formed a great display. At Birmingham, the roses were placed on the central stage of a tent some three hundred feet in length, two rows of stands on each side with fuchsias between, and the effect was exceedingly good. The managers of the Nottingham show were not successful in the disposition of the roses; there was a good competition for the prizes, which amounted in the aggregate to £250, and the blooms staged ought to have made a rich display, but it was otherwise. They were arranged round the sides and ends of a gigantic tent, and when one was in the middle of the tent the roses had the appearance of a thin streak of colour, and when near them the stage upon which they were placed was so arranged that a very unpleasant impression was produced.

It would take up too much space, besides being wearisome to the reader, to attempt a detailed report of the several exhibitions; moreover it is unnecessary, for all practical purposes will be served by indicating a few of the best varieties in the several lines of colour.

We will take the white hybrid perpetuals first; and as they are not numerous, a few words will suffice to dispose of them. Madame Lacharme, of which we have heard so much, had a fair trial this season, and there can be only one opinion, and that is, it is only suitable for fair weather. Blooms at the Alexandra and Crystal Palaces, that had not been exposed to stormy weather, and had been caught just right, were superb; but at later exhibitions all the blooms were more or less bad; in many cases the outer petals were terribly discoloured. It is, however, a superb pot rose, and supplies a long felt want, for we have no really good white rose suitable for specimens. We must therefore very much depend upon Boule de Neige, Madame Liabaud, and others now well known, for our white roses, as before.

Passing on to the light pink varieties, I would beg of my readers to make notes of Mdle. Marie Cointet, a newish variety, that made its appearance two years ago, in a very unassuming way. At the Crystal Palace it made quite a stir; for Mr. Bennett presented two magnificent stands, with one of which he secured the first prize offered for twelve trusses of the best rose in the show, and a similar award for the same number of blooms of a new rose of '72 or '73, in the face of a strong competition. It is somewhat similar in build to La France, but the blooms are rather smaller, and the colour is several

shades deeper. It is undoubtedly a fine garden rose. Baroness Rothschild and La France still hold their own as two of the finest flesh-pink varieties. Duchess of Edinburgh is lighter than either of the preceding, and is exceedingly fine. Miss Hassard improves immensely, and may now be considered one of the finest pink roses we have. Captain Christy, on the other hand, does not improve on acquaintance. It is very bright in colour, and the form is not bad when caught right; but it is no sooner sufficiently advanced for exhibition, than it expands to its fullest extent, and you have a rose as coarse as a Moutan pæony.

From amongst those with flowers of a rose or rose-pink shade were selected for their high merit, Madame Marie Finger, which was shown largely; Princess Beatrice, also popular. Annie Laxton and Marquise de Castellane are two roses not unlike in character, have flowers of a bright rose colour, and are well suited for the garden. Comtesse de Chabrilland is, perhaps, without an equal in point of form, but rather small. Edward Morren is one of the finest of the section, large, free, and rich in colour. Emilie Hausburgh is also good; so are Francois Michelon, Henri Pajes, Julie Touvais, Leopold Hausburgh, Madame Alice Dureau, Madame George Schwartz, Mdle. Eugenie Verdier, Paul Verdier, Reine du Midi, Richard Wallace, rather new, and remarkably fine, and Victor Verdier.

The moderately dark roses represented by Alfred Colomb constitute a most valuable class, for they mostly possess a good constitution, the flowers resist the effects of bad weather, and have a telling appearance in a stand of blooms on the exhibition table. John Stuart Mill well sustained in the competition its character as a desirable acquisition to its class. Mrs. Laxton, one of Mr. Laxton's seedlings, bids fair to take a foremost position, for the blooms presented by the raiser at the Alexandra and Crystal Palaces were very fine, surpassing in shape and colour that grand variety, Marie Baumann.

Here it may not be amiss to refer to a very interesting competition at Birmingham. Mr. Laxton offered a prize for the premier bloom in the exhibition. This was no easy task for the judges, for there were several thousand blooms to be selected from; but after some time spent in comparing the blooms in the stands, a bloom of *Senateur Vaisse* was selected from the stand of seventy-two set up by Messrs. Cranston and Mayos, and one of *Marie Baumann* from a stand from Mr. Corp; and in the end the *Senateur* was voted the prize, and thus one of our oldest roses was decided to be the best rose in the show.

In addition to the foregoing, the following are indispensable:—Thomas Mills, Alfred Colomb, Beauty of Waltham, Camille Bernardin, Charles Lefebvre, Countess of Oxford, Etienne Levet, Exposition de Brie, Madame Charles Crapelet, Dr. Andry, Madame Victor Verdier, Maurice Bernardin, and Miller Hays.

Of the crimson section represented by General Jacqueminot, on the one hand, and by Xavier Olibo, the best this season have been, in addition to the two here mentioned, Pierre Notting, Duke of

Edinburgh, Horace Vernet, Le Rhone, Reynolds' Hole, a rather new variety of considerable merit, and Prince Camille de Rohan. More than these are not required, excepting in the largest collection.

All the foregoing are Hybrid Perpetuals. Tea-scented and Noisettes were well represented at the exhibitions, but all notice of them must be deferred for the present.

FIRST-CLASS BULBS IN POTS.

BY R. OUBRIDGE,

Church Walk Nursery, Stoke Newington.



MARKET growers require very few sorts of bulbs, but they use large quantities of those few, the selection being regulated by the price and the quality. Good sorts they must grow, and those they depend on are certainly the best, price being considered. In hyacinths the favourites are, Homer, Vainqueur, Voltaire, Charles Dickens, Grand Lilas, Alba superbissima, L'Ami du Cœur. In tulips the favourites are Van Thols, Pottebakkers. In narcissi, the polyanthus section, of which there are several splendid varieties.

The amateur needs more variety, and consequently while the market sorts are equally useful in the private garden, they are not all-sufficient. A lady or gentleman taking a pleasure in the garden, does not wish to see the same kinds repeated and repeated. Hence it is desirable for amateurs to grow collections, but for special decorative purposes some of the very cheap showy kinds should be grown in quantity. I was greatly interested in a collection of five hundred sorts of hyacinths grown by Mr. Hibberd two years ago, and the more so because that gentleman honoured me with the order to obtain the bulbs, and I saw the collection several times when in flower, and was surprised to find amongst so many, comparatively few that were not worth growing, whereas I should have expected to find fully one half or more to be utterly worthless. Some seven years back Mr. Hibberd flowered an enormous collection of tulips, that I watched in the same manner, and then there occurred comparatively few that were not thoroughly good. Of course no ordinary amateur needs such large collections, and it is one of the duties of those who contribute to the horticultural journals to point out the best among many, in order that readers may be well advised both as to the expenditure of money and time, for the bad things cost as much as the good ones, or, at all events, the difference in first cost is trifling, and as to time, there is as much consumed in growing bad plants as in growing good ones.

The system we follow in growing thousands of bulbs for Covent Garden Market will answer admirably in the management of a collection in a private garden. We plant all our bulbs,

hyacinths, tulips, narciss, crocuses, etc., in the same compost, which consists of equal parts of rotten manure and turfy loam that has been laid up some time, with about a fifth part or less of sharp sand. We pot nearly all our bulbs in 48 size, putting one hyacinth, three tulips, and five crocuses in a pot; but of course not the same pot. This is the best course, generally speaking, for the private garden, the 48 size being so useful. But there are two useful deviations that I will mention. We send to market Van Thol and other tulips in the most perfect state, three or more roots in a pot. Now it must be understood that these perfect samples are not grown in the pots, but in shallow boxes. From the boxes they are taken when the flowers are just open and carefully potted. This plan insures uniformity, for when several bulbs are in one pot they may not all open their flowers at the same time, but when flowered in boxes, we can select them so as to have in every pot plants of the same height and all in the same state as to the bloom. The other method is Mr. Hibberd's. He flowers hyacinths and tulips superbly by potting one hyacinth in a large 60 size, and one tulip in a large thumb or small 60 size. There is only one small crock put in, and the compost consists of at least two parts fat manure to one of loam. The great advantage of this system is that when the bulbs are in flower a number can be packed close together in a vase or basket, and the most sumptuous of spring decorations can thus be most easily provided. It may be well to add, that in potting bulbs, one small crock to cover the hole in the pot will be drainage enough, and that all the bulbs should be quite covered with soil. In the trade catalogues it is advised to leave hyacinths half out, but experience has taught me that they do much better when quite covered. After potting keep them dark and cool, and give no water until they begin to grow; then bring them into the light, in a pit or greenhouse, and keep fairly supplied with water until they flower, and if you wish to keep them, take equal care of them after they have flowered, until the leaves die down.

24 CHEAP FIRST-CLASS HYACINTHS.—Amy, Waterloo, A-la-mode, Blocksberg, Grande Vedette, Amphion, Diebitz Sabalskanki, L'Ami du Cœur, Madame Hodgson, Lord Wellington, Norma, Robert Steiger, Alba Superbissima, Grandeur à Merveille, Grand Vainqueur, La Candeur, Queen Victoria, Baron Von Tuyll, Charles Dickens, Grand Lilas, Couronne de Celle, Mimosa, Orondates, Heroine.

30 EXTRA FINE HYACINTHS, FOR SPECIMENS AND EXHIBITIONS.—Albion, Van Speyk, Argus, King of the Blues, General Havelock, Laurens Koster, Alba Maxima, La Grandesse, Madame Van der Hoop, Mont Blanc, Snowball, Queen of the Netherlands, Bouquet Royale, Fabiola, Tubiflora, Lord Macaulay, Mrs. Beecher Stowe, Solfaterre, Von Schiller, Cavaignac, Prima Donna, Princess Royal, Ornement de la Nature, Haydn, L' Unique, Duc de Malakoff, Bird of Paradise, Chateaubriand, La Tour d'Auvergne, Noble par Mérité.

24 FIRST-CLASS EARLY TULIPS.—Duchesse de Parma, Belle Alliance, Bride of Haarlem, Canary Bird, Chrysolora, Cottage Maid,

Couleur Cardinal, Couleur Ponceau, Golden Prince, Grootmeester Van Maltha, Joost Van Vondal, Keizerkroon, Le Matelas, Ma plus Aimable, Pottebakker, white; ditto, yellow; ditto, striped; Proserpine, Queen of the Violets, Rembrandt, Roi Cramoisie, Roi Pepin, Samson, Thomas Moore.

6 FIRST-CLASS DOUBLE TULIPS.—Van Thol, in three sorts, yellow, carmine, and scarlet, Rex Rubrorum, Tournesol, Imperator Rubrorum.

12 SUPERB CROCUSES.—Albion, Argus, David Rizzio, Gloriosa, Havelock, La Satinee, Lilacens, Lord Palmerston, Mont Blanc, Ne Plus Ultra, Othello, Sir Walter Scott. All the foregoing are whites and blues of various shades and styles, and all exquisitely beautiful. As they want yellows to bring them out, you must buy a sufficient quantity of the two best yellows, Cloth of Gold, and Largest Golden Yellow.

6 FINE POLYANTHUS NARCISS.—Bazelman Major, Double Roman, Grand Monarque, Grand Soleil d'Or, Jaune Supreme, White Pearl.

NEW NOTES ON THE HYACINTH.

BY J. E. SAUNDERS, ESQ.



N the early part of the present year I availed myself of an opportunity of visiting, in company with a friend, some of the principal bulb farms in Holland, and I am bound to say that I enjoyed myself thoroughly. From London to Rotterdam, either by the boats of the Steamship Navigation Company or by the Great Eastern Railway, and boats by way of Harwich, is not an unpleasant or an expensive journey, and takes up very little time; and once at Rotterdam, there is not much difficulty in reaching the bulb-growing districts about Haarlem. My friend, I may with advantage add, was well acquainted with several of the leading bulb growers, and we therefore met with a hearty welcome, and had a better opportunity for visiting the farms and nurseries than would be enjoyed by strangers having no business with, or letters of introduction to, any of the growers. No one must suppose that they have only to call at the house of one of the growers and prefer a request to inspect the farm to insure his receiving permission to do so, and the offer of a guide to show him the principal objects of interest and explain the various details connected with the multiplication and cultivation of hyacinths and other bulbs for the English markets. No; for if such suppositions are indulged in, disappointment must ensue. The Dutch bulb growers, like the English nurserymen, make no pretence of throwing their grounds open to the public, and they set too high a value on their own time and on that of their employés to admit of their furnishing guides to those with whom they are not likely to do any trade. In this they do no more than their own interests justify.

September.

On my arrival at Haarlem, I am bound to confess I felt some little disappointment; and I believe all who visit the district during the spring of the year feel more or less disappointed. We all know that hyacinths are grown in immense numbers, I should be afraid to say how many, and that tulips, crocuses, and other bulbs are grown in proportion; and those who take an especial interest in flowers expect to see the fields on all sides sheeted with the rich colours of the hyacinths and the brilliant hues of their more showy congeners the tulips. There was certainly plenty of all the leading spring-flowering bulbs in bloom, but they bore no proportion to my expectations and the expectations of others, and certainly failed to make the powerful impression on my mind that I, before setting out, thought would be the case.

In inspecting one of the largest farms in the neighbourhood of Haarlem, and with the proprietor as guide, I said, "I am very much disappointed in the bulb farms, for I expected to see the fields now gay with the hyacinths and such tulips as bloom at the same time, whereas those in bloom are but a very small proportion of the whole." "Ah," says our guide, "you are just like all who visit us for the first time; you suppose that we allow all the bulbs to produce their blooms every year. We do nothing of the kind, for we have to produce strong bulbs that will bloom satisfactorily when they are placed in the hands of the purchaser." And with a hearty desire to give me all the information that he could, he proceeded to say that from the time the offsets are removed from the parent bulb, and it is by these that the stocks are mostly increased, a period of four or five years is required before the bulbs are of sufficient size and strength to produce spikes of first-class quality. Some of the varieties produce so few offsets that the old unsightly bulbs are put by, and previous to their being again planted have a slice taken off the under side, or they are partly split through at the base, and this manipulation encourages the production of offsets in a remarkable manner. The offsets are removed from the bulbs when they are lifted in the summer after attaining maturity. The following autumn they are planted rather thickly in lines. They are lifted when the foliage dies down, and in the autumn they are again planted, and more space is allowed them; and this process is repeated until the fourth year, when the strongest bulbs are selected for sale, and the others are grown another year, and, in some cases, two years; but as a rule they are disposed of after the fifth year, and those which have not attained their full size or proper degree of solidity are put on one side for the cheap mixtures sold for bedding purposes.

The flower-spikes are annually removed as they make their appearance; for if they were allowed to bloom, they would be of little use, excepting for propagating purposes, as they do not in Holland, any more than they do in England, bloom satisfactorily twice. It will thus be seen that the bulbs require much attention and labour to be bestowed upon them before they are in proper condition for sale; and when we think of this, we ought not to begrudge the sixpence or the ninepence we have to pay for a first-

class bulb of one of the established kinds. We ought rather to feel thankful that we can obtain them for such comparatively small sums.

In the catalogue of the proprietor already alluded to, there are upwards of four hundred varieties, and there are, undoubtedly, more than that number; for three years since a trial of five hundred sorts was made at Stoke Newington by our worthy Editor. This is a large number, and more than is really required, and I expressed my surprise that so many should be grown. "But," says the proprietor, "we growers have a large constituency, and nearly every purchaser has a preference for some one or two varieties that no one else cares about. Again, it is too much of a sacrifice to make away with a stock of any particular variety otherwise than slowly, even if it is surpassed by others of more recent introduction. There is a demand for all the varieties in the catalogue, and so long as the demand continues we must continue to meet it, or refuse money, and that is quite out of the question," observes my friend; "but there are at least two hundred which could be dispensed with, and for any one who grows hyacinths for his own entertainment fifty will suffice."

I inquired of him the names of the varieties he should recommend in the selection of fifty varieties for home decoration, the majority to cost sixpence each, and none to exceed ninepence, purchased in the ordinary course of trade in the country, and he readily gave me a list of the fifty varieties selected from his collection, which is one of the best in Holland. So far as my experience goes, a better selection could not be had unless some of the higher priced varieties were included; but it will be generally agreed that this assurance on my part is hardly needed.

The varieties are as under:—Single, dark blue.—*La Nuit*, *Mimosa*, *Prince Albert*, *William I.* Single Light Blue.—*Argus*, *Baron Van Tuyll*, *Charles Dickens*, *Couronne de Celle*, *Emilius*, *Grand Lilas*, *Grande Vedette*, and *Orondates*. Single Carmine and Crimson.—*Amy*, *Duchess of Richmond*, *Homerus*, *Robert Steiger*, and *Veronica*. Single Red.—*Belle Quirine*, *L'Ami du Cœur*, *Madame Hodgson*, and *Norma*. Single Rose-shades.—*Emmeline*, *Gigantea*, *La Dame du Lac*, and *L'Ornement de la Nature*. Single White.—*Alba Superbissima*, *Grande Vedette*, *Grandeur à Merveille*, *Grande Vainqueur*, *La Candeur*, *Madame Van der Hoop*, *Mirandoline*, *Orondates*, and *Queen Victoria*. Single Yellow.—*Alida Jacoba*, *Heroine*, *Koning Van Holland*. Single Mauve.—*L'Ami du Cœur*, and *L'Unique*. Double Blue.—*Albion*, *Blocksberg*, and *Othello*. Double Carmine and Crimson.—*Bouquet Tendre*, *Princess Royal*, and *Sir Joseph Paxton*. Double Red.—*Madame Zoutman*, *Regina Victoria*, and *Wellington*. Double White.—*Anna Maria*, *La Virginite*, and *Prince of Waterloo*.

There are but few double varieties, for they are not so easy to cultivate, and they do not have such a pleasing appearance when at their best as those with single flowers. On the Continent they have adopted a practice of potting from eight to twelve bulbs in one pot, and, when in bloom, they have a very effective appearance. They make a very pleasing change from the single bulbs in small

pots, and I would recommend those to whom the expense of the bulbs is not a serious matter, to grow a few specimens in this way. It will, perhaps, be better to make a beginning with specimens consisting of six or eight bulbs, and to employ eight or nine-inch pots. The principal points in the cultivation of specimens are to select none but thoroughly reliable varieties, and to put one sort only in each pot. The best kinds for this culture are *Baron Van Tnyll*, dark blue; *Charles Dickens*, bluish lilac; *Grand Lilas*, azure blue; *Amy*, dark red; *Belle Quirine*, bright red; *Veronica*, deep red; *Alba Superbissima*, *Grandeur à Merveille*, and *Madame Van der Hoop*, white, and white shaded.

I hope it is not expected that I should say much about the cultivation of hyacinths, for it is so simple, and so many excellent treatises have appeared in the FLORAL WORLD upon the subject that nothing further appears necessary. I will add that my bulbs are potted in September in a mixture of two parts turfy loam and one part well-rotted manure. Five and six-inch pots are employed, according to the size of the individual bulbs. They have a good layer of crocks placed in the bottom, the bulbs are buried to about two-thirds of their depth, and the soil pressed firm; the pots are then placed on a hard bottom out of doors, and covered with a layer of cocoa-nut fibre refuse, about a foot in thickness, which is sufficient to keep out the frost. When the pots are nicely filled with the roots, and the growth an inch or so in height, they are taken from the plunge-bed and placed in a frame, and near the glass. They are protected from frost, supplied with soft water as required, and as they come into bloom are drafted to the conservatory. I do not attempt to force hyacinths, and I should not advise amateurs to do so, for with the foregoing selection they will have a long succession of bloom from quite the early part of March. Provided the bulbs are of good quality, and are purchased and potted early, a compost such as I have recommended employed, due care taken to remove them from the plunge-bed as soon as they are sufficiently advanced, and when they are in the frame to keep them near the glass and properly supplied with water, the spikes will be large and of first class quality, and the foliage be stout and of a fine deep colour. The plants will, in fact, resemble the examples met with at the public exhibitions which amateurs usually regard with some degree of wonder.

NOTES ON NEW BEDDERS.

BY WILLIAM GARDINER.



DURING the last two years very few new bedding plants have been introduced to public notice, and only a small proportion of these possess any real value, and a very few words indeed will suffice to pass the leading bedders under review.

The leaf-plants, now so extensively employed for carpet bedding

and for marginal bands round beds of flowering plants, have appeared to wonderful advantage this season in comparison with the flowering plants, for from the day they were put in the beds until the present moment they have presented a most bright and attractive appearance. This is more than can be said of those grown for their flowers, for during a great part of the summer the latter have presented a somewhat dismal appearance, owing to their producing so few flowers. It was at one time thought that the *Golden Chickweed* would have been a formidable rival to the *Golden Feather*, but, after two seasons' careful trial, the latter still holds its ground; and it must be said that the chickweed is hardly required. In cool, moist weather, it grows loose, and has a greenish yellow colour; and in hot, dry weather, it perishes in patches, and the blanks of course spoil the appearance of the bed. In nice friable soils, with an extra amount of care, it is very effective, and, by way of a change from the *Golden Feather*, most useful. In reference to the latter, it may be said that many amateurs do not as yet thoroughly understand its proper management. The plants are usually put out too large, and the stopping is not commenced soon enough. When planted rather small, and the hearts pinched out nearly close to the ground as soon as they begin to push up a flower-stem, they produce a large number of small side-shoots, and, by pinching off the tops of these occasionally, the lines can be kept perfectly level with very little labour and no real difficulty.

The *Golden Fleece* thyme is a useful yellow-leaved edging plant, and as it is hardy, it can be wintered safely in a cold frame, which, to many amateurs, will be found a great convenience. It is of neat growth, and forms a compact line about four inches in breadth and as much in height.

Another exceedingly useful yellow-leaved edging plant is *Robert Fish* geranium; it is very dwarf and compact, usually attaining a height of six inches; and as the leaves are of a rich yellow, and the orange-scarlet flowers are produced abundantly, it is very effective. This geranium should be grown more extensively than is at present the case for edging purposes, as it makes a pleasing change to the golden-leaved pyrethrum.

No new dark-leaved plants have been introduced for some time. The comparatively new *Alternanthera amœna spectabile* is a strong-growing form of *A. amœna*, and therefore valuable in gardens in which carpet bedding is carried out on an extensive scale; but for the garden of the amateur it is of but little value. They both have foliage of a brilliant colour, and are of so slow a growth that it is needful to plant them very thickly, not farther than two inches apart; and the number of plants required for a moderate sized bed is very large. The most useful *Alternanthera* is *A. magnifica*, which grows so vigorously that it may be planted four inches apart, and it is, moreover, effective in colour. There is as yet no *Coleus* to surpass *C. Verschaffelti splendens*, which is several shades brighter than *C. Verschaffelti*. The most useful of the comparatively strong-growing dark-leaved bedders is *Iresine Lindenii*, for with a free, yet

compact growth, it combines a rich tone of colour. *Ajuga reptans atropurpurea* deserves general attention, for it is dwarf and compact, has rich bronzy leaves, and, moreover, is perfectly hardy. For a band from six to twelve inches in width, I know of no more useful plant.

We have absolutely nothing in the way of silvery-leaved plants that can be considered new. *Leucophyton Browni* has recently been brought forward as a bedder, but it is not new, neither is it adapted to the requirements of amateurs. It is rather difficult to propagate, and requires more than a usual amount of attention to keep it in proper trim. The most useful white or silvery-leaved plants are *Cerastium tomentosum*, and *Echeveria secunda glauca* for marginal or divisional lines, and *Centaurea ragusina* for central blocks or for front lines in association with rather tall-growing geraniums.

Verbenas have done exceedingly well with me this season, and, in fact, in the district generally. I have a somewhat extensive collection, and the following varieties are, in my opinion, the best in cultivation for bedding purposes:— *Blue Boy*, dark blue, flowers rather large; *Celestial Blue*, light blue; *Crimson King*, crimson-scarlet, very brilliant in colour, fine habit, the best of the scarlet varieties; *Exquisite*, pink, a pretty variety, and the best of the colour; *King of Bedders*, crimson-scarlet, free, and of good habit; *La Grande Boule de Neige*, the best verbenas with pure white flowers; *Lord Raglan*, an old strong-growing variety, with salmon-scarlet flowers; *Mrs. Mole*, lavender, distinct and good; *Purple King*, purple, distinct and good; *Sprite*, pale flesh-pink, pleasing in colour; *Wonderful*, deep plum-colour. Verbenas require, for their successful cultivation, an open situation, and soil that has been stirred deeply and enriched with a good dressing of manure or leaf-mould some time in the winter previous to planting.

Several new lobelias have made their appearance within a comparatively short period, and two or three of these may be regarded as most desirable acquisitions. *Bluestone* is one of the best of the new varieties, belonging to the *speciosa* type, and is most valuable, for the flowers are of an intense indigo blue, and as there is no white eye to interfere with the general effect, a band or block is exceedingly rich and telling. It is a capital companion to *Blue King*, which has self-coloured light blue flowers, and is one of the best in its tone of colour. *Pumila magnifica* is one of the finest bedding lobelias distributed for many years past. It is of free, vigorous growth, attaining, under ordinary conditions, a height of six inches, and it is quite as compact as the well-known *Pumila grandiflora*. The flowers are of a fine deep blue, and the plants bloom so freely that throughout the season they are perfectly solid with bloom. It is one of the very finest lobelias with blue flowers in cultivation, and as it may now be had at less than a shilling per plant, it is within the reach of all. *Duchess of Edinburgh*, a white variety, sent out by Mr. Charles Turner in the early part of the year, is pretty and compact, and well adapted for front lines. *Lustrous* is not new, but it is so good that it ought to be extensively grown; the flowers are of a fine deep blue, with white eye, and the plant, although

compact, is vigorous, and produces a profusion of flowers throughout the season.

With reference to petunias, heliotropiums, ageratums, and other odd subjects, it does not appear necessary to say much, for they are of secondary importance, and no new kinds, possessing any merit, have been added for some years past.

A COMBINATION OF CLEMATIS AND ROSES.



It is not my intention to write a treatise on the cultivation of either roses or clematises, for although we have a fair collection of both of these flowers, and usually have a fine display of bloom during the summer season, I do not consider myself competent to instruct others. Our garden is of the old-fashioned type, with roses in abundance everywhere, borders of choice herbaceous plants, and a few beds of summer flowers, such as geraniums, verbenas, and similar plants. Our residence is also somewhat old-fashioned, and it would be difficult to say to which architectural era it belongs. This point is a matter of no consequence, and my object in writing to you about it is to say that its walls are clothed with flowering plants, and, amongst other things, roses and clematis have a place. We have some of the most free-growing of the hybrid perpetuals trained over some part of the walls, and we have some of the early summer-flowering clematis also, but it is of neither of these that I wish to write.

What I am anxious the readers of the FLORAL WORLD should know is this. We have in front of our house two plants of *Gloire de Dijon* rose, and the same number of *Clematis Jackmanni*, and these have been so trained as to entirely cover the wall, which is forty feet long and about twenty feet high. The shoots of the roses and the clematis have been so intermingled, that the large, deliciously-scented cream-coloured roses and the purple clematis are somewhat regularly intermixed over the entire surface, and the effect is really magnificent, and the majority of our friends consider it one of the most beautiful combinations they have ever seen.

I intend covering two large wire arches in the garden with roses and clematis, and shall, in November next, plant on each side of the arch, a plant of both, and train them in much the same manner as on the front of the house, and I believe that the effect will also be exceedingly good.

When we planted the roses and clematis against the house some years since, we had a liberal quantity of good farmyard manure dug in, and we have every winter-time applied a good dressing of partly-decayed manure and covered it with soil to prevent its being unsightly. Neither roses nor clematis will thrive unless the soil is tolerably rich. The clematis requires to be pruned well back every winter, otherwise the bottom of the plants become quite bare in the course of a few years. They should, in fact, be pruned, so that there is an equal distribution of young growth all over the plant.

A LADY SUBSCRIBER.

THE EUCALYPTUS GLOBULUS.

BY M. BOULADE, HORTICULTEUR, LYONS.



THE scientific world has lately been much busied with the results attained by the acclimatization of this new plant in France, and we must own to having been somewhat mistrustful of the wonderful qualities attributed to it. Desiring to procure thoroughly authentic information on the subject, we have availed ourselves of a friendly acquaintanceship with several residents at Cannes, and their reports, taken in conjunction with the specimens forwarded to us, have left no room for further doubt in the matter. It was on 6th May, 1792, that the Eucalyptus was first observed, on the shores of Van Diemen's Land, by Labillardiere, who was engaged with Entrecasteaux in the search for La Perouse; it was only in 1856 that it was brought into France by M. Ramel, who, taught by long Australian experience, had recognized the advantages derivable from its cultivation, and desired to secure them to his native land.

The tree, an evergreen, attains a height of 180 to 250 feet, and sometimes more. The "Tasmanian Blue Gum," by which name it is also known, belongs to the myrtle family; it is a tree with a tetragonal head, the younger leaves subcordate and opposite; the others alternate, variously petiolated, coriaceous, unicoloured, shining as though varnished, apiculated, and often somewhat pseudo-convolute at the base, or narrowly lanceolated. The flowers are axillary, duplicate or ternate, sessile or furnished with a short, broad, depressed peduncle. The floral buds are wart-like, wrinkled or smooth, with a double operculum.

Wherever it grows the Eucalyptus is always full of sap. In the South of France, it blossoms all the year round, and continues perennially green as in Australia. It has a balsamic odour somewhat suggesting that of the walnut, and slightly terebinthine, arising from a volatile essential oil, which exists in abundance in the leaves.

M. Ardisson, pharmacien at Cannes, has obtained from the Eucalyptus the following products:—An alcoholic tincture; an ethereal tincture; two essential oils; two kinds of gum possessing different resinous properties. Dr. Gimbert has undertaken to investigate the therapeutical properties of these preparations.

The Eucalyptus possesses many remarkable properties. When young it has the shape of a pyriform mass, but it changes rapidly in accordance with the climatic conditions to which it is subject. Sometimes it widens at the base, and throws up oblique aspirant branches; most often the trunk rises straight and branchless, and terminates in a crown of foliage. In such cases, the height of the foliage above the ground, and the vertical position of the leaves have the advantages of not impeding the sun's rays in their passage to the ground.

At Cannes, seedlings planted in May, in suitable soil, attained a height of 20 feet in the course of eight months. The growth during

the second and third years is as rapid as in the first; afterwards, as the tree increases in girth, it is slower. Eucalypti, eight to ten years old, have an average height of 60 to 65 feet, and an average girth, at 20 inches (50 centim.) above the ground, of 43 to 44 inches.

For some years past the Eucalyptus has been as common about Cannes as the Platanus in the neighbourhood of Lyons. It is stated that an Eucalyptus planted at Hyeres, in 1857, is now over 25 metres (81 feet) in height. From observations and calculations that have been made, it is estimated that in re-wooding, results might be thus obtained in fifteen or twenty years, which with ordinary timber would take 100 or 120 years. The wood is excellent, and owing to the resinous principle contained in it, it keeps well. In Australia it is used for ship-building purposes. M. Ramel saw planks 180 feet in length.

The absorbent powers of the roots, and the aromatic exhalations from the leaves, impart to it the qualifications peculiarly suitable to the sanitation of marshy sites. It is remarkable that wherever the tree grows well, the climate is particularly healthy; it may, indeed, be regarded as an antidote to marsh fevers.

M. Malingre has grown it in Spain, and M. Trottier in Algeria; the latter gentleman, who entertains the most hopeful anticipation of the results, lately read the following report before the Agricultural Society of Algiers:—

“A hectare ($2\frac{1}{2}$ acres) of land planted with Eucalypti, in rows six metres apart, with three metres between the trees in each row, will contain 500 trees. These, if well managed, should be 20 centim. (7ft. 4in.) in girth, at a height of 2 metres (6ft. 6in.), above the ground at the end of the third year. Wood of this size is fit for many purposes in waggon-making, and would now fetch at the rate of five francs a tree; the first thinning would thus produce 2500 francs. In eight years' time, the remaining timber will be large enough for railway purposes, and will fetch 20 francs a tree. One hectare of Eucalypti would thus give a gross return of 6200 francs in the course of eight years.”

After what has been said above, the interest which attaches to the acclimatization of this plant will readily be understood. Unfortunately, the attempts hitherto made at Paris and Lyons have not been altogether satisfactory in their results. We are inclined to think that a mistake was made in setting out the trees, whilst yet too young, and not adequately sheltering them against the winter cold; but this need not give rise to discouragement; we feel confident that better directed efforts will be crowned with success.

THE POTATO DISEASE is prevalent throughout the country, and it is probable that quite one-third, if not more, of the potato crop will be destroyed.

THE FRUIT CROP of 1875 will long be remembered as one of the largest crops for many years past. There was an abundance of small fruits of all kinds, and it is much to be regretted that such large quantities were rendered worthless by the rains. Stone-fruits of all kinds are most abundant, and in some parts of the country the plum trees were fairly broken down by the heavy crops; and of peaches and nectarines there are fairly good crops of excellent quality.

GIGANTIC GOOSEBERRIES.

BY T. RICHARDSON.



DURING the month of August, a series of gooseberry shows are held in Lancashire, and one or two other northern counties, and these, although less attractive than exhibitions of flowers, possess a considerable degree of interest, and the preparation of the fruit for exhibition affords the growers no small amount of innocent and healthful amusement. The prizes are awarded invariably for the heaviest fruit, which in some instances are shown singly, and in others in pairs, classes being as a rule provided for the heaviest fruit in the several colours, and for pairs or "twins," as two fruit shown together are technically termed by the growers. The towns in which the principal exhibitions of gooseberries have been held of late years are Attercliffe, Southwell, Newark, and Dronfield, and in common with the exhibitions of celery, and other specialties, excite great interest among the growers and their friends.

As the weight of the fruit is the test of merit, the largest varieties are planted, and every effort is of necessity made to develop the fruit to its fullest extent, and the time and labour bestowed upon the trees would quite astound residents in the southern counties, where exhibitions of gooseberries are quite unknown. An experienced grower will begin by procuring young trees furnished with about three shoots each; these are planted in soil that has been liberally enriched with manure, and deeply dug or trenched to a depth of about eighteen inches. The shoots are trained out horizontally, those having an upright tendency being brought down by large pegs, and those which hang down are supported by props, as an horizontal position is considered of prime importance. The shoots are pruned back to about seven inches in length, and in the course of the season each produces several laterals; if these are too much crowded, a portion are removed during the summer, and at the winter pruning, which is usually performed in November, two of the strongest laterals on each of the three primary shoots are selected, and cut back to within about seven inches of their base, and the others are removed close to the main branch. These laterals, in their turn, produce the following season a number of young shoots, and at the winter season two of the strongest are selected as before, and pruned back to seven inches, and all the others are removed. In subsequent years the cultivator aims at keeping the trees thinly furnished with strong healthy shoots, as it is upon the vigorous shoots of the previous season that the finest fruit is produced. The tree is not allowed to become overcrowded with wood, because of the risk of the shoots being drawn and becoming more or less weakly; and they are not thinned too severely, as a full exposure of the fruit to sunshine is not favourable to the attainment of a large size.

Great attention is also paid to the roots, and every two or three years they are carefully pruned, those extending farthest from the main stem being shortened moderately; and a trench is opened out round the tree, in advance of the roots, and filled in with a compost consisting of about equal parts of soot and manure, and into this the roots soon push. The trees are also mulched, partly decayed stable manure being usually employed; and they are also liberally supplied with water, both at the roots and overhead; and need it be said no caterpillar is allowed to obtain a footing upon the leaves. The fruit is also thinned severely; not more than two or three are allowed to each shoot, and additional assistance is afforded the fruits by placing saucers of water underneath them. By this means fruit of an enormous size is obtained; but as they are grown to be admired rather than to be eaten, it matters not that the quality is indifferent.

The most popular of the Lancashire or show gooseberries are as under; and as indicative of the size they attain under the system of culture briefly sketched out in the foregoing remarks, I have appended the heaviest weight on record of each. Those marked R. have red, W. white, Y. yellow, and G. green skins.

Antagonist, W., 34 dwt. 21 gr.

Beauty, R., 31 dwt. 6 gr.

Careless, W., 31 dwt. 19 gr.

Catherina, Y., 32 dwt. 8 gr.

Clayton, R., 32 dwt. 8 gr.

Conquering Hero, R., 31 dwt. 11 gr.

Dan's Mistake, R., 31 dwt.

Drill, G., 32 dwt.

Fearless, G., 27 dwt. 10 gr.

Great Western, Y., 26 dwt. 3 gr.

Green Overall, G., 27 dwt. 6 gr.

High Sheriff, Y., 28 dwt. 2 gr.

Leader, Y., 28 dwt. 14 gr.

Leveller, Y., 30 dwt. 11 gr.

London, R., 37 dwt. 7 gr.

Mount Pleasant, Y., 31 dwt. 4 gr.

Overseer, W., 29 dwt. 12 gr.

Ploughboy, R., 30 dwt. 21 gr.

Shiner, G., 31 dwt. 19 gr.

Stockwell, G., 30 dwt. 18 gr.

Thumper, G., 30 dwt. 9 gr.

Wonderful, R., 33 dwt.

GRAND DISPLAY OF HARDY HERBACEOUS PLANTS.

BY A TOWN AMATEUR.



OWE you no end of thanks for the joys you have enabled me to snatch from a little garden that is often dimmed by the smoke of London. Above all things I am thankful for the many wise advices given us in the FLORAL WORLD on the selection of beautiful hardy plants that are cheap and lasting, and need no particular care at any season. I have now hundreds of such good things, and all my purchases have been made under the guidance of the valuable monthly to which I send this very humble contribution.

Reflecting lately on the trouble I used to incur to keep one of my borders gay with bedding plants, I resolved to follow your advice, and collect hardy flowers. When they began to swarm about me—for I devoted the front borders of my kitchen garden to many of them—I made a selection for the border referred to. The plants that have proved the most showy are the common Crimson Pæony,

the red and white varieties of *Anemone Japonica*, the fern-like *Spiræa filipendula*, the yellow *Alyssum*, the white *Arabis*, the very showy *Armeria dianthoides*, *Aubrietia deltoides*, *Delphinium formosum*, *Dianthus hybridus*, *Geranium sanguineum*, *Iberis corifolia*, common White Lily, *Monarda didyma*, a few crimson and rose-coloured *Phloxes*, a very large variety of *Primula acaulis*, comprising single and double flowers of all colours; the very large-leaved *Saxifraga cordifolia*, *Sedum fabaria*, *Trollius Asiaticus*.

It will be observed that the selection is a small one, and whoever (as a beginner) consults a trade catalogue will be tempted to add a great many more, only to discover that they are not adapted to make a brave show. Select largely if you like, but do not expect a grand display. Those that I have reserved for my borders, and have given the names above, are splendid things, and I could not part with one of them. The border is a hundred feet long by ten feet wide, the background being a fine lot of evergreens. It must be understood, however, that it is not planted with these few herbaceous plants only, and thereby hangs a tale.

It was in the month of September that I prepared and planted the border. The preparation consisted in a deep digging of two spits, and the incorporation of a very liberal allowance of fat hotbed manure as the work went on. I sent to Mr. Ware of the Hale Farm Nurseries, Tottenham, for such plants as I wanted, and got them in their places when the weather was fine, and they were well established before winter. Now it is not enough to say that I planted such and such. I must add that I repeated at regular intervals all the more showy subjects, and planted everything according to its height when in flower, and as I allowed plenty of room. There were plenty of gaps that wanted filling. These I planted with clumps of cheap bulbs, for a gay display in spring, and when May came round I turned out a lot of geraniums that had grown lanky, and these lighted up the border gloriously. With a good foundation of hardy plants of the very best kinds, we can easily add to the richness of such a border, for nothing comes amiss, provided only that it is really showy, and all the better if it is sweet scented.

Independent of this very noble border, I followed a suggestion of our Editor's for what he calls a "Sensation bed." I laid out a bed eighty feet long, and put in the centre twelve clumps of *Tritoma*, with thirteen clumps of White Lily alternately down the centre. Along the sides I planted in regular alternations *Spiræa palmata*, *Spiræa aruncus*, *Sedum fabaria*, and *Astilbe Japonica*. The last named is the favourite "*Spiræa Japonica*" of the nurseries, but as it is an *Astilbe* I give it its proper name. Strange to say, although I value it much for forcing, I think it quite a poor garden plant. This bed is gorgeous when the tritomas are out, and it is at all seasons respectable. At the time of writing this there are about a hundred and fifty spikes of tritomas just coming into colour, and we had a splendid bloom of white lilies in July. The *Spiræa palmata* I obtained by division from one plant which I purchased when the truthful picture of it was published in the *FLORAL WORLD*. The plant cost me half a guinea, and I thought the money well spent.

SELECT BEDDING GERANIUMS FOR SMALL GARDENS.

BY JOHN WALSH.



Q UING to the dull and excessively wet weather which has of late prevailed, the bloom of the bedding geraniums is this season less satisfactory than usual, and the plants are making an extravagantly vigorous growth. They are, indeed, growing so strong, and producing such stout and soft shoots, that I anticipate some little difficulty in obtaining a sufficient supply of suitable cuttings. Fine weather during August may be more favourable to the production of a fine growth than has been the case up to the present time, but it will have to be very hot and very dry to check the plants much, as the ground is now so thoroughly saturated with moisture, and we shall soon have the heavy night dews, which are so conducive to the production of sappy wood. In anticipation of the difficulty that is likely to be experienced in the propagation of the usual stock of geraniums, I have considered it desirable to direct the attention of the readers of the *FLORAL WORLD* to the importance of commencing the work earlier than usual, and also to the necessity of bestowing more than the customary care on the selection of the cuttings, and to the desirability of departing somewhat from the usual practice.

Although the geraniums have not blossomed so abundantly, or presented so brilliant an appearance as usual, they have been much brighter and more effective than the majority of the bedding plants grown for their flowers. Whilst the verbenas have had the colour well-nigh washed out of them, the calceolarias have had their flowers knocked off, and the petunias weighed down to the ground with the wet, the geraniums have stood up bravely against the weather, and as fast as the rains have knocked off one set of flowers, another set has taken its place. This season the bright scarlets, the deep pinks, and the pure whites have appeared to the best advantage; for even whilst the flowers were saturated with wet, and everything out of doors as dreary as it well could be, these colours presented a bright and cheerful appearance. But we hope to have weather of a more favourable nature during the next six weeks at least; and should this be the case, varieties with flowers of an intermediate shade will again assert their claims to our attention, as in past seasons.

There are no very striking novelties to be reported on this year. A few of the more popular varieties will be replaced by others of the same line of colour and character; but by far the largest proportion of the varieties that have been in commerce some time will have to be retained. *Vesuvius* still remains one of the best of the bright scarlet varieties, and this year its compact habit, short, stiff flower-stalks, and neat trusses, have appeared to wonderful advantage in comparison with the more robust nosegays, with their gigantic flower-heads. *Flamingo* is somewhat similar in habit to the preceding, but has rather larger flowers, which are of a deep crimson scarlet colour. *Miss Maud Holden*, a new variety, bids fair to be

an excellent bedder; it is very dwarf and free, has flowers of the most brilliant scarlet. The season has not been favourable to it, and it would not be prudent to speak too positively about it. *Grand Duchess*, deep crimson, and *Beauty of Wilts*, light orange scarlet, are also full of promise as bedders. *Corsair*, now known as one of the finest scarlets for pot culture, is also a good bedder, and can be strongly recommended; it is compact in growth, produces good trusses in abundance, and the flowers, which are quite circular, are of the brightest scarlet, and have no white eye. *Lucius* has long been well known as one of the finest of the strong growers, with cerise flowers; for throughout the season it bears a profusion of noble flower trusses. It is now surpassed by *Mrs. Hetley*, which is of a similar colour, but a few shades brighter, neater in habit, and blooms rather more profusely. I have now had it two years, and consider it one of the best I have added to my collection for some time.

I have not a large number of white varieties in my collection, for most of them are so unsatisfactory, that I have considered a few only worth keeping. The best of those I now have is *White Clipper*, and I have no hesitation in recommending it in preference to all the others. In common with other white varieties, it is very robust in growth when planted in rich soil, or in wet seasons like the present, but it flowers more abundantly than either of the others, and the flowers are of the purest white. An undue luxuriance may be checked in ordinary seasons by plunging the plants in pots, or by filling the bed with some poor sandy soil, should the ordinary soil be too rich. Some of the newer varieties with pink flowers are exceedingly good. Of the pink zonals, not more than two or three are required, because of the fine things we have amongst the pink nosegays. If only one is required, *Mrs. Haliburton* should be selected in preference to all the others. It is free and compact; the flowers are borne very profusely, and are of the brightest rose pink. If three are required, add *Mrs. Upton* and *Bella*; the latter is an improved *Christine*.

Amongst the nosegays will be found some of the very finest of the geraniums suitable for bedding purposes. *Chunder Sen* has a dwarf spreading habit, and bears large trusses of orange scarlet flowers. *Charley Casbon* is very dwarf, and bears neat trusses of flowers of a brilliant scarlet colour. *Star of Fire* has brilliant scarlet flowers, which are produced in large trusses, and the habit is extremely good. *Bonfire* surpasses *Stella*, *Waltham Seedling*, and all the nosegays of that class; it has a compact, robust habit, the flower-trusses are large, and the colour is a rich crimson scarlet. *Soleil* is the best of the orange scarlet series. *Lady Kirkland* is unequalled amongst the purple crimsons, and a superb bedder. *Forest Hill Nosegay* is the best nosegay with salmon flowers. *Violet Hill Nosegay* has the finest habit of any of the nosegays, and blooms freely; and wherever a purplish salmon colour would be suitable, it should be planted. We have now some grand things amongst the pink nosegays. *Mrs. Hole* is of dwarf growth, the colour bright pink. *Mrs. Flytche*, rather strong growing, with noble trusses of deep pink flowers. *Amaranth* has purplish pink flowers,

borne in noble trusses. *Mrs. Augusta Miles* and *Welbeck Nosegay* are also good bedders, and can be recommended where a large number of varieties are required.

The above comprises the very cream of the geraniums grown for their flowers, and I would advise my readers to commence with as little delay as possible the work of propagating a stock for next year. The medium-sized shoots should be selected, and the cuttings be inserted in a border facing the south, or in an open quarter. They should be dibbled in, a few inches apart; and unless the weather and the soil are very dry, they should receive no water whatever. In any case, they should not be watered until after the third or fourth day of their being inserted. But few will damp off, probably not more than five per cent.; whereas, if they are inserted in pots, and shut up in frames, according to the orthodox method, quite fifty per cent. at least will, in all probability, perish, as the shoots are now so full of sap. Some care will be required in taking the cutting, so as not to spoil the appearance of the beds and borders at this early period; and a few of each variety should be taken at a time, to avoid making any blanks. The variegated varieties must also be propagated early, and in the same manner as recommended for those grown for their flowers.

[The foregoing was written for publication last month, but came to hand too late. We advise those who are now propagating geraniums to put the cuttings in pots.—ED. *F.W.*]

PLANTS—THEIR STRUCTURE AND USES.

BY MR. J. E. TAYLOR, F.G.S.,

Curator of the Ipswich Museum;



SERIES of lectures on the above subject has been delivered in the Temperance Hall, Ipswich. In his first lecture, Mr. Taylor confined his attention to the very lowest forms of vegetable life, and explained the material from which both animal and vegetable forms were constructed. He proceeded to show that all organisms are cellular, and these mere cells had in some instances an individual existence. These atoms or diatoms, as they are called, were to be found in plenty in rivers, and it was their constant formation and decay which produced the greater part of the black mud of the rivers. These minute organisms, which were first considered to be animalcules, would be found, on close examination, to be composed of material similar to that which entered into the composition of flint, and they could be passed through fire without injury to their form. After giving interesting information as to the structure of these organisms, Mr. Taylor stated that their powers of reproduction were so great that a single diatom, in some species would, in the course of four days, have produced 140,000,000, which would perhaps all be contained in two cubic feet. Owing to their rapid growth and accumulation, harbours in some parts of the world rapidly became silted up, and herein lay the secret of one of the greatest engineering difficulties. They formed the greater part of the mud of rivers, and its blackness was owing to their decomposition. They were concerned in the struggle for existence continually going on in the world, and they must and would live, for God had made them to live. By putting the sewage into the river, they rendered the water fitter for the growth and life of these plants, in the same way as the land would be fertilized by its deposition thereon, and they were thus aiding the silting up of the shallow waters of the river.

September.

All plants, he said, in his second lecture, under whatsoever conditions they lived—whether on the earth, in salt water or in fresh—were divided into flowering plants, or those that bring forth seeds and fruits, and non-flowering or cryptogamic, whose fructification is concealed. The latter class, which until lately received but scant attention from botanists, included such familiar forms as fungi, lichens, mosses, ferns, and so on. Of this class, also, were such diseases as smut and rust in barley. Seaweeds, which were of this class, were well known in appearance to everyone; in reality, they were exceedingly small structures, commencing with cells. An examination of seaweeds would show them to be possessed of a large quantity of mucilaginous material, which was secreted from the minerals in the ocean by absorption, but not by means of the roots, as was the case with some other kinds of vegetation. By this means they not only built up the solid parts of their frames, but served to keep the sea pure. From capsules growing at the end of branch-like projections were emitted male and female spores, which having served the object of reproduction, were cast in some nook in the ocean to begin life as seaweeds. Mr. Taylor proceeded to speak of the microscopic fungi, of which he said there were at least three thousand species; they grew in the utmost luxuriance; and assumed such strange conditions that it required no small amount of observation to follow them through their various changes. The transitions by which the caterpillar passes to the gorgeous butterfly, which had always been held to be the most wonderful instance of metamorphosis that could take place without changing the individual organism, were nothing as compared with the different conditions of these fungi. The best known of this species of plants was fatal to potatoes; a single spore would settle on a weak plant—in all nature it was to be observed that the weakest went to the wall—and so rapidly would its increase take place, that in a few days a field of many acres in extent would have caught the infection. The spores were emitted with a slight jerk from the capsule, were caught by the wind and borne no one knew whither. When the disease had once settled on a field the only thing to be done was to mow down the tops and make what use was possible of the unripe tubers. There was but one means of baffling the potato disease. It did not appear before the month of August, and therefore by producing early yielding potatoes, which come to maturity before the pest sets in, its ravages might be avoided. Other well known forms of microscopic fungi were what were commonly known as mildew, dry rot, cheese mould, and bread mould. Another species of mould frequently attacked jams, but it was to be resisted by simply tying down the tops of the jampots while the jam was still at a temperature of 200 or 300 degrees, instead of letting it stand all night to harden and stiffen, a chance being thus given to the atmosphere to rain down these spores in countless millions. These plants were at the bottom of many diseases. A horrible disease, prevalent in Poland, which mats the hair together, and that disease with which all mothers are only too familiar, which causes the interior part of the mucous membrane of infants to become white, and is commonly known as “Thrush,” were both to be attributed, along with the ring-worm and many other diseases, to the prevalence of microscopic fungi. In seeking, therefore, to discover and check the workings of these tiny plants, scientific men were engaging in as philanthropic an undertaking as ever human philanthropists devoted themselves to.

THE BAMBOO.—A pamphlet has been published at Cairo by the Agricultural Department of Egypt, on the Indian Bamboo, which, it is said, is being acclimatized there with great success. We append a few notes therefrom:—The gigantic bamboo, which is of colossal dimensions, growing to the height of 20 metres, with a circumference of 40 or 50 centimètres at the base (say 65 feet high and 15 to 18 inches in circumference), from the joints of which, especially those of the middle and upper parts, grow numerous branches with long leaves, is the most vigorous species of this arborescent plant. It was introduced some years ago into the gardens of the Khédive of Egypt, at Ghézireh, from whence it has been multiplied in two or three other gardens in Egypt. It was so much admired by the Emperor of Brazil, on his visit to the gardens of the Khédive last autumn, that he expressed his determination to import it into Brazil, and to cultivate it upon the Imperial estates as a shade for animals during the heats of summer. The gigantic bamboo originates in India and China, and is highly appreciated wher-

ever it is cultivated, being used for posts in pavilions and the houses of the inhabitants. The hollow joints are utilized for carrying liquids, for flower-vases, etc.; and in China, and especially in India, for bottles and tobacco-boxes, highly wrought and polished, and sold at great prices. The larger stalks are also used for bridges, water pipes, and carts and other vehicles. In fine, the wood is employed in the arts, in a multitude of industries, and for implements of agriculture. This species of bamboo vegetates with such rapidity that it can almost be said that one can see it grow. Its progress may be seen from day to day, and at Ghézireh it has been known to grow 9 inches in a single night. In China, criminals condemned to death are subjected to the atrocious punishment of impalement by means of the bamboo. A humid soil is congenial to the gigantic bamboo, although it suffers under a prolonged inundation. It is proposed in Egypt to cultivate it upon the borders of the canals in the vast domains of the Khédive. There is also in the gardens of Egypt another species of bamboo, believed to be the *Bambusa arundinacea* of Willdenow. It presents the following characteristics; the stalks are smaller and shorter than the gigantic bamboo of India; it attains about 12 mètres (39 feet) in height; it forms larger tufts or clusters than the great bamboo, and throws out a greater number of stalks, which are furnished with numerous slender and flexuous branches, bearing ordinarily tolerably large thorns, a little arched at the joints or articulations, and the leaves are smaller than those of the gigantic species, being rounded at the base, lance-shaped, tapering to a point, and a little downy. There is another species of bamboo which it is proposed to cultivate in Egypt. It attains a height of 5 or 6 mètres, produces enormous clusters of canes, about the size of the finger, and makes excellent props for use in horticulture. A plant of two or three years' growth will furnish a hundred stalks, forming a cluster of vast size. This species is the *Bambusa edulis*, so called from the fact that its young shoots are edible, and in China regarded as very nourishing. There is still another species of bamboo to which the attention of the cultivators in Egypt is called. It is the black bamboo (*Bambusa nigra*). It is distinguished principally by its slender branches, which are of a fine black colour, and from which canes are manufactured extensively for exportation. Pens are made from the smaller stems, which are commonly used for writing in Egypt.—*Journal of Applied Science*.

NEW HYBRID HELLEBORES.



THE following seedlings are the grand results of the cross-fertilization of *H. abchasicus* with *H. guttatus*, and others. Their general superiority to the older varieties consists in a much improved form, more floriferous habit, larger and finer flowers, of more distinct and in some cases dazzling colour. The leaves of these valuable species have nearly all the same character; they are about twelve inches in diameter, sharply toothed, dazzling dark green with lighter ribs and lines, on taller stalks, according to their age, more or less inclining and evergreen, as damaged foliage is always replaced by a new growth. Dr. Koch, in referring to them in the pages of a contemporary, says: "These historical notes will doubtless interest your readers, because the species last named have yielded, through cross-fertilization, varieties of rare beauty and diversity, which I cannot too strongly recommend to them. And should any reader of the *Gardeners' Chronicle* wish to become better acquainted with them, I am quite ready to play the part of mediator, as I am convinced that at this time of the year there are no more beautiful or more useful plants than these hybrid Hellebores." These magnificent hybrids originated in the Berlin Botanic Gardens. Messrs. Ant. Roozen and Son, Overveen, near Haarlem, Holland, who will offer them in the autumn, have kindly sent us the undernoted descriptive particulars:—

Seedling No. 1.—Flowers beautifully formed, three inches in diameter, bright dark purple and rose colour, with numerous carmine red streaks, charming leaves, rich and early variety.

Seedling No. 2.—decidedly the finest and most remarkable hybrid raised till now (*vide Gar. Chron.* p. 480, 1874), flowers of fine form, stately, and well above the leaves; petals finely cut and covered, very large, often three inches in diameter; colour pale brown and purple-rose, with numerous sharp bordered, dazzling, dark carmine red spots, splendid variety.

September.

Seedling No. 3.—Flowers irreproachable in form and attitude, very large and freely flowering, of dazzling purple-rose colour.

Seedling No. 4.—Smaller flowers, but in other respects exactly the same as *Seedling No. 3.*

Seedling No. 5.—Flowers very large and flat, fine form, three inches in diameter, petals finely cut and covered, colour snow white, very recommendable plant.

Seedling No. 6.—Flowers of a very fine pure white, from two to three inches in diameter; their rich blooms, held up on tall foot-stalks, give to this variety a remarkably gay appearance.

Seedling No. 7.—Fine formed pure white flowers, the centre of the petals covered with small red spots, forms a red star on the white ground of the flowers.

Seedling No. 8.—Flowers very large, fine formed and flat, the flower stalk held far above the leaves; coloured like small orchids, snow-white, with large round, nicely bordered dark purple-red spots, splendid variety.

Seedling No. 9.—The spots are smaller and less remarkable, than of *Seedling No. 8*, in other respects of same merit, very fine.

Seedling No. 10.—Large white flowers, with countless waxy red spots, forming a star like *Seedling No. 7.*

Præcox major.—Large snow-white flower, earlier than all the forenamed varieties, very recommendable on account of its free flowering qualities.

SENDING FLOWERS BY POST.



CORRESPONDENTS who send flowers for our opinion are greatly disappointed when they learn that "your flowers were dried up when they came to hand, and we can offer no opinion of their merits," yet such is a common occurrence, and one of the wonders of editorial experience.

For it is a wonder, to say the least of it, that people who grow flowers, and who know much about them beyond what may be seen and learnt in the garden, should expect them to travel safely when merely wrapped in dry paper or put loosely into chip boxes, and then committed to the post. As an experiment in hay-making, this mode of transmitting bits of vegetation in hot weather may be all very well; but that is not the intention; the senders of the desiccated scraps wish us to see them as they see them, fresh and bright, that we may say whether in our judgment they are good, bad, or what else. Now, let any of these disappointed correspondents consider for a few moments one aspect of the subject. Suppose the flowers on which our opinion is desired are now growing at York, A, B, or C, the grower thereof, purposes to forward them to us. He cuts them perhaps in the morning, when they are at their best, puts them loosely into a chip or pasteboard box of some sort, taken haphazard from a drawer or closet. He seals up the box, and commits it to the post, and perhaps he attaches a proper number of stamps, We say "perhaps" here advisedly, because sometimes we have to pay sixpence, eightpence, or more, for these packages, and in every case of that kind we fling them away as far off as possible, and know nothing more of them; time is too precious to be wasted in asking people to refund what we have been mulcted of, and experience has taught us to deal in a summary way with every species of annoyance. But suppose they are delivered free (as we are bound to admit is the case *generally speaking*), they are as a rule twenty-four hours old when they are received at the office. The next thing to be done is to send them on to Stoke Newington, and there may be a little delay even to the extent of half a day or so between the receipt and the despatch of the flowers. We will now allow three hours to elapse ere they are delivered at Stoke Newington, whether by post or carrier, and we may consider another day to have elapsed ere we see them, or say from thirty-six to forty-eight hours from the time the flowers were cut. But here another delay is possible. Editors occasionally leave home—not often, it is true—and another whole day or so may pass just at that particular juncture when A, B, or C's flowers, already worn out by travel, are seen by the person to whom they are addressed. Here is the case as we are familiar with it, make what you please of it, friends. This is not the first or second time we have endeavoured to make the path easy for cultivators to obtain our opinion on their flowers, and having shown how the case commonly fails, we will proceed to remark on the conditions of success.

At this point we are reminded of a great lot of flowers that lately reached us in a state of absolute perfection. Those flowers came from the extreme north of England and were subjected to several small delays, yet when we opened the package they were as fresh and as bright as if just gathered, and we were enabled to place all the bunches in vessels filled with water, and have a good leisurely look at them ere saying a word as to their qualities. They were skilfully packed in a close fitting square tin box, one foot deep and fifteen inches square, the lid of which fitted accurately. Within this was a sort of wooden cage formed of very thin laths, say half an inch wide and an eighth of an inch thick, which was lifted out bodily. Within this cage the flowers were packed in bunches, every bunch being surrounded at the base with moss, and all of them bedded in a mass of moss at the bottom of the cage. The moss was moist, the tin box almost air-tight, and the flowers came out almost as fresh as when they went in, though nearly forty-eight hours had elapsed from the time they were gathered till the time we saw them. We remember a similar case occurring in the early part of last year. Messrs. Barr and Sugden desired us to see a collection of *Ixias* grown by one of their agents in Jersey, and they were sent from Jersey direct, and we had them in a state of perfection. The bunches were tied round with moss at the base, and were laid one upon the other with a little damp moss sprinkled between them in a long, deal box, and above them a few cross-bars of wood were fixed with nails, so that in the event of the box being turned upside down, or even thrown from hand to hand by the carriers, the flowers were so fixed by the cross-bars that not one could move, and therefore no ordinary concussion could harm them. An occasional correspondent sends us leaves and flowers, and sometimes cuttings of plants, simply folded in oil paper and enclosed in common envelopes, and they generally arrive in a condition not only such as admits of fair judging, but we can strike the shoots if desirable, and we have, in fact, several plants obtained from cuttings sent in this simple way. The grand thing is to *arrest evaporation*; this the damp moss accomplishes in one case and the oiled paper in the other. Common tin-foil is also a preservative of leaves and flowers sent by post.

In the case of subjects that cannot be submitted to pressure, a box of some kind is essential. The Post-office authorities properly refuse to carry boxes with sharp edges, and any tinman will quickly make a box of any size, for a mere trifle, with the edges rounded, so that the Post-office regulations need not be infringed. But wooden boxes even if of the most fragile kind, will usually answer the purpose, if the flowers are packed in it tight enough and sufficiently fixed to prevent injury by shaking, yet loose enough that they do not injure each other by pressure, with a slight amount of moisture to keep them fresh; but *in no case should they be wet*, for that may cause as much mischief as extreme dryness.

A common error in packing flowers for the post is to bed them in masses of dry cotton-wool. We do sometimes receive good samples packed in that way, but commonly the juices are drawn from them by the cotton-wool, and they come to hand shapeless, shrivelled, and indeterminable. It is not always possible to obtain tin boxes and other specially prepared receptacles, and the boxes that seidlitz powders are sold in, the wooden boxes, two or three inches over, in which tooth-powders are sold, and the small wooden barrels, about four inches high and two or three inches in diameter, in which many housewives keep such things as arrowroot, and in which some grocers pack coffee and spices for sale, are severally suitable, and in most houses are ready to hand. Card and paper boxes are generally not so trustworthy as wood or tin, on account of their liability to be crushed, and the excessive evaporation of moisture from their contents. Given a suitable box, the rest is very easy. A little damp moss will be found the best of packing, and if the flowers are firmly bedded in it, they will continue fresh for two or three days. Not long since, we sent a boxful of flowers a long journey to a friend. They were packed in a long deal box—a sort of fig-box—with clippings of privet above and below, and the flowers carefully laid together, without ties, but as it were in a heap, the small clippings of privet serving to fill up, and to keep them from being shaken on the journey. They reached the friend in a perfectly fresh condition, though the journey comprised three separate changes from rail to rail, and from rail to carrier's cart. Freshly gathered ivy-leaves, and even fresh grass-mowings, answer admirably, without any addition of water; in fact, fresh green leaves of any kind will do, and if bruised, as in the case of clippings of privet or mowings of grass, all the better.

S. H.

HOW TO TAKE IMPRESSIONS OF PLANTS.



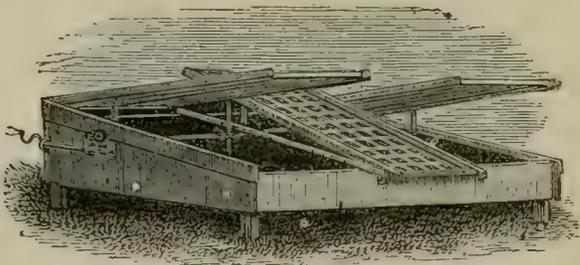
THE advantage of being able to take accurate impressions of plants without much labour need not be pointed out to those who can appreciate what is useful. It is not brought forward as a substitution for dried specimens, where these can be obtained and attended to; but as being less cumbersome it deserves notice, as a means of refreshing the memory, in very many instances, in a manner equally satisfactory as when specimens are employed. It has, further than this, no claim to novelty, but simply to usefulness.

The materials required are few, and these not expensive. One pennyworth of lampblack and one pennyworth of sweet oil are all that will be required beside the paper. A large sheet of paper should be provided, and this should be prepared by rubbing it evenly all over with a piece of flannel moistened with the oil; this must be done thoroughly, and when the paper is well moistened, but not in a wet state with the oil, a small quantity of lampblack should be laid evenly over it, also using flannel for this part of the operation. If this preparation can be made a day before using the paper, it will be so much the better. The next process requires great care:—Having the prepared sheet in readiness, place on it evenly and flatly the plant, flower, or leaf, of which an impression is required; then place over this a dry sheet of paper, and with a handkerchief or cloth press firmly over every part, that it may equally and regularly receive the black preparation. The paper intended to receive the impression should now be in readiness, and the specimen must be carefully removed and placed on it, and great care must be taken that its position is not changed; this, too, must be again evenly and firmly pressed as before, and the impression will be complete, and must be laid carefully aside to become dry. A specimen or two can be tried on a spare sheet, in order to ascertain whether the blackened sheet is in a proper state of preparation, before it is attempted to take a very careful impression. This is particularly valuable in preserving sketches of the leaves of rare and valuable plants.

S. H.

NEW INVENTIONS.

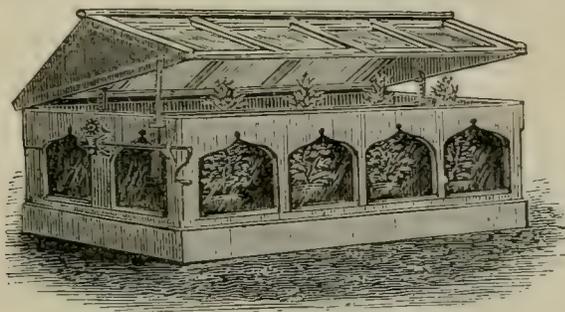
VOICE'S PATENT VENTILATING FRAMES.—At several of the great exhibitions of garden implements these frames have been certificated, and have met with general approval. They are the invention and manufacture of Mr. Voice, of Horley,



VOICE'S PATENT SYSTEM OF VENTILATING GARDEN FRAMES.

Sussex, and have for their object to combine with the cheap portable frame, the conveniences of a greenhouse, the ventilation of the common frame being a quite haphazard affair. The figures show that the lights are levered so as to balance each other, but the very easy way in which the lights can be moved and air given at the discretion of the cultivator, cannot be clearly demonstrated by any figure. We advise those of our readers who are interested in such things to write to Mr. Voice, and obtain his illustrated prospectus.

VOICE'S PEA TRELLIS is by the same inventor. It is the best and cheapest substitute for sticks we have yet met with, and has the advantage that it may be pre-



VOICE'S PATENT PORTABLE GARDEN FRAMES.



VOICE'S SYSTEM OF TRAINING RUNNER BEANS.

served for years. It consists of suitable uprights and a strong wire net, to which the peas or runner beans cling readily, and soon obtain a firm hold.

THE GARDEN GUIDE FOR SEPTEMBER.

When autumn, bleak and sunburnt, do appear,
 With his gold hand gilding the falling leaf,
 Bringing up winter to fulfil the year,
 Bearing upon his back the riped sheaf;
 When all the hills with woody seed are white,
 When leving fires, and lemes, do meet from far the sight:
 When the fair apple, ruddy as even sky,
 Do bend the tree unto the fructile ground,
 When juicy pears, and berries of black dye,
 Do dance in air and call the eyne around;
 Then, be the even foul, or even fair,
 Methinks my hearte's joy is stained with some care.

THOMAS CHATTERTON.



AURICULAS to be housed for the winter, and watered very sparingly. Look over the stock in removing them to the frames; see if slugs are hidden in the hole next the crocks; and if the surface of the soil in the pots has moss or liverworts growing on it, you may be sure there is something the matter with the drainage, which see to at once.

BEDDING PLANTS struck in the open ground must be potted towards the end of the month. In all cases a poor sandy soil and plenty of drainage must be used, especially if the plants are to be kept in pits or other places where they will be exposed to a low temperature during hard weather.

CABBAGE to be planted out for spring supply on ground well manured. Collards September.

planted close will now be getting crowded, so draw for use as soon as possible every other one, and ply the hoe between them.

CAPSICUMS AND TOMATOES may be gathered before they are ripe if needful, and ripened by laying them on a shelf in a warm greenhouse.

CARNATIONS.—Layers to be potted or transplanted, as soon as rooted, in sandy soil; avoid rich soil or stimulating manures, as they must not be encouraged to make much growth, or they will get a gross habit, which will be very detrimental during winter, for then it is necessary that they should rest.

CAULIFLOWER to be pricked out into frames for the winter, and to be kept as hardy as possible.

CHRYSANTHEMUMS require plenty of water, and twice a week manure-water, but not a drop of the latter to touch the leaves. See to any tying that has been neglected.

CINERARIAS, PRIMULAS, CALCEOLARIAS of the herbaceous class, and other soft-wooded plants now growing freely, should be carefully looked over to see that they are in a fit state for housing as required. Some will want a shift; some will be found invested with fly, etc. None of these things should suffer for want of water.

CROPS of apples and pears to be gathered now as they ripen, always selecting a dry sunny day for the purpose, if possible; be careful to preserve them from bruises.

ENDIVE to be planted out on warm well-manured borders, to stand the winter.

FLOWERING SHRUBS to be forced for the conservatory should now be thought of, to have them potted up and plunged ready to be taken in to force. Plants that have made good growth in the open ground are best for this work, such as Lilacs, Kalmias, Daphnes, Andromedas, Polygala chamæbuxus, Ledum latifolium, Rhodora canadense, double-flowering plums and cherries, Azaleas of the nudiflora section, Weigelas, etc. Put them into as small pots as possible without doing any serious harm to their roots, and plunge in a bed of cocoa-nut waste, in a sheltered position, till required to go to the forcing-house.

GLADIOLI to have very little water now the bloom is declining; when the soil in the pots is nearly dry, lay the pots on their sides in the full sun, to promote their ripening. Those in beds will take care of themselves till time to take them up.

HARD-WOODED PLANTS must be kept well aired and in full sunshine, to ripen the wood and give them strength to pass the winter in an ordinary greenhouse temperature. Heaths, Epacrises, and Pimelias, to have free ventilation, and the rank shoots pinched in, to preserve uniformity of growth.

LETTUCES required for use in winter to be planted out, a portion in frames, and another portion on a warm sloping border. The cabbage kinds will bear frost with the least injury. Some forward plants of cos put out now on a rich warm border will come into use late in the autumn.

LILIUMS to be treated the same as recommended for Gladioli. Give water till the leaves begin to fade, then lay them on their sides.

MINT to be potted for spring forcing. There is in almost every family a demand for mint before it can be supplied, and the only way to make sure of it is to pot it.

MUSHROOMS.—Prepare the bed for winter supply. The first thing to be done is to collect plenty of short unfermented dung, or if only long dung can be had, pick out the long straw and lay it in small heaps to ferment gently, and turn it every three or four days till it produces only a gentle heat; then make up the bed.

PARSLEY sown in July to be thinned, and the thinnings planted if needful. Remove all the plants that show single leaves.

PEACHES AND NECTARINE TREES must be looked to as soon as the last fruit is gathered; if any are infested with red spider, dust them liberally with sulphur early in the morning before the dew is off the leaves, or else syringe them well before the operation, so that the powder may adhere.

PINKS.—Plant out the old stock plants that have been grown in pots into borders, and keep the beds of young ones perfectly clean and free from weeds.

POTATOES left in the ground after this time will spoil, therefore lift and store the crop; and should you intend to follow the practice of autumn planting, throw out all the middle-sized greenish tubers, and plant them at once, seven inches deep, and the rows not less than thirty inches apart.

PROPAGATE all kinds of bedding plants that will be wanted for next year as fast as possible. As soon as cuttings are rooted, pot them off, or place in boxes as recommended above; keep them in a close pit or frame for a week or ten days, and then expose them to the weather for a short time before housing them for the winter.

REVISE all named plants while there are blooms or fruits to determine if they are tallied correctly. To keep plants correctly tallied will do more to familiarize the mind with their several characters and excellences than any amount of book study; in fact, every garden is a book where—not he who runs—but he who stoops may read, and everything of real interest should have a tally correctly written. This is especially useful in regard to rock plants, coniferous and fruit trees, and roses.

ROSES may be propagated now by inserting cuttings in a bed of light soil in a frame or pit. But a more certain way will be to prepare the cuttings and insert them in damp sand in a shady place, and keep them frequently sprinkled till they callus, and then pot them, and plunge them in a gentle bottom-heat.

SPINACH must be thinned till the plants are about six inches apart; vacancies to be filled up by transplanting, and if the ground is heavy or trodden during the operation, loosen it with care so that the roots may have the benefit of the air.

STRAWBERRIES to be forced should now have well-formed plump crowns.

VINES that have ripened their fruit to be kept well aired, cool, and dry.

VIOLETS for bloom during the winter and early spring should be taken up now with good-sized balls, and potted in 48 or 32-sized pots in rotten turf, or a mixture of leaf-mould and road-sand, and then placed in a pit or frame near the glass.

VINES.—Pinch off laterals, as it is too late for the plant to benefit by leaves formed now, and remove useless growths.

WALL TREES only need such care as may be necessary to assist in the ripening of the wood. Where spray-like growth and rank shoots overtop and shade wood selected for bearing, remove it or cut it into reasonable bounds, for the wood laid in needs now all the sun it can get, and it is sure not to receive too much.

WEEDS will be found to grow rapidly, and will make their appearance in every place where the seed was allowed to ripen and fall during the summer months. Now is the time to give them an effectual check, and short work may be made of them on a bright sunny day with the Dutch hoe, when they may be either raked up in a neat manner, or left to winter on the ground.

WINTER FLOWERS must be thought of now to ensure a satisfactory display of bloom. Give a few Begonias a shift, and push them on for flowering; look to Euphorbia fulgens and splendens, Poinsettia pulcherrima, Achimenes picta, Lily of the Valley, and pot up from the borders *Dielytra spectabilis* in plenty; it is one of the best things to force, and, "though common," it is exquisitely beautiful.

HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY have at length made terms with her Majesty's Commissioners, and at a special general meeting held on the 13th ult., the agreement between the two bodies was sanctioned by the Fellows of the Society. Two new agreements have been made between her Majesty's Commissioners and the Society. By the first her Majesty's Commissioners absolutely remit the payment of the £2,400 rent now nearly due, and authorize the Society to borrow £7,000 to pay its debts and repair its buildings; and if, at the end of three years, they shall exercise the power given to them and determine the agreement, they must take upon themselves this £7,000 of new debt, or so much of it as shall not have been repaid, out of what would have been their own rent. The Society's lease cannot, in any case, be forfeited before the end of the year 1878. It cannot be then forfeited unless the income of the Society for that year falls short of the amount required, namely, £10,000. Even if such income should for that year fall short of that amount, there can be no forfeiture if the Society shall pay its rent in accordance with the present agree-

ments ; or if the Society shall next year, out of moneys which it could tender as rent, reduce the new debt by £2,400. By the second new agreement the Council have obtained part of the French Annexe, the garden attached thereto, and a new entrance close to the Royal Albert Hall, in consideration of certain concessions in respect of the strip of land lying to the north-west of and outside the gardens, which they believe can be made without injury to the Society's property.

ROYAL BOTANIC SOCIETY.—The 36th anniversary meeting of this Society was held on the 10th ult. at the Society's house in the gardens, Regent's Park, Lord Chesham, vice-president, in the chair. The ballot for the Council resulted in the addition of Lord Londesborough, Lord Rendlesham, and Mr. J. Travers Smith as new members. The Duke of Teck was re-elected president, and Mr. W. M. Coulthurst was re-elected treasurer. A total of 124 new Fellows had been elected during the year—a number in excess of that of last year, and which had only been exceeded in one year of the last ten. The amount received in subscriptions was also in excess, being £300 above that reported last year. A considerable portion of the garden and an extensive range of greenhouses is devoted to the practical pursuit of botany, and its application to the arts and manufactures. Most of the plants, whether natives of the tropics or the temperate zones, which are useful to man are here exhibited. The lectures, which are free to all visitors to the gardens and were delivered by Professor Bentley, were well attended.

EUCALYPTUS GLOBULUS during the summer flowered very freely in the garden of R. W. Hall Dare, Esq., Newtownbarry House, co. Wexford. The tree is in a dry and sheltered position ; it has been planted out about four years, and is twenty feet high, and very healthy.

THE ANNUAL MEETING OF THE PELARGONIUM SOCIETY was recently held at the "Criterion," Piccadilly Circus. The treasurer, Dr. Denny, was able to report a healthy state of the finances, a balance of £20 8s. 4d. remaining after paying the prizes awarded at the exhibition on the previous day, and all the working expenses. The sum paid out in prizes was £40. A hope was expressed that the Society, now that it had become better known, might draw around it more abundant support, so that encouragement might be extended to other classes of pelargoniums, besides the zonals, which was the class specially in view when the Society was originally founded. It was also thought that the inducements offered by the Society might set hybridizers to work, and so be the means of obtaining new types of this useful decorative genus. The chairman, treasurer, hon. secretary, and committee were re-elected, the latter body being strengthened by the addition of the names of Mr. Andrew Henderson, Mr. G. T. Rollison, Mr. B. S. Williams, and Mr. J. F. West. In the course of the meeting a most interesting discussion took place as to the influence of the pollen in cross-breeding, and on other matters connected with the history and improvement of the pelargonium. Mr. Pearson suggested that the Society should endeavour to find and to fix satisfactory and intelligible names for the different groups of pelargoniums, instead of the inapplicable ones—show, fancy, tricolor, zonal, etc.—now in common use.

KEEPING APPLES UNDER LEAVES.—The "Rural Home," an American journal, gives an account of an experiment near Rochester in keeping apples on the ground under leaves. Two bushels of leaves were placed on one bushel of apples, the whole being partly surrounded by evergreen trees, which kept the wind from blowing the leaves. They were found this spring less decayed than apples in the cellar, and fresh and fine in condition. There were obviously two or three causes which made them keep well. Contact with the earth gave them moderate and uniform heat from below ; the leaves, being stratified, turned off the water and kept out the cold, the frost of very few winters ever reaching through a foot of leaves ; and the evergreen trees gave an additional protection. If we were covering apples in this way in an exposed situation, we should want a foot of leaves, held down by evergreen branches ; but, surrounded closely by the evergreen trees, half that depth of leaves might answer. What gardener has not picked up apples perfectly sound and fresh which had dropped from the trees, and lain during the winter hidden beneath leaves or the dense-growing crops ?

THE INTERNATIONAL POTATO SHOW will be held in the Alexandra Palace, Muswell Hill, September 29 and 30.

TO CORRESPONDENTS.

VINES IN POTS.—*Amateur.*—The vines in pots may be left out of doors during the current month, but it is not desirable that they should remain out until the end of January next, when you propose to commence forcing them. It is in every way better for the vines that they should, after the end of this month, be placed in a cold, airy house, and the soil be kept in a moderately moist state. Many cultivators suppose that grape vines require no water whatever when at rest, but this is a serious mistake, and many failures have occurred through keeping the soil dust dry through the winter. If you are compelled to leave the vines out of doors until mid-winter, stand the pots upon a hard surface, and then pack newly-gathered leaves between the pots, for the purpose of protecting the roots from frost.

CEMENT FOR FLOWERS.—*Lady Subscriber.*—The cement used by the bouquet-makers in Covent Garden Market, and elsewhere, for fixing the petals of flowers that soon fall off when the bloom or truss is removed from the plant, is easily prepared. It is made by dissolving gum shellac in methylated spirit; sufficient gum is added to the latter to make it of the consistency of gum ordinarily employed for gumming paper. It should in fact be just thick enough to run rather slowly from a small brush dipped into the solution, and then held over it; therefore if too thin, a little gum can be added; on the contrary, if so thick that it does not flow readily from the brush, it should be reduced by the addition of a little more spirit. When prepared it should be kept in a well-corked bottle, it is a very good plan to put it in a rather wide mouthed bottle, and to cut a notch on one side of the cork just large enough for the handle of a small camel's-hair brush, so that the brush can be constantly kept in the cement, and the latter air-tight. The common practice in using the cement, is to dip the brush into it, and then let a drop fall into the centre of the flower, or if it can be done without damage, the brush charged with gum is inserted into the centre of the bloom, the gum cements the petals to the calyx and to each other, and they are therefore quite unable to fall off. It is consequently of considerable value when pelargoniums are employed. The cement may be purchased ready prepared, but as a bottle full, which costs eighteen pence or so, may be prepared for a few pence, it is quite unnecessary for us to speak of the economy of preparing it at home. Methylated spirit, which is used for its cheapness, has a rather disagreeable smell, and those who object to it may employ instead spirits of wine.

PENTSTEMONS.—*B. B.*—Cuttings of these showy flowers may now be struck in a cold frame. Select the tops of the young shoots, and insert in pans filled with light sandy soil. When nicely rooted, pot off separately, and winter in a cold frame. In March next plant in the border.

ZONAL PELARGONIUMS.—*Young Gardener.*—The zonal pelargoniums in the borders, where they are not overcrowded, will be most valuable for conservatory decoration next year, if managed with care. The best course will be to select a certain number of plants as quickly as possible, and prune them rather hard back, and as soon as they commence to break again, which will be in about a fortnight afterwards, lift and put them in pots of as small a size as possible. A rather light sandy soil should be employed. If it is not convenient to prune the plants as here advised, lift and pot them in the course of the month, and leave the shoots the full length. In January or February prune them into shape and shorten the shoots sufficiently to insure a good supply of young growth from the lower part of the plant. When zonal pelargoniums are pruned at the same time as they are removed from the open beds, a portion of the shoots die back and leave ugly blanks.

UNRIPE TOMATOES.—*K. S.*—The full grown unripe fruit are not worthless, as they will, if gathered in clusters and suspended in a warm room, attain maturity and be of the utmost value for making sauce, and also for sending to table freshly cooked.

GREENHOUSE QUERY.—*H. F.*—The house requires painting and whitewashing, and we should advise you to have it done with as little delay as possible, for it is not safe for tender-rooted plants to be left out of doors after the third week in the month, and ten days or a fortnight will be required for the smell of the paint to pass away. The woodwork and the glass should be well scrubbed with hot water

and soft soap previous to the woodwork being painted. The walls should be washed over with "hot lime," that is whitewash made with unslaked lime, and applied immediately it is made. Afterwards a wash prepared with whiting and size, and coloured to suit the taste, can be applied to give the work a more finished appearance than that presented by the limewash.

Woodford.—This is a bad season for vines, and for almost everything else. Instead of sulphur, in future use the Aphis wash of the City Soap Company, and keep the vines warmer; yours have been too cold.

W. A.—Sow the cones, when ripe, in a mixture of loam and leaf-mould in a fram they should be quite brown before you gather them.

B. A.—The FLORAL WORLD volumes are sold at 7s. 6d. each, handsomely bound. Any bookseller can obtain them for you.

EXHIBITIONS TO BE HELD IN SEPTEMBER.

1.—ROYAL HORTICULTURAL SOCIETY.—*Exhibition of Dahlias, and Meeting of Fruit and Floral Committees.*

1 & 2.—BATH.—*Second Floral Fete.*

1 & 2.—BOROUGH OF TYNEMOUTH HORTICULTURAL SOCIETY.—*Annual Exhibition.*

2.—ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—*Autumn Exhibition.*

2.—CENTRAL KENT AND ASHFORD HORTICULTURAL SOCIETY.—*Annual Exhibition.*

2 to 4.—MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—*Exhibition of Fruit, Flowers, and Vegetables.*

2 to 4.—ALEXANDRA PALACE, MUSWELL HILL.—*International Fruit Show.*

7 to 9.—CRYSTAL PALACE.—*Autumn Fruit Show.*

8.—GLASGOW AND WEST OF SCOTLAND HORTICULTURAL SOCIETY.—*Autumn Exhibition.*

8 to 10.—AMERICAN POMOLOGICAL SOCIETY.—*Fifteenth Biennial Session, at Chicago.*

10.—BURY ST. EDMUNDS AND WEST SUFFOLK HORTICULTURAL SOCIETY.—*Autumn Show.*

15 & 16.—ROYAL CALEDONIAN HORTICULTURAL SOCIETY.—*Great International Fruit and Flower Show at Edinburgh.*

15 & 16.—STAMFORD HORTICULTURAL SOCIETY.—*Annual Exhibition.*

21 to 23.—CRYSTAL PALACE.—*Exhibition of Bees and their Produce.*

29 & 30.—ALEXANDRA PALACE, MUSWELL HILL.—*International Potato Show.*

TRADE CATALOGUES.

M. C. ALKEMADE AND SON, ZEESTRAAT, NOORDWIJK, BINNEN, NEAR HAARLEM, HOLLAND.—*Catalogue of Flower Roots, Bulbs, etc.*

JAMES COCKER AND SONS, ABERDEEN.—*General Spring Catalogue of Bedding and other Soft-wooded Plants.*

E. G. HENDERSON AND SON, WELLINGTON ROAD, ST. JOHN'S WOOD, LONDON.—*Illustrated Spring Catalogue of Stove, Conservatory, and Bedding Plants.*

LOUIS VAN HOUTTE, ROYAL NURSERIES, GHENT, BELGIUM.—*Illustrated Catalogue of Stove and Greenhouse Plants, Cactuses, Pelargoniums, New Roses, etc.*

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ARISAEUM VANDERKAMERII.

VARIEGATED LEAVED ORCHIDS.

BY WILLIAM GEDNEY,

Head Gardener to J. C. Day, Esq., Tottenham, N.

(With Coloured Illustration of Anætochilus xanthophyllus.)

ORCHIDEOUS plants remarkable for the beauty of their leafage are not numerous, as compared with those grown for the sake of their richly-coloured and extremely beautiful flowers, yet these are more than sufficient to form a very interesting and pleasing feature in a well-appointed orchid house. There are now about thirty species and varieties of *Anætochilus*, which is by far the most important genus, comprising kinds with ornamental leafage, and these for the most part are so exquisitely beautiful that it would be difficult to overpraise them. It would, indeed, be more difficult to find words to convey an adequate idea of the exquisite beauty of the golden and silvery tracery with which the velvety surface of the leaves is overlaid, and as Mr. Hibberd so truly says in a most valuable paper on the *Anætochilus*, contributed to the *Intellectual Observer*, vol. viii., page 461—"No picture, no description, no fervid expressions of surprise, delight, or even of admiration, can convey an adequate idea of the extraordinary beauty of these plants. . . . Usually, the leaf appears as if formed of the richest purple-green, or olive-coloured velvet, or glossy satin or silk. Over this groundwork is spread an elaborate reticulation of gold or silver threads, the veining of the leaf being marked out as distinctly as if wrought in real metal, of the most cunning workmanship, and the gold has the lustre of gold, and the velvet, the softness, the iridescence, and delicacy of velvet; and the whole thing is so wonderful that, though we may have been familiar with the plants for years, we have never yet become thoroughly convinced of their reality." Mr. Hibberd, in thus speaking of them, has done no more than the barest act of justice, and as a goodly collection may, with proper care and attention, be most successfully cultivated in a comparatively small space, every amateur cultivator of orchids should have at least half-a-dozen species in his collection. To say that they are easily grown, as some writers have asserted, would be misleading, for to achieve success great care is necessary, but there is no difficulty so great that it cannot be surmounted by an amateur experienced in the cultivation of orchidaceous plants. Failures in the cultivation of these plants are by no means unknown, for although they thrive amazingly under a proper system of culture, they quickly succumb to bad management, and I shall probably be doing the greatest service to the reader by pointing out the chief causes of failure. These, so far as my experience has been with them, are an excess of heat and moisture, and a close stifling atmosphere. I would beg of my readers to understand that although they are natives of Ceylon,

Borneo, and Java, it is possible to expose them to too great a heat, and to supply them too liberally with moisture. Some failures have occurred through keeping them too dry and in too low a temperature, but few that have come under my notice can be attributed to this cause, nor are they likely to be numerous, for immediately the heat or the moisture is insufficient, they cease to make much progress, and they at once receive attention, and in the majority of instances are placed under conditions more favourable to a vigorous growth. But it is not so when the heat and moisture are in excess of their requirements, for the effects at first are misleading. They make rapid progress, and although the leaves are not so well developed as regards colour and size, the inexperienced cultivator indulges in the belief that the progress they are making is most satisfactory. By-and-by, the plants begin to show signs of decay, and in a very short time they die one by one, until, in many cases, the whole collection has perished. Sometimes failures occur through their being kept in the same pots until the mixture in which they are growing has become sour, and altogether unfitted to the healthy development of the roots.

The *Anætochili* are mostly of dwarf growth, ranging from two to six inches in height, and may be described as perennial herbs. They have a thick fleshy stem, from the base of which the roots directly proceed, without any intermediate bulb, as in the case of the majority of orchids, and they are therefore more susceptible to injury from an excess or an insufficiency of moisture than the *oncids* or the *dendrobies*. The pots must be perfectly clean, and rather small in proportion to the size of the plants. For a small example, consisting of a single stem, a thumb pot or a small sixty, according as the species is a spare or a robust growth, will be quite large enough. For specimens, the pots must be proportionate, and when of a large size, such as those I produced when in charge of the late Mr. Ellis's collection at Hoddesdon, deep pans may be employed with advantage, as they afford sufficient room for the development of the plant without presenting such an ungainly appearance as the ordinary pots of an equal diameter. As showing the size to which these comparatively humble plants may be grown, I would mention the fact that some of our specimens completely filled the large pans known as "No 2's." The pots must be filled to rather more than one-third of their depth with crocks of a medium size. When the plants have been turned out of the pots, remove from about the roots all the old material, or as much of it as can be taken away without injuring them. They should then be carefully repotted, and the base of the plant kept rather high, so that the material at the centre of the pot is slightly higher than the rim.

A mixture of sphagnum moss, crocks, and sand, is usually recommended, but I greatly prefer one consisting of partly decayed leaves, crocks, and sand, as in this the foliage attains a larger size, and the colouring is much richer. The leaves must be only partly decayed, not rotted to a powder, and the crocks, which must be broken quite small, and the sand must be added in liberal proportions. They should, in fact, be equal in quantity to the leaves.

When the potting is completed, a layer of sphagnum must be placed over the surface, to give a neat finish to the work, and to bring out the leaf colouring to the best advantage. The leaves decay more rapidly than the sphagnum, and the plants will require to be potted more frequently than those growing in the latter.

It is important to guard against bruising the roots, and also to carefully spread them out, so as to have them nicely distributed, with the material packed somewhat firmly between them. After the repotting is completed, water them liberally, and as soon as the superfluous moisture has partly dried up, which will be in an hour or so, place them in the case, or put bell-glasses over them and keep rather close for a few days. I would add that whenever there is any difficulty in obtaining leaves partly decayed, for potting purposes, sphagnum moss should be used instead. Just as they are commencing to make new growth in the spring is the best time for the annual repotting.

Cultivators differ somewhat in opinion as to whether it is best to place the *Anætochili* under bell-glasses or in a case, and as a rule they are grown under the former. For my own part I greatly prefer a case; for the plants enjoy the advantage of having a greater body of air about them, appear to greater advantage, and as the air can be admitted at the top, the plants are in no way exposed to draughts, and the moisture contained in the atmosphere of the case can escape into the house, instead of condensing on the glass, and trickling down to the roots, to their injury. The case should be twelve or fifteen inches in depth, and have glass sides and top, with a very light frame-work; the length and width must of course be determined by the space required. The case should be placed in a light position in the house, and at all times excepting when the stock has been newly repotted, the top, which must be moveable, should be tilted on one or both of the sides, from three to five inches. The plants must be freely exposed to the light and a little sunshine will do them no harm. Throughout the winter season no shading material must be placed over the case or bell-glasses, and in the summer no more than is sufficient to prevent scorching of the foliage. If the sun is not very brilliant it may shine on the case for several hours without doing any injury, provided the air is admitted as above advised. The common practice is to cover the case with paper or canvas, as soon as the first glimpse of sunshine reaches it, and when the sun shines fully upon the house to roll down the blinds and still leave the paper covering on; but it is most hurtful to them, to be deprived of light in this manner, and it may be safely said that they do not require shading before the other inmates of the house, and that the roof blinds are sufficient for their protection.

With reference to watering them, it must be said that they require liberal supplies at their roots during the growing season, and none over the leaves. It will not matter if a little water falls upon the foliage, provided the top of the case is removed for a short time, but they must not be systematically watered overhead, for it cannot be done without their receiving more or less injury. In the winter very moderate supplies will suffice at the roots, and care should be taken not to wet the leaves.

The *Anætochili* usually bloom in the autumn, and from that time until the spring have a thorough rest, provided the temperature is not so high as to excite them prematurely. The flower-spikes must be removed, for they weaken the plants, and do not add to their beauty, and throughout the resting period the temperature should range from 55 to 60 degrees. When they commence to make new growth in the spring, the temperature should be raised five degrees, and in a short period afterwards another five degrees. Bottom-heat is altogether unnecessary, and the bottom of the case should be covered with shingle of some kind upon which to stand the pots.

There are some thirty species in cultivation, but they differ considerably in merit; a few are most difficult of cultivation; and a complete collection is not desirable. A selection of them will suffice for ordinary purposes; and the ten finest are—

Anætochilus argenteus, a free-growing species; the leaves large, light green, with bright silvery lines.

A. Domini, a handsome hybrid; the leaves are dark olive-green, with a pale coppery tinge down the centre; the main ribs marked out by pale lines, and connected by means of pale reticulations.

A. intermedius is one of the most beautiful and easily grown; the leaves are dark olive, beautifully striped with gold.

A. Lowi is one of the finest of the genus; the leaves are very large, being four to five inches long and three broad; ground purplish bronze, varied and reticulated with bright gold.

A. maculatus, a free-growing species; dark green leaves, beautifully frosted with silver.

A. petola, a pretty species, the velvety leaves banded with gold.

A. Roxburghi is rather difficult to grow; the leaves are of a dark velvety green, beautifully veined with silver.

A. setaceus is a beautiful species, of free growth; the ground colour bright chocolate overlaid with a rich reticulation of the most refulgent gold.

A. Veitchi, a robust species, with rather large leaves of a light green, with a rich reticulation.

A. xanthophyllus, a superb species of free growth; the ground colour rich purplish brown, with yellowish band down the centre, and overlaid with reticulations of the brightest gold.

A NEW FORM OF FRUIT-ROOM.

BY J. JAMES,

Head Gardener, Redlees, Isleworth.



HE crops of apples and pears are, this year, so abundant in all parts of the country, that some difficulty will be experienced by many owners of gardens in providing room for their storage, and a few words explanatory of an improved fruit-room will probably be read with some amount of interest.

I shall not, in this communication, enter into the whole question of storing the crops of fruit intended for consumption during the winter, for I am afraid it would take up more space than can be well spared; but I would observe, in passing, that few middle-class gardens have a fruit-room properly constructed, and sufficiently spacious for the storage of the fruits above mentioned, when, as is the case this year, the crops are heavy. In some large gardens, too, the accommodation is lamentably deficient, and I am afraid that, as a rule, those most directly interested steadily set their faces against any outlay being incurred in providing proper accommodation for the fruit after it is gathered from the trees. It ought to require no very strong arguments to convince any one that, if the fruit is worth growing, it is also worth storing, and that the expense of a nicely-fitted fruit-room is quite as legitimate as other expenses incidental to the management of the trees. A costly structure is not at all requisite. In fact, it is simply necessary that the interior should be perfectly dry, not specially liable to be affected by the fluctuations of temperature outside, and that it is fitted up with shelves upon which to place the fruit. It matters not whether the room forms part of the dwelling-house, or whether it is independent of other buildings. I shall, therefore, say nothing about the selection of a site; and I think it may be said with safety, that some writers dwell so much upon this point, that they frighten amateurs into the belief that they have no position in their garden suitable for the erection of a fruit-room. In very many instances a room indoors may be turned to good account for storing fruit; and I will at once proceed to explain how it may be fitted up to hold immense quantities in proportion to its size, and in a manner altogether new.

The usual plan of fitting up fruit-rooms, now general, with fixed shelves, is in many respects faulty; and if I was not able to describe something very much better, I should not have considered myself justified in saying anything about the matter. When the shelves are fixed, the fruit must of necessity be handled several times before it is placed where it is intended to remain until attaining maturity, they do not hold more than one-half the quantity they should do, according to the space occupied; and, moreover, the fruit is difficult of examination during the winter. After some little consideration, I have succeeded in devising a plan of fitting up the fruit-room which, during the last three or four years, has been found eminently satisfactory. Instead of fixed shelves two feet or so apart, we have moveable ones, that are placed so close, one above the other, that an immense quantity of fruit, although only placed in single layers, can be stored in a medium-sized room. Any ordinary room may be fitted up in the manner I am about to describe; and, in confirmation of this assertion, I will mention the fact, that the room in which the fruit crops at Redlees are stored was erected for a purpose totally different to that to which it is now put.

To make the description as clear as possible, I will first of all say, that the shelves are in reality shallow trays, which can be taken out of the rests, and removed about anywhere. These trays are

two and three-quarter inches in depth, thirty-three inches in length, and twenty-six inches in width; the bottom is made of strips of wood half an inch in thickness, three inches in width, and placed so as to leave a space of three-quarters of an inch between each strip. The four sides are formed with deals three-quarters of an inch in thickness. The strips are nailed lengthwise, and the edge of the two nearest the sides are flush with the outer edge of the sides, so that the trays can be drawn backwards and forwards without difficulty. The uprights are joined together in pairs, and of a sufficient length to reach from the floor to the ceiling. These are two inches square, and are joined together by means of strips of wood, to which the rests for the trays are fixed, and there is, consequently, precisely the same number of cross-pieces as of trays. The distance from the outer edge of one upright to the outer edge of the other is precisely the same as the length of the trays, namely, thirty-three inches. One of each pair of the uprights is placed next the wall, and the other stands out from it at right angles. The distance between each pair of uprights is half an inch greater than the width of the trays, namely, twenty-six and a half inches, so as to allow them to slide backwards and forwards easily. The rests, which are made with wood an inch square, extend from the wall to the outer edge of the front upright, and are placed nine inches apart, so that a space of six and a quarter inches is allowed from the top of one shelf to the bottom of the other. The trays, when in their place, may be likened to a chest of drawers, the uprights forming the sides, and the trays the drawers. The number of trays that may be placed one above the other depends entirely upon the height of the ceiling from the floor; for, as the fruit is in single layers, and a circulation of air maintained between each layer, there may be fifty tiers if the head-room is sufficient; but in practice about a dozen tiers will be the most convenient. The room fitted up here on this principle is twelve feet square and nine feet high; and although it has shelves on two sides only, it affords accommodation for no less than fifty bushels of apples and pears placed in single layers.

The trays possess additional value from the fact that they can be taken on a hand-barrow to the trees, and the fruit placed in them, and they can then be returned to the room, and put in their proper place. After this, the fruit need not be handled until it is sent to table, for the trays can be drawn out whenever it is considered necessary, and any fruit that shows signs of decay can be removed without touching the other. They are also especially useful in gathering such soft fruits as are improved by being gathered and placed in a dry room a day or so before sending to table.

I have given the details as fully as it is possible to give them, and any handy carpenter ought to be able to fit up a room from the description given. If any reader should fail in understanding the principle, I must beg that they will address the Editor for further information, as my duties will not admit of my answering inquiries through the post.

CHEAP SPRING-FLOWERING PLANTS FOR CONSERVATORIES.

BY GEORGE SMITH.



A DISPLAY of spring flowers is usually much appreciated by all classes, and I shall probably be doing good service by pointing out a few subjects especially adapted for associating with the hyacinths, tulips, and other bulbous plants grown for the embellishment of the conservatory during February and the two following months. I shall not enumerate a large number, for the amateur will be more interested in a short selection of good things than in a lengthy list comprising many that are second-rate or that require much skill to insure successful results. The selection given will consist chiefly of such things as may be purchased by the amateur ready prepared for forcing. The majority, however, may be grown on from year to year when a stock has once been obtained, and it will depend entirely upon the cultivator as to whether he has to purchase a stock in subsequent years.

Astilbe japonica, which is known also as *Spiræa japonica* and *Hoteia japonica*, is one of the most elegant plants for early flowering, and is immensely popular amongst those who have had an opportunity of becoming acquainted with its merits. In the neighbourhood of the metropolis it is grown in immense numbers, and it is steadily making its way into country districts, but not so freely as one would expect. It is imported in clumps, and if these are potted in six-inch pots as soon as received in the autumn, and placed in the forcing-pit early in February, they will be in grand condition towards the latter end of March, and continue fresh and good until the end of April, provided they are placed in a shady position when at their best. They can be started into growth with a bed of fermenting materials, such as stable manure or leaves, or they may be put in the cucumber-pit or an early vinery. If the stock consists of some three dozen plants, divide them into two or three portions, and start the first lot about the middle of January, and the others at intervals of a fortnight. The soil should be in a nice moist state when the crowns are placed in heat, and after they commence to make new growth supply them liberally with water. It is an excellent plan to stand the pots, when in the conservatory, in pans of water, as they then retain their freshness and the fine deep colour of the foliage much longer.

When past their best, place in a cold frame for a fortnight, and then plant them in a well-prepared border. During the summer they will increase amazingly in strength, and make grand specimens the following season.

Convallarias comprise the *Lily of the Valley*, and the *Solomon's Seal*, both of which are most valuable for winter flowering. The former can be purchased in clumps similar to those of the *Astilbe*, and single crowns may also be had; but for the amateur the former

are the best. They should be potted in much the same manner as the last-mentioned, and as they do not make new roots until after they go out of bloom, any rather light soil will do for them. The soil must be pressed rather firmly, or the moisture will drain away quickly, and leave the middle of the clump quite dry. After they have done flowering they can be planted out, but they must remain two years to acquire sufficient strength to bloom satisfactorily. They may be had in bloom in seven or eight weeks from the time of being placed in the forcing-pit. The Solomon's Seal is most useful for table decorations, as medium-sized clumps put into five-inch pots are very graceful in appearance when in bloom. The slender arching sprays, furnished with the drooping flowers, are very elegant inserted in the trumpet-shaped glasses now so much in vogue on the dinner-table. After they have done flowering, a bed can be formed with them to afford a supply in subsequent seasons, care being taken to renew it by lifting and dividing a few of the roots not required for forcing, or by planting out in the spring those lifted and potted the previous autumn.

Deutzia gracilis is one of the most easily forced, and one of the most beautiful of white-flowered plants of small growth. Nice bushes, about fifteen inches in height, should be procured, and put in six-inch pots. Place them under cover until the end of January, and then start them in a genial temperature. Use the syringe freely to assist the buds to break, and the result will be most satisfactory. To maintain an annual supply of plants for forcing, there should be two sets, each set to be forced every alternate year. The best practice is to plant them out as they come from the conservatory, prune them moderately in the autumn, and then let them remain until the following year. The partly ripened shoots strike freely, and a few cuttings should be put in annually to maintain the supply of small thrifty plants.

Dielytra spectabilis, when properly managed, is one of the most effective of pot plants, but it is so generally forced in too high a temperature, and placed so far from the glass, that the growth is, as a rule, drawn, the foliage spare, and the general appearance altogether unsatisfactory. Clumps of various sizes may be obtained, but those of medium size are the most generally useful. They require potting in much the same manner as the other herbaceous plants mentioned, but the temperature of the structure in which they are placed should average sixty-five degrees, and they must be near the glass and have sufficient space for the natural development of the gracefully arching sprays of flowers.

Funkias are not so generally useful as many other of the subjects mentioned; but several of the variegated forms, if potted up in rather large masses and placed in a temperature similar to that advised for the dielytras, are particularly handsome, and the ample leafage presents a most pleasing appearance in contrast with the flowers of the other subjects in the conservatory. Even the green-leaved forms are attractive.

Lachenalias are amongst the most attractive of spring-flowering plants; but as they have been frequently alluded to in these pages, I

shall do no more than mention them. About five bulbs should be put in six-inch pots, and a compost consisting of turfy loam three parts, and well-decayed manure one part employed. As they bloom rather early without the assistance of artificial heat, they should be placed in a warm pit or in the greenhouse. When growing freely, they must have liberal supplies of water, and, when the growth is completed, be dried off. To preserve their vigour they require the renewal of the soil annually, and early in the autumn they should be shaken out of the old soil and be repotted in a newly-prepared compost. The most valuable kinds are *L. pendula*, *L. quadricolor*, and *L. tricolor*. They may all be grown most successfully by those who have only a small frame, and be taken to the drawing-room when in bloom.

Primula japonica and the beautiful varieties of *P. cortusoides* are of the utmost value for conservatory decoration when grown in pots. Specimens well-established in pots are the best for early flowering; but strong plants, lifted from the open ground, at once potted and put in cold frames, will bloom freely, and make a grand display in the early part of the season. Plants with several crowns each are preferable, as they produce a much richer effect. The best varieties of *P. cortusoides* obtainable at a cheap rate are *Amæna*, *Lilacina*, and *Alba*.

Spiræa palmata is most effective when grown in pots, and can be most successfully forced if the crowns are rather strong and the temperature not in excess of sixty-five degrees. It should be managed in much the same manner as advised for the Astilbe.

Shrubs.—A few of these are extremely beautiful when of medium size and well-flowered. Bushy plants, lifted towards the end of the month, and carefully potted at once, will bloom early in the season with the assistance of a genial temperature. The best of the shrubs are *Andromeda floribunda*, a neat growing evergreen, bearing small flowers not unlike the Lily of the Valley; *Ghent Azaleas*, in variety; *Persian* and *Siberian Lilacs*, *Double-flowered Peach*, *Prunus triloba*, and *P. sinensis*, *fl. pl.*, *Rhododendrons*, in variety, and *Double Thorns*. These may all be procured at some of the principal nurseries specially prepared for forcing. In the forcing of shrubs of all kinds, the frequent syringing overhead with tepid water is most beneficial in assisting them to break freely.

THE COLOGNE INTERNATIONAL EXHIBITION, although very extensive, has been a quite second-rate affair. Flowering plants were very poorly represented, and although ornamental-leaved plants were abundant, the exhibition lacked attractiveness, for the plants were scattered throughout a series of structures erected in the grounds of the Flora Society, and it was impossible to arrange the various subjects effectively. The exhibition was opened by the Crown Prince of Germany with great *éclat*, and the enjoyment of the hospitalities offered by the Municipality and other public bodies appears to have been quite sufficient to occupy the time of the various officials and jurors for several days, as no prizes were awarded until the exhibition had been open about a week. Messrs. James Veitch and Son, who exhibited a large and interesting collection of plants, were awarded the Empress' Prize, of a splendid porcelain service, richly painted with views of the Rhine, for their contributions to the exhibition.

October.

BEDDING ARRANGEMENTS AT THE CRYSTAL PALACE.

BY GEORGE GORDON.



RESIDENTS in London and its suburbs are wonderfully well off in the matter of public flower gardens, for within the limits of the metropolis there are four or five parks, all easily accessible, in which flower gardening during the summer season is carried out on a most elaborate scale, and in addition there are the grounds of the Crystal Palace at Sydenham, which have long been famous for their splendid bedding displays. These grounds are indeed held in such high repute, that throughout the months of July and August, and a portion of September, some hundreds of gardeners, besides hosts of the owners of gardens, from all parts of the country, make a point of visiting them for the purpose of inspecting the bedding arrangements, and obtaining new ideas for working out in their own arrangements the following year.

It is a quite common occurrence, during the months above mentioned, to see some half-dozen gardeners walking round, note-book in hand, making rough sketches of the planting of the most attractive beds, and jotting down the names of such plants as have a striking appearance. There can be no doubt that the Crystal Palace possesses more value as an educational establishment than it has credit for, and it may be safely assumed that the examples of colour planting which are year by year provided for the delectation of the visitors, exercise a most healthy influence throughout the country. Much, of course, is done that would be altogether out of place in a small private garden, but no one having the charge of a flower garden can visit these grounds during the summer without obtaining some few hints that will prove useful to them afterwards.

The present season has not been very favourable to bedding plants, for when they were first put out, they were nearly burnt up by the intense heat which for a short period prevailed, and since they have been nicely established, dull, showery weather has been the rule, and the warm sunny days, so essential to the plentiful production of flowers, the exception. The bedding arrangements at Sydenham have suffered less from the adverse character of the weather than at many other places, and, in fact, less than might have been expected, for throughout the season there has been a display of bloom more or less brilliant, and the bedders have appeared to a great advantage. Carpet bedding, which is now extremely popular, has within the last three or four years been developed to a considerable extent, and a large number of beds that were formerly devoted to geraniums and other plants grown for their flowers, are now filled with Alternantheras, Golden Feather, and other plants with coloured foliage. This season a feature altogether new to these grounds has been introduced, for in a sheltered nook, on the walk leading from the terrace to the Rose Mount, several beds have been cut, and these are filled with the choicer kinds of plants, noble in aspect and

having large foliage, which have become generally known under the designation of "Subtropical plants."

The "carpet" beds, that is, the beds filled with plants of low growth, having coloured leafage, are on the upper terrace, by the side of the walks which branch off right and left on descending the steps in front of the transept, and on the Rose Mount. The beds on the terrace and those on the mount form two distinct features, and the former afford most valuable lessons for colouring beds, square or oblong in form, and the others afford lessons equally valuable for planting circular beds. As the designs are necessarily complicated, it is impossible to describe the planting with a sufficient degree of clearness to admit of their being carried out from the descriptions. This could only be done with the aid of diagrams. Six of the oblongs on the terrace have been divided into three parts, mostly with blue Lobelias, and in the centre compartment of each bed a butterfly has been designed. The butterflies have been chiefly formed with *Alternantheras*, and rest on a light ground-work; the greyish *Sedum glaucum*, and the silvery-leaved *Cerastium tomentosum*, being the plants chiefly employed for the latter purpose. In the end compartments are smaller designs of a distinct character. The idea of the butterflies is remarkably good, but they fail in making a very strong impression, because of the beds being rather too small for the conception to be carried out on a sufficiently extensive scale. Moreover, an attempt has been made to show the spots and markings on the wings of the high-coloured butterflies, and owing to the latter being of a very small size, comparatively speaking, the effect is not so good as it otherwise would have been. Indeed, uninitiated visitors wonder what the little clusters of Lobelias and the clumps of Golden Feather have to do with the butterflies, so unlike are they to the spots which add so much to the beauty of these ephemeral creatures. To imitate with any degree of success a butterfly, the bed should be not less than eight feet square, for outside of the carpet or groundwork upon which the representation rests, it is needful to have a marginal line and a narrow band of a different colour, to form, as it were, a framework, and give the bed a finished appearance. Even in large beds there will be much difficulty in imitating the spots on the wings, because of the plants that are of the proper colours, mostly growing too high for the *alternantheras*. It would appear less difficult to imitate the lines of colour on the wings with the different varieties of the last-mentioned plants, which although similar in character, vary somewhat in colour. The beds on the mount are remarkably tasteful, and afford some of the best examples of this style of bedding yet presented to public notice, and as they are all different in detail, they display, in a remarkable manner, the versatility of the superintendent, Mr. G. Thomson.

The sloping border round the rosery is coloured in a very rich manner, and seen from the terrace as well as from the walk at the foot of the mount and the one at the summit, it is very effective. It may be very briefly described. At the back of the border is a band of Shottisham Pet geranium, a variegated variety, grown extensively

at the Crystal Palace; from this depend festoons of the same geranium, about six feet in width. The spaces are filled in with Waltham Seedling geranium, a fine crimson flowered Nosegay, and Christine geranium alternately. Outside the first festoons are bands of Iresine Lindeni, and next to this bands of Golden Feather, forming three distinct series of festoons. In the angles of the festoons formed by the Golden Feather are diamond-shaped blocks of blue Lobelias, enclosed with a band of the yellow-leaved plant last mentioned. Outside of this is an irregular band of *Alternanthera magnifica*, and in its widest part are narrow strips of *Leucophyton Browni*, a white-leaved plant of a distinct character, effective, but peculiar in its requirements, and for amateurs will not be found so useful as some other things. Next to the grass is a single line of *Echeveria secunda glauca*, which forms a fitting finish to the border, and in its tone of colour balances the variegated geraniums at the back.

The promenade beds on the terrace are coloured more effectively than last year; the colouring is rich without being overpowering, and uniform without being monotonous. The beds throughout the length of the walk have a marginal line of Robert Fish geranium, a golden-leaved variety, neat and effective in colour. Right and left of the walk the beds are planted as follows:—The first has a central block of *Gem calceolaria*, the best yellow bedding variety in cultivation, enclosed with a band of Purple King verbena; the second bed a block of scarlet geraniums, enclosed with a band of Countess of Warwick geranium, and the third pink geranium, enclosed with a band of *Coleus Verschaffelti*. This order of planting is repeated in both series of beds. The scarlet geraniums employed are Murillo, Prince Arthur, and Duchess of Sutherland; and the pink varieties Amaranth, Cleopatra, Pink May Queen, Maid of Kent, and Christine; the three first mentioned being the best.

In the chain beds in the sunken panels on the terrace an exceedingly good effect has been produced by planting variegated geraniums and *Viola Perfection* in alternate lines, as the blue flowers of the latter contrast so well with the white foliage of the former. The two large beds at the foot of the steps at the south end of the terrace have bands of the above-mentioned viola, which throughout the summer has been solid with bloom, and consequently very effective. The soil at the Crystal Palace appears to suit violas, and the season has also been favourable to them.

THE CRYSTAL PALACE FRUIT SHOW, SEPT. 7 TO 9, was fairly successful. The entries in the majority of the classes were exceedingly numerous, and the productions mostly of excellent quality. The chief feature of the exhibition was the display of hardy fruits, comprising Apples, Pears, Peaches, Plums, and Nectarines. The Grapes and Pine-apples were in no way remarkable in point of quality, and the entries were not numerous as compared with those in the other classes. There were, however, a few good examples of skilful cultivation in the classes for these fruits. *Gladioli* were the only flowers for which prizes were offered, and they were remarkably fresh and good.

THE HYDRA.

A GARDEN STUDY FOR THE MICROSCOPE.

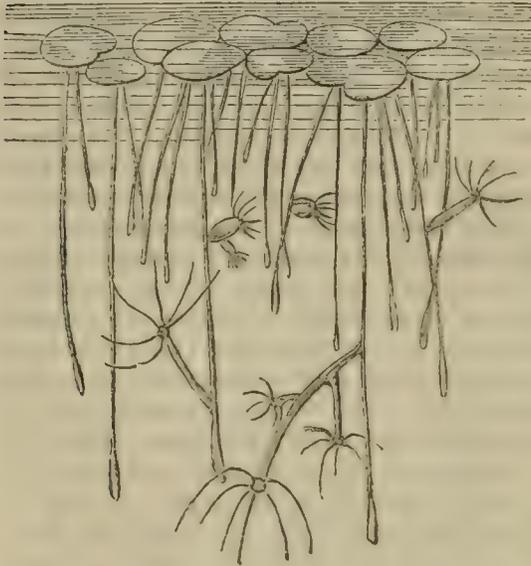
BY W. B. PRITCHARD.



WHEN Alphonse Karr wrote his charming "Tour Round my Garden," he appears to have had no experience with the microscope. I find no fault with him on that account, for his work is full enough of wonders real and imaginary. But what a world of marvellous life, without beginning and without end, is a garden to one who seeks occasional recreation with the microscope. We see an advertisement in the papers headed, "No Home Complete without a Stereoscope." I would say, in capital letters, "NO HOME COMPLETE WITHOUT A MICROSCOPE," and those who love the garden should have most frequent occasion for resort to this revealer of the secrets of Nature. It is many years since I read a paper by Mr. Hibberd on the "Microscopic Structure of the *Valisneria spiralis*," and that made a microscopist of me, and since that day all my spare time has been given to the instrument; and it seems to me that there can be no higher pleasure. It is in part a discharge of my indebtedness to Mr. Hibberd that I now offer him for his readers, if worthy, a few notes on the Hydra, which everybody has heard of, and very few have seen. But if you take a little duckweed from the nearest pond, you will be sure to obtain hydras in plenty, and then you may begin with a low power to investigate their structure, and never more, so long as you live, should time find for you a weary hour.

The classic history of the Hydra is full of awfulness. The real Hydra is full of beauty. I must avoid the poetical view of the case, being insufficiently posted in Greek myths, but every person of culture knows enough of the fiction, and only one here and there knows anything of the fact. Take out of the water a tuft of duckweed, and put it in a glass of quite clear water, and allow it to remain undisturbed in full daylight for a few hours. Then explore the plants and the side of the vessel with the aid of a good hand-lens, and you will no doubt see a number of green star-like creatures—a sort of compromise between a spider and sea anemone—suspended beneath the weed or attached to the glass itself. As they stretch out in some instances until they are the sixth of an inch long, and are as stout as sewing silk, the eye needs no special training to discover them. If you have studied the history of zoophytes, and especially the actinia section, you will at a glance discern the relationships of the pretty creatures before you. In a paper by Dr. Deakin on the subject, he says:—Upon examination it will be seen that its body is formed like a little bag, open at one end; this is its mouth, and is surrounded with seven very delicate thread-like arms (*tentacula*), and that the other extremity is furnished with a minute disk-like sucker, by which it is enabled to attach itself to the roots of the plants, etc. Examine it carefully, and I

think you will say that it looks like a gelatinous thread, in which are a few greenish granular particles; disturb it, and it shrinks into a minute jelly-like spot, but expands again when left undisturbed, so that it has the power of contraction and extension. Observe it still further, and you will see that it has the power of locomotion; attached by its sucker, it extends its body to its full length, and with its arms takes firm hold with the other; it then relaxes its sucker and advances it towards its head, and again fixes itself; and thus, by a repetition of these movements, it makes progress. It is slow, certainly, but consider the size of the animal, and, further, what is its mode of sustenance. It has been observed, however, that it has another and very remarkable mode of diverting itself; that is, by rowing about in a very ingenious and wonderful manner. To accomplish this, the little creature first moves itself to



Hydra viridis on roots of *Lemna minor*, slightly magnified.

the surface of the water in the manner above described; it there protrudes its little sucker above the surface, and dilates it into a hollow cone-like cavity, thus forming a miniature boat, and by this curious contrivance it is enabled to float its body, and with the aid of its arms, which it uses as oars, it is enabled to row itself about in any direction it pleases; but, if it become alarmed and is desirous of getting out of danger, it contracts up its little boat, and, from its body being specifically heavier than water, it sinks to the bottom. Observe, also, the effect which light has upon it. On the side of the vessel turned from the light you will not find them; but turn it round, and they are congregated on that side. Leave it for a few hours, and then they will have changed their position to the other side again, showing that they are attracted by the solar rays; but how they act upon the little animal we know not, as hitherto no organs of vision, or even a nervous system, has been detected.

Let us now inquire further into its mode of living, and we shall be astonished at so minute a gelatinous-looking creature being endued with such powers as it has. It is carnivorous, and most voracious in its habits, and is gifted with such terrible powers of destruction, as to capture and devour the lava of insects, etc., larger, stronger, and more active than itself. It does not, however, wander about for its prey, but lays wait for it. Having firmly

fixed itself by its sucker, it elongates its body, and spreads out its arms in different directions, and when any wandering animal impinges upon its arms, it is immediately arrested, and becomes motionless as if benumbed. And this, be it observed, is the more remarkable, as it was not struck, but only touched, by the arms of the Hydra as it was moving along in its own course. What power the arms of the Hydra possess it is difficult to conjecture; its effects are like the sudden shock of electricity, for the animal, under the influence of its potent shock, seems motionless and sinks to die, or only after the lapse of some time recovers itself. When the prey is thus become motionless, the Hydra slowly contracts its arms around it, and gradually brings it to its mouth, and then engulphs it in its capacious stomach.

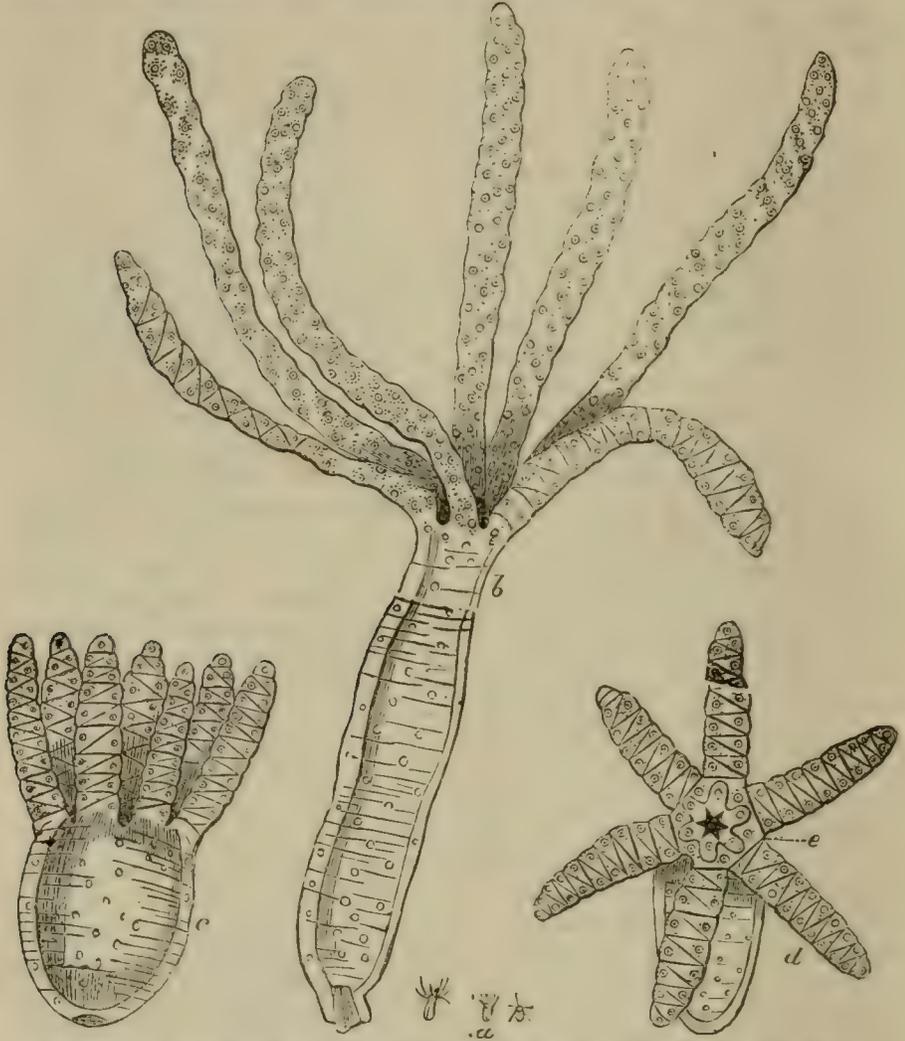
We may now observe what takes place upon the prey that is swallowed into the distended stomach, for the body of the Hydra is so thin and pellucid that, with the aid of magnifying glasses, we are enabled to see the process; nor have we to wait long, for soon the swallowed animal loses its form, and becomes a confused mass; all its digestible parts are then soon dissolved, and that which is hard and indigestible, such as its shell, etc., is at length expelled from the stomach through the opening by which it was admitted. It occurred to Trembley (whose observations upon the Hydra are the earliest and best upon record), that from the transparency of the body of the Hydra he might ascertain the manner in which the digested particles became appropriated to the sustenance of the animal. To accomplish this, he fed the Hydra with the red larva of some insect, and the result was, that it is through the medium of the green granules floating in the semi-fluid transparent substance of the Hydra that the diffusion of the coloured particles was accomplished, and that the granules themselves became of the same colour as the food, but that the gelatinous matter remained colourless.

Trembley also remarked that the digestive power of the Hydra had no influence on the tissues of its own body; for he observed that some of the species occasionally swallowed their own arms together with their food, and these remained during the process of the digestion of the animal which it had swallowed, without being injured. On one occasion, the same author says that he observed the extraordinary occurrence of two Hydra having hold of the same prey, and that they contended for the possession of it, and that the conquest was terminated by one swallowing the object of dispute, and also its rival. But imagine what was the observer's astonishment when he afterwards saw the swallowed Hydra, together with the refuse of the digested meal, ejected, and that the Hydra, after its capture and imprisonment in such a perilous place, was apparently none the worse!

Wonderful as these facts are regarding the nutriment of the Hydra, they are not more so than the manner in which the species are multiplied, or its lost parts restored. Trembley cut a body transversely into two, and others into several portions, and he found that each part, in process of time, became furnished with arms at one extremity, and with a sucker at the other, and acquired all the

powers and characters of a perfect individual ; so that in this way it is like a plant propagated by cuttings.

I have, in various ways, put to the test the reproductive powers of the Hydra. I once managed to cut one into forty-two parts, and they soon became perfect Hydras. I divided one lengthwise into two parts, but left the two parts joined at the base, expecting to see



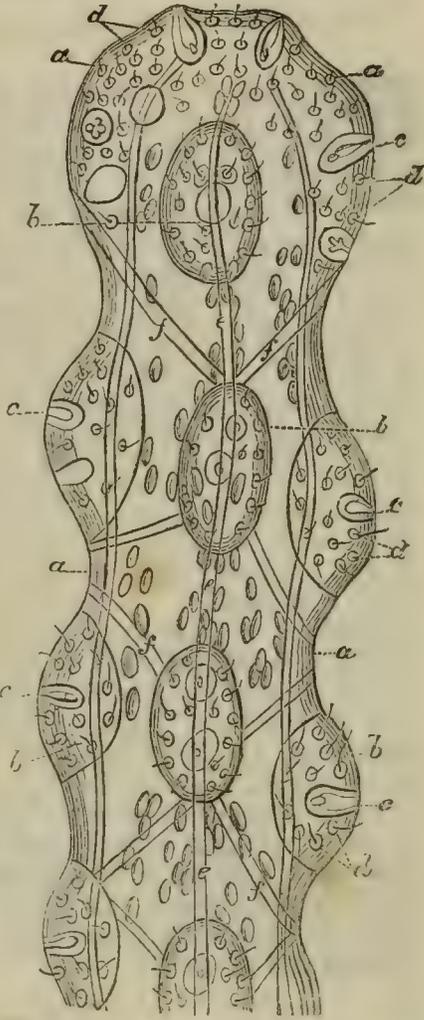
Hydra fusca—*a*, natural size ; *b*, magnified, extended ; *c*, the same contracted ; *d*, the same seen vertically to show its mouth, *e*. (After Corda.)

two perfect animals joined at the foot, but the divided parts united, and very soon there was one complete Hydra as before. I therefore divided another in the same manner, but divided it completely, and this became two independent animals ; but the posterior end did not acquire completeness. This did not surprise me, for I have always found the sea-anemones capable of reproducing lost parts ; but any injury to the sucking disk is usually fatal to them. The

fact brings us back to the classics, and, we may say, that Hydra is like Achilles in this respect, that he is invulnerable everywhere, except in the heel. I have succeeded in removing a single tentacle, which soon became a complete animal, and I have cut off the heads of two and made them change heads, which they did with gladness, or, at all events, without a token of discontent. To turn one inside out is an old trick difficult to perform. When it is accomplished, the creature appears none the worse, but feeds freely and digests its food as before. I have seen one thrust inside another and the two united and become one. I quite expected the outer one would digest the inner, but they appeared to understand each other, and instead of the swallowed animal becoming a mere victim, it became a partner in the business.

The usual manner, however, in which it multiplies its species appears to be by gemmation, that is, it has the power of sending forth, from different parts of its body, a little bud or gemma, which at first has the appearance of a shapeless excrescence, which in a short time becomes developed into a body similar to its parent, having arms, a mouth, and stomach. Until, however, it is fully formed and perfected in all its parts, it remains attached to its parent by a short pedicel, and enjoys, by this means, an entire communication of food, by that of one freely passing into the other. Sometimes this offsprout puts out

another bud, even while it is attached to its parent, so that three generations may be united together. Trembley even found that by snipping the side of an adult polyp with the points of a fine pair of scissors, that a bud was soon developed from the wounded part, and that by making this experiment repeatedly, both upon the parent and its progeny, he obtained as many as seventeen all connected with each other.



End of Arm (tentacle), highly magnified.—*a*, investing membrane; *b*, wart-like knobs; *c*, prehensile darts; *d*, organs of touch; *e*, longitudinal, and *f*, transverse, muscular bands. (After Corda.)

CLOVE CARNATIONS.

BY AN AMATEUR GROWER.



ONE of my favourite flowers is the old crimson clove, for the flowers are so delightfully fragrant, and so useful for cutting for vases. I think amateurs who require cut flowers in abundance should grow one or two dozen plants, and a few plants each of other good clove carnations, the names of which I shall mention.

Clove carnations, I would first of all say, grow and bloom freely in any ordinary good garden soil, provided it is free from wire-worm, which do such an immense amount of mischief to carnations of all kinds. A deep holding loam is the most suitable; on heavy undrained soils there is a risk of their perishing in the course of the winter, and on dry sandy soils they become half-starved and partly burnt up during the summer; but by the addition of grit in the one case and of a liberal dressing of fat manure in the other, soils of both classes may be suitably prepared for them. If grown in pots, a compost prepared by incorporating together turfy loam four parts, thoroughly decayed manure one part, and sand half a part, will be found in every way suitable. The present moment is most favourable for purchasing, and the plants may be put out at once, or they may be kept in pots through the winter, and be planted in March next.

I have now a rather large number of clove-carnations, and the best of these are *Ambassador*, crimson-purple, a superb flower of large size; *Christine*, rose-pink, a beautiful flower; *Geant des Batailles*, scarlet, a grand flower, very bright in colour and of large size; *Ghost*, pure white, fine; *King of Yellows*, bright yellow, a large flower of splendid quality, very distinct and good; *Maiden's Blush*, blush pink, very beautiful; *Prince Arthur*, large and very fine; and the *True Old Crimson*, the colour of which is well known. These are all distinct, and of such exceptionally good quality, that not one of them can be spared.

THE CHRISTMAS ROSE.

BY THOMAS TRUSSLER,

Nurseryman, Edmonton, N.



THE large white salver-shaped flowers of the Christmas Rose, *Helleborus niger*, are so useful for dressing epergnes and stands for the dinner-table during the winter season, that it well deserves more extended cultivation. Especially should it be grown in the garden of the amateur, where no convenience exists for the production of the flowers of *Eucharis amazonica*, and other first-class subjects. It is

not one of those grand subjects that render a large expenditure necessary before its flowers can be enjoyed, for a stock can be obtained for a trifling outlay, and, planted in any good garden soil, they will grow freely, and when well established, produce a goodly number of flowers.

The Christmas Rose is of course well known, but the usual practice of growing it in solitary clumps along the front of a mixed border, is not the best that could be adopted when a supply of cut flowers is required. It blooms naturally at midwinter, when the weather is mild and open; but their production is checked by severe frosts, and the rains and snows destroy their purity. The course I should suggest is that a rather large bed be formed in a sheltered position in the kitchen garden, and then they can be protected with a frame or one of the portable structures now before the public. The plant preservers manufactured by Messrs. Boulton and Paul, of Norwich, are the best for the purpose. The frame should be put over the bed towards the end of October, and the lights opened sufficiently to admit of a free circulation of air. In frosty weather they must be closed, and a covering applied to keep out the frost. Strong plants may also be lifted and planted in large pots, and then placed in a cold frame for the winter. They must be lifted at once, with as little disturbance to the roots as possible.

The month of October is in every way favourable to forming beds of the Christmas Rose, and all the preparation the ground need undergo is to apply a good dressing of manure, and then dig it up deeply. They should be planted about eighteen inches apart each way, unless the frame within which they are to be covered is narrow, and then it will be better to have the rows not less than a yard apart.

In sheltered situations away from towns, in the southern and western counties, protection will not be so essential as in the northern parts of the country. Protection is of the utmost value in the neighbourhood of towns, because of the liability of the flowers to be disfigured by the impurities with which the atmosphere is frequently charged at the time the flowers are produced.

CHOICE GRAPES FOR AMATEURS.

BY WILLIAM COLE,

The Grove Vineyard, Feltham.



In this communication I propose to offer a few remarks on grapes especially adapted to the requirements of amateurs, and to briefly explain why some of the most popular grapes at present in cultivation should not be planted by this class of cultivators. So many of the finest flavoured grapes require great skill and a special knowledge of their peculiarities to bring them to perfection, that it is of the utmost importance that amateurs should exercise great care in

October.

selecting varieties for planting, for the purpose of guarding against failures and the consequent disappointment. This caution is all the more necessary because it is a quite common occurrence to meet with communications in the horticultural journals, in which grapes most difficult of cultivation are spoken of in the highest terms of praise, because of their fine flavour or handsome appearance, without a word of qualification, or a single reference being made as to their requiring a special code of management to ensure successful results.

One of the most popular of grapes amongst skilled collectors, and the white grape most generally seen at the public exhibitions, is the *Muscat of Alexandria*, yet if the amateur plants it in an ordinary vinery in company with the Black Hamburgh and other sorts thriving in the same temperature, a failure must ensue, for the temperature will not be high enough. Besides, when sufficient warmth is provided, the vines require to be so skilfully managed in setting their berries, and also when the latter commence to ripen, that the crop is not often satisfactory. The *Muscat Hamburgh* is of the most delicious flavour, but it requires a very high temperature, and with the greatest care seldom colours well, and the appearance on the table is anything but satisfactory, for until eaten they cannot be distinguished from a bad sample of Black Hamburgh. The *Royal Ascot*, so highly recommended a few years since, for its prolific character, is practically worthless, for it does not bear heavier crops than the Black Hamburgh, the bunches are small and the flavour indifferent, the berries are also liable to crack. *Mrs. Pince's Black Muscat* and *Madresfield Court Muscat* are two fine grapes when well grown, but not more than one grower in twenty can produce good samples of the former; and the latter, although less difficult of cultivation, is not often seen in really first class condition. The *Golden Champion* is shy in bearing, and the berries are as a rule very much discoloured, and the flavour is quite secondary. The *Royal Muscadine* and *Sweetwater* are only suitable for out-door culture, for they are not good enough to have a place in a vinery. The latter is, however, useful for furnishing a very early supply of white grapes in pots. *Barborossa* is coarse and inferior in flavour. *Ferdinand de Lesseps* and the *Duchess of Buccleugh* are small berried grapes, only worth growing for their peculiar piquant flavour, and not deserving a place in the general vinery. The *Muscat Champion* is very ugly, and difficult to grow, and although the flavour is good, it is not worth cultivating, excepting it be by those who have a collection. The *Black* and *White Frontignans* are of good flavour, but they are small in bunch and berry, and speaking generally are not worth growing.

The best known of the grapes not worth growing, have been indicated, and their peculiarities pointed out, and I will now proceed to give the names of those best adapted to the requirements of amateurs. The *Black Hamburgh* is undoubtedly the finest of all the black grapes from early in the summer until November. It is handsome in appearance, of excellent flavour, and under ordinary good management, sure to produce good crops. *Lady Downes* is the best

black grape for the table, from November until the April following, as a crop well ripened by the end of September will with care remain in excellent condition until the end of March. These two varieties ought to be grown in separate houses, as the former should be pushed on to attain maturity by the end of July. The best white grape for amateurs is *Buckland Sweetwater*, which should be grown with the Hamburgs, and be sent to table at the same time as the latter. The *Muscat of Alexandria* is the only really first class late white grape, and, for the reasons already given, it should not be planted by the class of cultivators for whose guidance these notes have been penned.

GRAND LILIES FOR THE CONSERVATORY.

BY J. W. TEUSCHEL.



OR some years past I have been most successful in the cultivation of lilies in pots, and for the information of amateurs who are desirous of growing these beautiful flowers to perfection, I purpose offering a few remarks on those kinds best adapted for the embellishment of the conservatory. In doing so, I shall not follow the example of most writers on lilies, and enter into minute details, because I believe that these lengthy dissertations do more harm than good, and deter many amateurs from taking them in hand. I shall be as brief as possible, for the cultivation of lilies in pots is so simple that a brief outline of their requirements is all that is necessary to enable the amateur to produce specimens of first-class quality.

A most essential point is to limit the selection to not more than half-a-dozen kinds, and these to be the best kinds for the purpose. In my time, I have grown nearly all the kinds in commerce, and although they all possess some degree of interest, no more than the number here mentioned should be obtained until the cultivator has made considerable progress with them. The six I shall recommend are:—*Lilium longiflorum*, beautiful pure white; *L. auratum*, *L. speciosum album*, *L. speciosum rubrum*, *L. tigrinum Fortunei*, and *L. tigrinum japonicum*. These are all of vigorous growth, and form specimens of a most magnificent character, which, in their season, produce a striking effect. As the several kinds here mentioned differ in their season of flowering, a grand display of bloom is produced for a considerable period.

I would suggest that all these should be grown in the form of large specimens, as they are in no way more difficult to cultivate than small plants, and, when in bloom, they are far more effective. The current month is most favourable for making a beginning, as the bulbs may soon be obtained from the nurseries in excellent condition. When they come to hand, prepare in the usual way a given number of nine-inch pots, and in each of these put from three to six bulbs, or, to be more explicit, three bulbs of *Auratum*, four of the varieties of

Tigrinum, five of the varieties of Speciosum, and six of Longiflorum should be put in each pot. They should be distributed regularly over the pots, and be covered to a depth of about three inches with the prepared compost. The latter should consist simply of two parts mellow turfy loam, one part of well-rotted manure, and a liberal proportion of grit, such as drift or river-sand. When the potting is completed, place them in a cold frame, and protect from frost. When put under the stage of the greenhouse, they are frequently started into an early growth, and occasionally allowed to remain until the new growth has become very much drawn. The soil must be moderately moist ; throughout the winter and when the new growth makes its appearance above the surface, the water supply must be increased, and the frame freely ventilated, and only closed in case of severe frost, to which it is not desirable to expose them. In April they can be placed on a hard surface out of doors, and there allowed to remain until they come into bloom and are required in the conservatory.

Lilies require an annual shift only, and the bulbs must not be disturbed. No time can be fixed for repotting, for as every dog has its day, so also every lily has its season. The bulbs commence to make new roots soon after the stems die down, and as the repotting should be done before the production of the new roots, they should be transferred to larger pots immediately the decay of the stem of the respective kind is complete. There must be no waiting for a general repotting of all the kinds. On the contrary, each sort must be shifted when it has arrived at the proper stage. As a rule, the bulbs are disturbed too much at the annual repotting, the common practice being to shake the bulbs entirely out of the soil, and in consequence the white variety of *Lilium speciosum* and other delicate kinds suffer considerably, and do not often bloom satisfactorily. The proper course is to turn them out of the pots, remove a moderate proportion of the old soil, but without in any way disturbing the bulbs, for they should be preserved intact, and then put them in other pots of the same size or one size larger, using of course fresh compost prepared as already advised. They should then be put in a cold frame, and otherwise managed as described in speaking of their management during the first winter.

By the system of culture described above, and the use of rather weak liquid manure alternately with soft water after the pots are well filled with roots, and the plants are growing freely, I have succeeded in producing specimens of immense size, some of our examples of *auratum* had as many as ten stems ranging from six to eight feet in height, and bearing a dozen flowers each. Our largest specimens of *speciosum rubrum* have as many as eighteen stems, and are between four and five feet high, whilst of *tigrinum* we have specimens so large that they quite surprise even those who are well acquainted with lilies.

NOTES ON DINNER-TABLE DECORATIONS.

BY J. E. SAUNDERS, ESQ.



ON the occasion of the recent exhibition of fruit at the Alexandra Palace, liberal prizes were offered for bouquets, stands for the dinner-table and for the drawing-room, and also for tables fully equipped for dining twelve persons. The bouquets and the drawing-room vases were not good, the dinner-tables were not particularly remarkable; but the stands for the latter were characterized by great taste, and a brief description of them will probably interest, and be of service to the readers of the *FLORAL WORLD*.

The dinner-tables differed materially, both in the style of dressing and in point of merit; and there was also some difference of opinion as to the proper position of the second and third prize tables on the list of awards. There was no question as to the table exhibited by Mr. Soder, of Brentwood, who was awarded the first prize. This table had three stands of the usual Marchian type down the middle: a series of small glasses, one in front of each guest, containing a spray of flowers and the frond of a fern; and six or eight glass baskets containing fruit. This table was undoubtedly the best, but it was a long way from being perfect. The little upright glasses for holding sprays of flowers look pretty upon the table in an exhibition, but they ought to be banished, for they are more or less in the way; there is a risk of their being knocked over by the servants, and to a certain extent they interfere with the comfort of the guests. Judges who have opportunities for dining at tables elaborately dressed, steadily set their faces against a superabundance of flowers, for they well know some of the discomforts of having two-thirds of the table devoted to them, and, as a rule, award the prizes to those tables having no more than three stands. Unfortunately, the adjudication of awards for decorated dinner-tables is very often entrusted to those who have not once dined at a decorated dinner-table, and all that they take into account is the abundance of the flowers, and the taste with which they are placed in the receptacles provided for them. I have on more than one occasion seen tables covered with flowers to within a few inches of the edge of the table, and have heard also loud complaints from the exhibitors because of their receiving no prize. In the dressing of the three stands on Mr. Soder's table, the principal flowers employed were *Vallota purpurea*, white Water Lilies, and *Agapanthus umbellatus*, relieved by fronds of *Adiantum cuneatum*. In the top of the centre stand, sprays of *Celosia pyramidalis* and the inflorescence of grasses were tastefully intermixed; and the tops of the side stands were dressed with Cornflower and grasses. The fruit upon the table was hardly satisfactory; there was not enough of it, for it cannot be said that a couple of small bunches of grapes, three or four peaches, and as many figs, plums, and nectarines, was sufficient for twelve persons. The pyramidal mounds of fruit such as were on the third prize table, and

which are frequently seen on tables in private houses, are not by any means desirable, but the fruit should certainly be sufficient for the guests, or be kept off the table altogether. On the third prize table the fruit was piled up on huge stands, and so placed that the guests on opposite sides of the table could not see each other, and the host and hostess could not have seen more than the two guests sitting right and left of them. One of the first principles in the decoration of a dinner-table is the preservation of a clear view across it, yet, as a rule, very little importance is paid to it, to the discomfort of the guests. I know of nothing more vexing than to be placed opposite to a friend, and to have a large epergne or a big plant between us, so that it is a work of extreme difficulty to speak to him in the course of the dinner.

The best example of dinner-table decorations was that afforded by the three stands of Mr. J. Hudson, of Champion Hill, and these were so tasteful, comparatively inexpensive, and, moreover, permitted a clear view across the table, that too much cannot be said in praise of them. The middle stand consisted of a circular plateau of flowers, with a palm about two feet in height in the centre. The two ends consisted of circular plateaux of flowers, with a slender trumpet glass eighteen inches or so high. The bases of the stands were not visible, and it would be difficult to say whether they were of glass, metal, or earthenware. It does not, in fact, matter what they are made of, provided they are of the proper size and the edges nearly touch the tablecloth. This mode of employing palms on the dinner-table can be highly commended. The plant, which should be of the height mentioned, have gracefully pinnate leaves and a slender stem, is turned out of the pot, a few of the crocks removed, and then set in the centre of the dish. The ball of soil is then banked up with wet sand, which slopes off to the edge of the dish. The sand is then covered thinly with *Lycopodium* or the fronds of *Adiantum cuneatum* laid over it to prevent its being seen through the flowers. The flowers are then fixed in their places by inserting the stalks in the wet sand. On this occasion Mr. Hudson had a fringe of fern fronds, and immediately above these a row of flowers of the white *Eucharis Amazonica* and the scarlet *Vallota purpurea*, placed alternately. Above the ring thus formed the same flowers were arranged in a somewhat irregular manner, although equally disposed over the surface, and between them were placed lightly single flowers of the blue *Agapanthus umbellatus* and fronds of *Adiantum cuneatum*. The bases of the two side stands were dressed in much the same manner, with the exception that they contained, in addition, a few brilliantly-coloured spathes of *Anthurium scherzerianum* and the inflorescence of a small elegant grass. In the trumpets, which were only about two inches in diameter at the top, were a few sprays of grass and two or three blooms of one of the new tuberous-rooted *Begonias*, and a bloom each of *Lapageria rosea* and *Lapageria alba*; and a most elegant effect was the result.

These straight and slender trumpet glasses are far superior to the fanciful glasses so much in vogue, and they are comparatively inexpensive. Indeed, as the base of all three stands may be of tin, and

the cost of the two trumpets trifling, this style of decoration is within the reach of all who desire to have flowers upon their dinner-tables, and the effect far surpasses that produced by glass or silver stands of elaborate design. There are numerous ornamental-leaved plants that may be employed instead of palms. It is simply necessary that they should have a slender stem about eighteen inches in height, and surmounted with a tuft of elegant leafage. The effect is better when the stems of the plant and the trumpets have some trailing plant of small growth twined about them.

MR. CHARLES TURNER'S ROYAL NURSERIES, SLOUGH.



THE Slough Nurseries have become famous throughout the world, principally in consequence of the extraordinary spirit and success of Mr. Turner, as an exhibitor of horticultural productions. They comprise several large tracts of ground at Slough and Salt Hill, and at both places there are considerable extents of glass-houses. The home nurseries are about half-a-mile from the Slough Station on the Great Western Railway, and are undoubtedly the most interesting. At whatever time of year the visitor enters, the place is found to be delightfully gay. The flower-garden and show-houses are so managed, that neither frost nor rain, snow or hail, makes any great difference; but, of course, as flowers love sunshine, it is on a fine day any time between March and October that we see the place to best advantage. There are three displays in the flower-garden that adjoins the road from London to Bath. Here, in the earliest days of spring, we find the beds and borders richly filled with pansies, violas, forget-me-nots, daisies, wallflowers, silenes, primulas, and other early flowering plants, the groups enriched with edgings of silvery cerastium, golden thyme, the lemon-coloured stellaria, the aucuba-leaved daisy, the golden stonecrop, and other hardy plants that are distinguished by the bright appearance of their leaves, and are, for the most part, as gay in winter as in summer. The artistic arrangements of the colours is heightened by the careful sprinkling on the soil amongst the plants of clean cocoanut-fibre refuse, which is of a pleasing nut-brown colour, and useful to protect the roots of the plants from frost and drying wind, as well as to show off, by suitable contrast, their several colours. When the spring display begins to wane, the plants are removed, and the beds are planted with geraniums, verbenas, and other summer bedders, and there is usually one strong feature in the shape of a border of seedling petunias, with a series of crescents and lozenges in front filled with dwarf flowering plants. These seedling petunias are of all colours, but shades of purple and rose predominate, and they make a splendid display. When these summer bedders are declining an autumn show is made, and this is ingeniously merged into the spring show, the same edgings being made to do duty in both. As a matter of course, the spring bedders are all planted in the autumn, and thus some of them necessarily appear in the autumnal display.

In a very neat show-house in the flower-garden is a grand Marechal Niel rose, that flowers superbly, and in the same house is the rare Clematis indivisa, which produces myriads of smallish flowers, which are at first green and afterwards become white. This is a plant we recommend our readers to look after; it is a first-class greenhouse climber, requiring only a cool house, and quite hardy in the extreme south and west of England. Proceeding onward we find extensive ranges of houses devoted to the many useful subjects which Mr. Turner has always shown a special liking for as an exhibitor. The collections of azaleas and pelargoniums are extremely interesting, but yet more fascinating, perhaps, are the houses devoted to pot roses, which are here grown to gigantic proportions, and bring their worthy owner money and honour at the great horticultural shows. Tree carnations are grown in vast quantities, and when they are turned out of the houses pot vines take their place, and a splendid growth of canes is invariably secured. The visitor will be impressed with the remarkable cleanliness and order that reigns in this establishment, and which is especially noticeable in the houses, where apple-pie order prevails, and a

ballet-girl dressed for her performance might walk through without ruffling or soiling her muslin. A duchess, indeed, might do the same, but might not be so fantastically dressed as to put to a fair test the admirable keeping of this nursery.

There is one feature amongst the houses that every one of our readers may, with advantage, take interest in. It is a long, rather narrow, span-roof house, without stage or heating apparatus. It is filled with pot plants of dracænas, aucubas smothered with scarlet berries, variegated ivies, round-headed bay-trees, and others of the hardiest and handsomest of conservatory plants, constituting a charming winter garden the keeping of which in perfect trim entails an extremely small amount of labour, as there is no furnace to look after, and even air giving may in winter be neglected for days together.

These nurseries are the homes of the most important of the florists' flowers. Here are extensive collections of show tulips, auriculas, carnations, picotees, pinks, pansies, dahlias, roses, and the more tender florists' flowers that are necessarily grown under glass. It is a rare treat to see the collections when in flower, and perhaps the auriculas and roses attract the greatest number of visitors. The outdoor roses are mostly budded in the usual way on the brier, and the soil and situation suit them so well that they soon make splendid specimens. The number annually budded is 80,000; this number representing, of course, the average annual sale.

During the past summer a very interesting feature at the home nursery has been a trial plantation of peas, comprising all the best sorts known. This trial was instituted for the purpose of comparing with the most noted of the established kinds Mr. Turner's new pea, called *Dr. Maclean*. This grows four to five feet high, and produces in the most extravagant profusion large, handsome pods, that contain an average of seven to nine peas each, these being equally remarkable for size and colour as they are for tenderness and flavour when cooked. The trial has confirmed the belief of Mr. Turner and the many practical men who have known this pea for some years past, that it is the very best pea in existence, and as well adapted for the market-grower as for the private garden.

At Salt Hill there are extensive collections of variegated-leaved plants, more especially of tri-coloured geraniums, which here acquire richer colours than they do at Slough, although the two places are only about a mile apart. Here are grown great breadths of the lovely gold and silver-leaved *Euonymus* of the *latifolius* section, which may be truly described as the grandest of bedding plants for winter display, while they are invaluable for the front of the shrubbery border. There is here, also, a large collection of zonal geraniums, both single and double, and collections also of cinerarias, phloxes, pentstemons, verbenas, and other useful garden flowers.

Mr. Turner's fame as an exhibitor indicates, of course, unusual skill and pluck, and other high personal qualities, for there must be something in the man, as well as in the plants, to ensure such constant and such brilliant success. Now, any one with a fair perception of men and things might easily divine the secret of the long-sustained triumphal progress of this veteran cultivator in the exhibition tent. He takes in hand no more than he can see his way to do well, and then lays on all the strength possible to ensure success. He is always about, and sees everything; has a genial word for everybody, and, if anything goes wrong, is ready, and prompt, and sound with his advice. Talent is nothing unless conjoined with perseverance and cheerfulness. It is no small testimony to Mr. Turner's high personal qualities that the heads of departments have been with him for years, and a change in the establishment is quite a rare occurrence. Very few even amongst amateur horticulturists can form any idea of the task it is to take and keep the lead in exhibiting at great shows. The work never ceases night or day, and even at that the great pot roses Mr. Turner usually presents at Regent's Park, South Kensington, and the Botanical Gardens, Manchester, seem too perfect to be real, and yet no fabric of man's make could equal, in any one particular—to say nothing of equalling them in all—these marvellous products of nature. When lately conversing with Mr. Turner on the splendid appearance of a house of specimen roses, he said, "My rose man is like other men here, unremitting in his attentions. All my head men are as proud of their work as I am, and as anxious that we should always have first place. I made note on Sunday that the rose man came in and looked round before breakfast, and after breakfast, and on the way to church, and after he came from

church, and again in the afternoon, and after that I did not see him; but I know he came in to shut up. This constant watching for sun, wind, rain, or whatever may happen, is absolutely necessary in this high culture, for on these grand specimens we cannot afford to have a single leaf damaged, or one flower insufficiently developed."

HARVEST HYMN.

BY THE REV. HENRY MOULE, M.A.

"For as the rain cometh down, and the snow from heaven, and returneth not thither, but watereth the earth, and maketh it bring forth and bud, that it may give seed to the sower, and bread to the eater: So shall my word be that goeth forth out of my mouth."—ISAIAH lv. 10, 11.



AS heaven in boundless height
Above this earth extends,
Thy way, O God of light,
Our utmost thought transcends.

The snow and gentle rain
Descend by Thy decree;
Nor back return again,
A fruitless errantry.

Through them the earth outpours
From forth her fruitful fields
The life sustaining stores,
The unceasing harvest yields.

So ne'er returning vain
Thy Word, O Lord, to Thee
Shall still its course maintain,
Fulfilling Thy decree.

The clouds may gather round,
The promise tarry long,
Yet sure at length shall sound
Through earth the angelic song.

All, bowed beneath Thy feet,
Shall Thy salvation see,
And Jew and Gentile meet
In blissful harmony.

THE ROYAL HORTICULTURAL SOCIETY'S SEPTEMBER SHOW was not extensive, and in no way remarkable excepting for the gladioli, which were shown in splendid condition by Messrs. Robertson and Galloway, of Glasgow, Messrs. Kelway and Son, of Langport, and Rev. H. H. Dombtrain. The first prize for twenty-four spikes was awarded to Messrs. Robertson and Galloway, with a grand stand containing spikes of Undine, Legouve, Psyche, Horace Vernet, Madame Desportes, Hesperia, Ambroise Verschaffelt, Sylvia, Amalthea, John Waterer, Adolphe Brongniart, Donna Maria, Pactole, Orpheus, Le Thare, Hercules, Robert Fortune, Imperatrice, Sosius, La Candeur, Anna, Souchat's Leda, Hermione, and Virginalis, all of which are first-rate for exhibition. Messrs. Kelway and Son were second, with the undermentioned varieties:—Shakespeare, Parasius, Orphée, Meyerbeer, Xeres, Agrius, Serapis, Pioneer, Felix, Zenobia, Osci, Pyalus, Lady Bridport, George Galloway, Formosa, Ababa, Hesperia, Lynceus, Hermione, Mrs. Reynolds Hole, Stesileus, Amycla, Tubero, and Talmedes.

October.

THE GARDEN GUIDE FOR OCTOBER.

Then came October full of merrie glee ;
 For yet his noule was totty of the must,
 Which he was treading in the wine-fats see,
 And of the ioyous oyle, whose gentle gust
 Made him so frolick and so full of lust :
 Upon a dreadful scorpion he did ride,
 The same which by Dianæes doom unjust,
 Slew great Orion ; and eeke by his side,
 He had his ploughing-share and coulter ready tyde.

SPENSER.



AMERICAN PLANTS may be moved now better than at any other period of the year. Whoever plants these must be sure in the first instance that the soil is suitable. Many of the natural loams about London suit them admirably ; and, on the other hand, there are many otherwise good loams in which they will not grow at all. It is only to be determined by experience on the spot ; and where there is any doubt, the only safe course is to cart in peat from the nearest source of supply in the district. Pontic Rhododendrons and their varieties are the least particular about soil of any of the race.

ASPARAGUS, when brown and half-withered, to be cut down to the surface of the ground, be well cleaned, and covered with four inches of half rotten dung. The spade must never be used on the beds.

CARNATIONS AND PICOTEES not yet rooted from layers must be taken off the stools and planted under hand-glasses ; those with a few root fibres may be potted ; having begun to root, they will soon gain strength.

CAULIFLOWERS to be planted out under frames and hand-lights, and some potted as previously directed.

CHRYSANTHEMUMS to have less liquid manure as they show colour, and to be discontinued (using plain water only) as soon as a few of the first flowers are open. Thin the flowers on plants from which blooms are to be cut.

CUCUMBERS to fruit during winter will now be showing signs of fertility, in which they must not be too much encouraged, unless the plants are strong. If allowed to bear too early, they will soon cease to bear, and the fruit will be small and inferior. Keep them carefully trained ; take the leaders up their full length before stopping, then stop every side shoot at the second joint.

DECIDUOUS TREES may be planted now *ad lib.* Fruit trees, roses, forest trees, ornamental shrubs, and all such things, may be ordered in from the nurseries, and planted at once ; and from this date every day gained is a real gain for the future well-doing of the trees, which will begin to make roots directly, for the ground is now warm, but from this time will become cooler every day, and the longer planting is delayed the longer will the trees require to make more new roots, on which their vigour next season will depend. Never plant while the ground is in a saturated state ; if it does not crumble freely, wait a bit ; meanwhile lay the trees in by the heels, to prevent injury to their roots by sunshine and drying winds.

ERICAS can be better wintered in a pit than in the greenhouse. It is certainly best to let them taste as little as possible of fire-heat, though they must be kept safe from frost. A damp, still air, especially if a little warmed to suit the growth of soft-wooded plants, is most injurious to these nearly hardy and free-natured plants. Water only on fine days and then as early as possible.

EVERGREEN SHRUBS will move now better than in spring ; the earth is warm and the air moist, and they will make fresh roots at once. This is the best time of the whole year to plant American beds, and to make alteration in shrubberies and wildernesses. Hollies will move now with safety, as also will aucubas, laurels, thujas, and all kinds of conifers.

FORCING to be prepared for according to the demand for asparagus, seakale, rhubarb, etc. Take up all the roots that are to be used in the first batch, and lay them in by the heels ; the roots force better if taken up some little while beforehand, especially for the earliest supplies.

MIGNONETTE sown now in pots of rich light soil, started with a little bottom-heat, as on a bed of leaves or nearly worn-out dung, and kept in a pit all the winter, will bloom early next spring, and a few may be forced. It requires but little skill,

indeed, to flower Mignonette at any period of the year; but at this season one important caution must be given, and that is, to grow the winter stock in pots extra well drained, and *never to wet the leaves of the plants.*

MUSHROOM BEDS to be spawned. It will be loss of time to hurry the operation by inserting the spawn while heat is too high. The safe temperature is 50°; if the bed is a few degrees above that, wait a few days without disturbing it, for any disturbance will give a fresh start to the fermentation, and run it up again to a high pitch; and, besides, the more solid the bed the better, so long as it is not quite as hard as a brick.

ROOT CROPS.—In storing potatoes, be sure they are dry first: if taken up in wet weather, spread them out in a shed or outhouse, but do not expose them to the light more the can be helped. Parsnips keep best in the ground, to be dug as wanted. Beet to be taken up at once; cut off the leaves an inch above the crown, and avoid bruising or cutting the roots; carrots treat the same; store both in sand or dry earth. Earth up cardoons; take up scorzonera and salsafy, and preserve in sand.

STRAWBERRIES to fruit in pots, ought now have plump crowns and be quite at rest, the pots full of roots and free from worms. Now lay them on their sides in coal-ashes, under a fence or wall, and by means of a few hurdles, or some other rough contrivance, shelter them from rain, and there leave them till taken in to force.

VACANT PLOTS in kitchen and flower garden to be turned over at once, and, if needful, manured. All heavy land which is to lay unoccupied till spring should be ridged up without breaking the clods. The autumn rains and winter frosts will mellow and fertilize the soil, and in spring every clod will break down into powder at a touch.

VERBENAS AND PETUNIAS from autumn cuttings are best kept with Cinerarias and Primulas, as the same treatment will serve for all, and they will require fumigating more frequently than other plants. All these things should be grown very slowly now, as the worst times for them are yet to come.

VINES.—Where fruit is to hang some time, all decaying berries must be cut out from time to time, and the atmosphere kept dry.

HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY'S MEETINGS in 1876 are arranged as follows:—Spring Show of Fruit and Flowers, Wednesday, March 15. First Great Summer Show of Fruit and Flowers, Wednesday and Thursday, June 7 and 8. Second Great Summer Show of Fruit and Flowers, Wednesday and Thursday, July 19 and 20. Great Autumn Show of Fruit and Flowers, Wednesday, November 8. Fruit and Floral Committees' Meetings, Wednesdays, January 19, February 16, March 1 and 15, April 5 and 19, May 3 and 17, June 7 and 21, July 5 and 19, August 2 and 16, September 6, October 4, November 8, and December 6.

ALEXANDRA PALACE—**METROPOLITAN FLORAL SOCIETY'S EXHIBITION OF AUTUMN FLOWERS**, August 23 and 24.—The exhibition of autumn flowers held at the Alexandra Palace, Muswell Hill, under the auspices of the Metropolitan Floral Society, was most successful, and afforded ample proof of the useful work accomplished by the Society in encouraging the cultivation of florists' flowers. The flowers, comprising dahlias, hollyhocks, gladioli, asters, roses, and zinnias, were arranged on a series of tables placed in the grand central hall. Asters and gladioli constituted the two chief features of the exhibition. Of the former there was an immense display of splendid blooms, and of the latter there was an exceptionally large number of stands, and the magnificent spikes from Messrs. Kelway and Son, the Rev. H. H. Dombrain, and Mr. Douglas, made a brilliant display of colour, and proved a great source of attraction. Hollyhocks were good, considering the difficulties under which cultivators have laboured of late years, and of the dahlias there was a large number of stands containing blooms of excellent quality. The roses staged by Messrs. Paul and Son, Mr. C. Turner, Mr. J. Keynes, and Mr. Prince, formed by no means the least pleasing feature of the exhibition; and especially

attractive was the stand of the Rev. J. B. M. Camm, a hybrid perpetual raised at Slough, and distributed in the early part of the present year.

ALEXANDRA PALACE.—GREAT INTERNATIONAL EXHIBITION OF FRUIT, Sept. 2 to 4.—The great exhibition of fruit held at the Alexandra Palace on the dates above-mentioned was one of the most important events of the year. Grapes were represented by some five hundred odd bunches, of good quality. Of Pine-apples there was a good display, whilst the number of dishes of Apples, Pears, Peaches, Plums, Nectarines, and other hardy fruits, was enormous. The competition in all the classes was very severe, and in some there were no less than forty entries. The display of vegetables was large and thoroughly good; so good, in fact, that in the great class for a collection of sixteen sorts equal first prizes were awarded. The table decorations were also good, and formed a pleasing feature of the exhibition. The miscellaneous contributions, although comparatively limited in number, were of an important character, and materially enhanced the attractiveness of the gathering. Especially attractive were the two groups of new and rare plants from the nurseries of Mr. B. S. Williams, of Upper Holloway, comprising, amongst other valuable subjects, a splendid variety of *Cattleya gigas*, one of the newest and best of the genus. The various productions were arranged on six lines of tables running the whole length of the central hall. The collections of fruit and the grapes were placed on two rows of tables down the body of the hall, the decorated tables, flower-stands, and bouquets on a series of tables in a line with the pillars on each side, and the hardy fruits and vegetables were arranged on the tables in the aisles. In the centre of the hall Messrs. Paul and Son, of Cheshunt, had a group of Pear and Apple trees lifted from the open ground, and loaded with fruit. Near the orchestra Messrs. Rivers had a bank of Peach, Apple, Pear, and other fruit-trees, some of which were in pots, whilst others had been lifted from the open quarters. At the end of the hall nearest the entrance was a large and tastefully-arranged group of palms and other ornamental-leaved plants belonging to the Company. The attendance was good throughout. We understand that since the opening of the Alexandra Palace in May last the visitors have, in number, exceeded a million.

TO CORRESPONDENTS.

ROSE-PINK GLOIRE DE DIJON.—*Rosarian*.—This rose, figured in the FLORAL WORLD of March last, is not yet in commerce, and therefore cannot be purchased.

STEPHANOTIS FLORIBUNDA.—*William Aveline, Messina*.—The most suitable compost in which to grow this delightfully fragrant stove climber is prepared by incorporating together, in equal proportions, good turfy peat and loam, and then adding a liberal quantity of silver-sand and a small proportion of leaf-mould or thoroughly decayed manure. The sand should be added in the proportion of one part to every six parts of the peat and loam when mixed together, and of the leaf-mould, or manure, one part to every eight parts of the soil and sand. Whatever pruning may be necessary should be done early in the winter, and as the flowers are mostly produced on the young growth, the old wood must be thinned out moderately to prevent overcrowding.

REPLANTING HERBACEOUS BORDER.—Encouraged by the articles in the FLORAL WORLD since 1868, I have acquired a large collection of herbaceous, perennial, and alpine plants. I desire to rearrange them, and shall be obliged if you will advise me whether to move large clumps, with balls of earth, or to shake out the soil and entirely replant them.—*H. Adamson, Ealing*. [The plants should be lifted with a moderate quantity of soil adhering to the roots; for whilst it is not needful to lift them with large balls, it is not desirable that all the soil should be shaken from them. October is one of the best months in which to replant the majority of hardy perennials, as the soil is still warm, and they become established before the winter. It will be found advantageous to divide the large stools into two or more portions].

PLUMERIA LUTEA.—*W. A.*—This plant grows freely in a mixture consisting of equal proportions of loam, leaf-mould, and peat, and a good sprinkling of silver-sand.

J. J. B.—We will take the matter into consideration, and, if practicable, will give a few of the best examples in time to be of service for next year's display.

POTATOES FOR LIGHT STONY SOIL.—*T. S.*—The Late Rose will perhaps be the most suitable potato for your dry stony soil. It is a very heavy cropper, and, in light soils, of excellent quality. By planting this variety you are likely to obtain heavier crops than by planting any other potato with which we are acquainted. You might also plant a small breadth of the Red Skin Flour-ball, sent out by Messrs. Sutton and Sons, of Reading, for it is of vigorous growth, a heavy cropper, and on your light soil the quality will be good. As there are several strains of the Red Skin Flour-ball in the trade, and some of these very inferior, we would suggest that you send direct to Reading for your seed. The true variety has a pure white flesh, and if kept until winter is mealy when cooked; but very frequently red-skinned potatoes, with a yellow waxy flesh, are sold under the name given above. The manure should be applied at the time of planting, so that the crop may derive the fullest possible advantage resulting from its application.

NERTERA DEPRESSA.—*M. A. D.* and other correspondents are informed that *Nertera depressa*, figured in the September number of the FLORAL WORLD, is plentiful in trade collections, and the prices range from eighteenpence to half-a-crown per plant, according to the strength of the specimens.

M. A. D.—A selection from the list of shrubs which appeared in the FLORAL WORLD for 1872, page 289, will be suitable for the border. Such as are mentioned as being rather tender should not be planted, for in so prominent a position it is not desirable that failures, either total or partial, should occur. The green and variegated Periwinkles would grow freely in the border, and by cutting them back occasionally they can readily be kept within bounds.

NAMES OF FERNS.—*A. B., Upper Holloway.*—No. 1, *Davallia chærophylla*; 2, *Lomaria discolor*.

J. W., Southgate.—"Paxton's Botanical Dictionary" will probably serve your purpose.

NAMES OF PLANTS.—Our advices on sending plants by post appear to have done more harm than good, for we have received a considerable number of plants in tin boxes in a state of decomposition and utterly indeterminable, because packed in wet moss, wet grass, and other such destructive rubbish. It is very strange that the simplest packing suffices, and yet not one packet in ten comes to hand as it should.

—*Constant Reader.*—The *Aerides* could not be distinguished from the wet grass amidst which it was packed, all being mucky together.—*C. A. C. V. S. M.*—Your creeper was decomposed. As to the rose, we never attempt to name roses sent by post, and as regards florists' flowers generally, it is impossible for any one to name them after they have been cut a few hours. Just put a bit of your creeper between two fresh but dry ivy leaves in a common letter, and post it to us directed Stoke Newington, London, N., and no doubt we shall recognize it. But we must have the flower as well as the leaf.—*R. W. Prince.*—Your pretty shrub is *Gaultheria shallon*.—*Semper.*—*Cuscuta Europæa*, the common Dodder. If you meet with *C. epithymum*, we shall be glad of a bit. We can, however, promise you will not find it on the moor you are now working at. Both the sundews may be found in the "black spring" there.—*Janson.*—Your rose is the original form of *Rosa polyantha*, a very scarce species, of which there is a notice in the "Amateur's Rose Book."—*W. Donald.*—1, *Vallota purpurea*; 2, *Plumbago capensis*.—*H. A. D.*—1, *Polypodium gracilis*; 2, *Lomaria hastata*; 3 and 4, we do not know as sent, but will name them on receipt of fronds in fruit.

EXHIBITIONS TO BE HELD IN OCTOBER.

- 1.—CRYPTOGAMIC SOCIETY OF SCOTLAND.—*Exhibition of Fungi at Perth.*
 - 5 TO 7.—CRYSTAL PALACE.—*Cat Show.*
 - 6.—ROYAL HORTICULTURAL SOCIETY.—*Exhibition of Fungi, and Meetings of Fruit and Floral Committees.*
 - 19 TO 22.—ALEXANDRA PALACE, MUSWELL HILL.—*Poultry Show.*
- October.

TRADE CATALOGUES.

CHARLES TURNER, ROYAL NURSERIES, SLOUGH.—*Catalogue of Bulbs, Roses, Fruit Trees, etc.*

JAMES COCKER AND SONS, SUNNY PARK AND FROGHALL NURSERIES, ABERDEEN.—*General Spring Catalogue of Soft-wooded Plants.*

H. CANNELL AND CO., 48 & 49, KING STREET, WOOLWICH, S.E.—*Illustrated Prospectus of the Victoria Hot Water Circulator.*

ALEXIS DALLIERE, GHENT, BELGIUM.—*Catalogue of Azaleas, Camellias, Rhododendrons, New and Ornamental Plants, etc.*

LOUIS VAN HOUTTE, GHENT, BELGIUM.—*A Catalogue of Stove and Greenhouse Plants.—Catalogue of Bulbs.—Catalogue of Azaleas, Camellias, Rhododendrons, Magnolias, etc.*

NEW PLANT AND BULB COMPANY, COLCHESTER.—*Retail List of Filmy, Tree, and other Ferns, Orchids, etc.*

PINE-APPLE NURSERY COMPANY, MAIDA VALE, EDGWARE ROAD, W.—*A Descriptive Catalogue of Stove and Greenhouse Plants, Roses, etc.*

WILLIAM ROLLISSON AND SONS, TOOTING, S.W.—*A General Catalogue of Stove, Greenhouse, Hardy, and Bedding Plants.*

ANT. ROOZEN AND SON, OVERVEEN, NEAR HAARLEM, HOLLAND.—*Catalogue of Hyacinths, Tulips, Crocuses, etc.*

THE THAMES BANK IRON COMPANY, OLD BARGE WHARF, UPPER GROUND STREET, LONDON.—*Trade Price List.*

BARR AND SUGDEN, 12, KING STREET, COVENT GARDEN, LONDON.—*Autumnal Descriptive Catalogue of Bulbs and Plants.*

JAMES CAWTER AND CO., 237 & 238, HIGH HOLBORN, LONDON.—*Catalogue of Dutch Flower Roots, Plants, Roses, etc.*

W. CUTBUSH AND SON, HIGHGATE, N.—*Catalogue of Hyacinths, Tulips, and other Bulbous Flowers.*

DICKSONS AND CO., LEITH WALK, PILRIG AND BONNINGTON FARM, EDINBURGH.—*Descriptive Catalogue of Roses; also Catalogue of Dutch Bulbs, Pansies, Phloxes, etc.*

DICKSONS AND CO., WATERLOO PLACE, EDINBURGH.—*Descriptive Catalogue of Dutch Flower Roots, New Pansies, Violas, Phloxes, etc.*

ALFRED LEGERTON, 5, ALDGATE, LONDON.—*Wholesale Catalogue of Dutch and other Flower Roots.*

R. E. MATTHEWS, 65, VICTORIA STREET, BELFAST.—*Descriptive Priced Catalogue of Dutch Flower Roots.*

THOMAS MILNER, 102, GODWIN STREET, BRADFORD.—*Catalogue of Flower Roots, etc.*

WILLIAM PAUL, WALTHAM CROSS, LONDON.—*Catalogue of Bulbs, Camellias, Azaleas, etc.*

DICK RADCLYFFE AND CO., 129, HIGH HOLBORN, W.C.—*Catalogue of Hyacinths, Tulips, and other Bulbs; Horticultural Elegancies, etc.*

PETER S. ROBERTSON AND CO., 33, ST. ANDREW SQUARE, EDINBURGH.—*Descriptive Catalogue of Dutch Flower Roots.*

ROBERTSON AND GALLOWAY, 157, INGRAM STREET, GLASGOW.—*Catalogue of Dutch Flower Roots.*

WILLIAM ROLLISSON AND SONS, THE NURSERIES, TOOTING, S.W.—*Catalogue of Cape, Dutch, and other Bulbs.*

JOHN SCOTT, MEERIOTT NURSERIES, CREWKERNE, SOMERSET.—*Catalogue of Flower Roots.*

SHEPHERD AND CO., DARLING NURSERY, AND 423½, GEORGE STREET, SYDNEY.—*Catalogue of Plants and Seeds.*

SUTTON AND SONS, READING, BERKS.—*Sutton's Catalogue of Bulbous Flower Roots, Plants, Seeds, etc.*

VILMORIN, ANDRIEUX, AND CO., 4, QUAI DE LA MEGISSERIE, PARIS.—*Catalogue of Flower Seeds, and also Catalogue of Bulbs, etc.*

B. S. WILLIAMS, VICTORIA AND PARADISE NURSERIES, UPPER HOLLWAY, N.—*Catalogue of Bulbs, Fruit Trees, Roses, etc.*

T. S. WARE, HALE FARM NURSERIES, TOTTENHAM.—*A B C Bulb Guide, and Catalogue of Spring Flowers.*

GEORGE YATES, STOCKPORT.—*Catalogue of Flower Roots, etc.*



ACER POLYMORPHUM PALMATIFIDUM.

THE AMATEUR'S ARBORETUM.

BY ALEXANDER M'KENZIE,

Landscape Gardener, Alexandra Palace, Muswell Hill.

(With Coloured Illustration of Acer polymorphum palmatifidum.)

HARDY trees, characterized by elegance of outline or nobility of aspect, or remarkable for the beauty of their foliage, are every day becoming more and more popular, and we may now reasonably hope that within a comparatively brief period they will be appreciated according to their deserts. Having for some years past advocated, whenever a favourable opportunity occurred, the claims these trees have upon the planter, and demonstrated in works entrusted to me their capabilities for producing picturesque effects, it affords me a more than ordinary degree of pleasure to take note of the increasing taste for them. The lists of hardy trees are exceedingly rich in trees of a highly ornamental character; yet until quite recently they have been all but ignored, and the most prominent positions in the pleasure grounds have been planted with trees that are alone fitted for grouping and massing in parks, and in the formation of distinctive features in woodland scenery. The elm and the horse-chestnut are of the highest value for the park and plantation, but they are altogether unfitted for pleasure grounds. In these we require trees possessing a greater degree of elegance and refinement, and also with distinctly coloured foliage to enable the planter to produce striking yet tasteful contrasts of colour, and also to afford as great a variety as possible, for without variety the pleasure grounds lose what is to my mind one of their principal charms. No one wishes to see the same trees, the same shrubs, or the same flowers at every point. Yet in the disposition of trees, planters often proceed as if it were of the utmost importance to have precisely the same kinds throughout pleasure grounds, and consequently distribute examples of each with a certain degree of regularity from one end to the other. There is much to be learnt in the disposition of "garden," or, as they are sometimes called, "pictorial" trees; for it is a very easy matter to put a golden or silvery-leaved tree where one with foliage of a more sombre hue would be appropriate, or a weeping tree where one of an upright habit would produce the best effect.

An Arboretum in which the most beautiful and distinctive trees could be gathered together, and so arranged as to show their characteristics to the best advantage, would form a most interesting feature of the grounds attached to a country or suburban residence, and to the amateur who takes a genuine interest in trees, it would afford a very large amount of pleasure. The extent of the "Amateur's Arboretum" must of necessity be regulated by the space at disposal and the amount it is intended to expend in its formation. An acre of ground would afford room for a goodly collection; but two acres

would be better, as it would be possible to include a greater number of species, have bolder groups of each, and also allow of a greater breadth of turf between the groups, which, it need hardly be said, will materially assist to heighten the general effect. Three or four acres would be even better; but, excepting in the cases where the pleasure grounds are very extensive, four acres should not be exceeded, as it is not desirable that the arboretum should be out of proportion to other parts of the ground. A situation contiguous to or forming part of the pleasure grounds should be selected, and as an undulating surface is preferable to one that is perfectly flat, due regard should be paid to that point in making a selection of the site.

It will in the first instance be desirable to form belts with trees of a suitable character along the boundary, for the purpose of enclosing it somewhat, and for forming a background to bring out the colour of those with variegated foliage. For these belts none but the finest garden trees should be employed, and they should be disposed in groups, each of these to be formed as far as practicable with species and varieties of the same family.

As it is not at all necessary for the full enjoyment of the trees that the grass should be closely shaven like the lawn or bowling-green, the turf need not be disturbed beyond what is necessary in planting the trees. To enable the arboretum to be visited during the winter season, there must be a gravel walk, and this should be of a sufficient breadth for two to walk comfortably abreast, and wind in a somewhat natural manner round and about the more important groups. The gravel walks must not be overdone, for they are costly to make and expensive to maintain in proper order, and during the summer season, when the trees are at their best, it is more pleasant to walk upon grass than upon gravel.

It will not be necessary to dwell upon the arrangement of the trees, but a few rules for the guidance of the amateur will undoubtedly be of service. It has been already suggested that groups should be formed along the boundary, and that these should represent as far as practicable particular families. These should consist in the most part of trees with deep green or dark bronzy foliage, and possessing boldness of character, for the purpose of bringing out more prominently the characteristics of those of slender growth or having finely-cut or coloured leafage. The central space must be devoted to groups representative of distinct genera, or hues of colour, with a few specimens standing out singly. Anything approaching a formal arrangement must be avoided, and as far as possible the trees of small growth should be placed nearest the walks; but upon this point the planter must be guided by the conformation of the ground and the character of the surrounding groups. Although no allusion will be made to shrubs, there is no objection to the presence of clumps of these; indeed, a few, judiciously placed, will contribute materially to the beauty and diversity of the scene. For the names of the best of the flowering shrubs, our readers can refer to the list published in the *FLORAL WORLD* for August.

In connection with and forming part of the arboretum should

be erected a rather spacious glass structure, for the accommodation of those trees that are not hardy enough to withstand the effects of a severe winter. No heating apparatus will be necessary; for anything requiring more protection than that afforded by the glass covering would be altogether out of place in an arboretum. Staging also will not be required, for the trees will mostly be of a sufficient height to produce a good effect grouped upon the floor.

In the preparation of a list of trees for the "Amateur's Arboretum," I have been careful to exclude those trees which are of so robust a character as to be only adapted for parks, where size is of some importance. Most of the trees also that will be mentioned are well adapted for planting singly, or in groups, in the dressed pleasure grounds surrounding the residence. They are as follows:—

Acer negundo variegata is now well known as one of the most distinct and striking of hardy trees with white variegations. It is very effective, either in the form of a bush or tree, and one or two bold masses of six or eight trees are much better than single trees scattered over the pleasure ground or the arboretum.

A. palmatum is a small-growing Japanese tree, with elegant palmate leaves. The variety of this known as *reticulatum* has bright green leaves, veined with yellow, and at certain stages is very beautiful.

A. polymorphum palmatifidum, like the preceding, is of small growth, and has rich green leaves which are deeply and elegantly cut. There is not perhaps a more beautiful small-growing tree in existence, as will be seen on reference to the striking illustration to which these remarks are an accompaniment.

A. p. atropurpureum is similar in character to the preceding, with foliage of deep bronzy purple.

A. p. sanguineum has foliage of a bright reddish-crimson colour.

A. p. ornatum is a fine variety, with rich brownish-red leaves.

A. p. roseis marginatis differs from the variety immediately preceding it in having the leaves margined with red and white, and anything more beautiful cannot be conceived.

All the varieties of *Polymorphum* may be grown in pots for conservatory or dinner-table decoration. In the pleasure ground they should be planted in groups in sheltered situations, and where they will be immediately under the eye. Owing to their comparative scarcity, their relative hardiness has not yet been thoroughly tested.

Ailanthus glandulosus, a noble tree, with bold pinnate foliage, deserving the heartiest recommendations. Large bushes, formed by planting young trees and annually cutting them close back to the ground, have a handsome appearance in the pleasure ground. When this is done they push up strong shoots furnished with grandly developed leaves, and in beauty are equal to the finest of the strong-growing ferns.

Aralia canescens is exceedingly beautiful when kept to a single stem. The leaves are large, much divided, and very handsome. It is an excellent plan to cut it down annually, as in the case of the

ailanthus, to compel it to produce strong shoots annually. It has, moreover, a more handsome appearance when the foliage can be seen from above.

Betula alba pendula, is the well-known Weeping Silver Birch, and one of the most elegant of weeping trees.

B. alba incisa pendula, the cut-leaved Weeping Birch, is also remarkably elegant as a weeping tree.

Castanea vesca aurco-variegata is a magnificent variety of the Spanish chestnut, with variegated leaves. The latter are broadly margined with bright yellow, and a moderate sized tree is as rich in colour as a well-grown croton; it is one of the finest of the golden-leaved hardy trees.

Cratægus.—The best of the thorns grown for the beauty of their flowers were mentioned in the August number, and I now allude to them to say that they should be liberally planted in the "Amateur's Arboretum," for the sake of their flowers in spring and bright berries in autumn. The Cockspur Thorn, *C. crus galli*, and one or two others, are also remarkable for the rich autumnal tints of the foliage.

Fagus sylvatica purpurea is the Purple Beech, and one of the most valuable of the dark-leaved trees for bringing out in bold relief the rich colouring of those with golden leaves.

F. sylvatica pendula is the Weeping Beech, quite remarkable for its grotesque habit and picturesque appearance, and although not desirable for the pleasure grounds when there is room for only one or two weeping trees, it should have a place in the arboretum.

Fraxinus excelsior pendula, better known as the Weeping Ash, is a useful tree for the formation of natural arbours, although less light and elegant than some of the other trees of a similar character.

F. parvifolia is undoubtedly the most beautiful species of ash, for it is of comparative small growth and very elegant in outline. It is the best for a garden or small arboretum.

F. ornus, known also as *Ornus europæus*, is also a beautiful tree of small growth, and can be recommended where there is room for a goodly number of kinds.

Kölreuteria paniculata is one of the very finest of ornamental trees of small size, although not often met with in private gardens. It forms a round head, has pinnate leaves, and produces bright yellow flowers, which are followed by reddish bladderly pots that add to its beauty. Messrs. Lane, of Berhampstead, have some splendid specimens of this lovely tree.

Liquidamber styraciflua has leaves not unlike some of the smaller-growing maples, which in the autumn change to a bright purplish red and orange, and produce a rich effect.

Magnolia conspicua is a round-headed tree, producing in spring a profusion of large white fragrant flowers.

Populus tremula pendula may be considered one of the most beautiful of weeping trees for the garden, and can be highly recommended.

Pyrus aucuparia, the Mountain Ash, is one of the handsomest

trees in the autumn, when well furnished with its clusters of brilliant scarlet berries. The Yellow-berried and the Weeping varieties are desirable where room can be found for them.

Quercus robur concordia has leaves of the brightest gold, which retain their colour throughout the summer.

Q. robur nigra is also a useful variety, the leaves being of a rich bronzy purple.

Robinia hispida, the Rose Acacia, is a beautiful tree of small stature, producing in summer lovely racemes of rose-coloured flowers.

R. inermis, the Parasol Acacia, is a distinct and handsome tree, with a small round head; but it is better adapted for terraces and other formal arrangements than for the arboretum.

Salix babylonica, the Common Weeping Willow, deserves mention for its value in water scenes, for which purpose it is unsurpassed.

S. Americana pendula is of smaller growth than the preceding, and very pretty.

Sophora japonica pendula can also be commended for its value as a weeping tree.

Ulmus montana pendula is also a fine weeping tree. It is indeed one of the most elegant for the garden.

Virgilia lutea, a pretty tree of low stature, with pinnate leaves, which in the autumn assume a bright yellow colour. In the summer it bears drooping racemes of white flowers.

THE CLOTHING OF WALLS AND TRELLISES.

BY A WANDERING HORTICULTURIST.



IN the selection of plants of a scandent habit for covering the walls of dwelling-houses, due regard must be paid to the style of architecture and the height of the wall so that they may be in every way suitable for the position they are to occupy. In many instances the selection is made without consideration, and the effect is not good, because of the plant not being strong enough to mount up to the top of the wall in one case, or of being of such a rampant habit as to envelope the house in foliage, and render it needful to be constantly cutting away shoots to keep it within bounds. Again, are not plants of the most formal habit planted against dwellings possessing a certain degree of rusticity, and rambling plants against newly-erected villas? and it cannot be said that in either case the results are satisfactory.

Beyond the ivies, the Wistaria and the Virginian Creeper, the characteristics of climbing plants is but imperfectly understood, and a brief description of some of the best may perhaps be useful at the present moment. Something too may advantageously be said about the management of climbers on dwelling-houses, for it is not often of the best. Climbers for rather small villas of the ordinary type should be of neat growth, and be somewhat rich in the colour

of the leafage, whether it be green or variegated, as, for example, the *Pyracantha*, the Japanese Honeysuckle, or one of the green or variegated ivies. The Virginian Creeper is much too large, as also is the *Wistaria*, and the Wild Clematis, for the latter must, to appear to any advantage, hang about in a somewhat natural manner, and the others when they have not a large surface to spread over, require constant attention to keep them in proper trim. But for houses of a large size, a mansion for example, there are not two finer climbers in existence than the *Wistaria* and the Virginian Creeper. The former, with space for its development, presents one of the most magnificent sights imaginable when sheeted with its lovely racemes of lavender blue flowers, and at other times is equal to any of the other robust-habited plants of the same character, and surpasses most. The latter is unequalled in point of lightness and elegance, and when trained so that the young shoots are allowed to hang down naturally over windows and all, the effect is indescribably beautiful, as witness the magnificent example which covers a gentleman's residence in Castle Street, Reading. Evidently the owner is well acquainted with the best system of management, for while the branches fall over gracefully like the spray of a gigantic waterfall, there is no approach to that raggedness which characterizes so many specimens.

In the case of the larger kinds, a certain freedom of growth must be permitted, or the effect will be bad, but the smaller sorts should be trained in a more formal manner, and be kept close to the wall. Ivies more especially should not be allowed to hang about loosely. Many good examples of ivy training could be mentioned, but one of the best the writer of this has seen is at Wood Green, near the termination of the Green Lanes, a district well known to North London. There are two villas, and over the face of these the ivy is trained in bands about two feet in width, and as those are placed so as to bring out the architectural lines, the effect is exceedingly pleasing to the eye. The ivy growing on Southgate Church is also effectively trained; it is kept quite close to the wall, and although it is trained quite close to the edge of the stone facing to the windows, not a shoot is allowed to extend over them, and as the stones forming the facings are arranged on the outer edge in the usual zigzag manner, the effect is novel and striking. Walls that are to be covered with plants unable to attach themselves to the surface, and require frequent attention to keep them in order, should be "wired" on the system advertised frequently in the *FLORAL WORLD* by Messrs. Barnard, Bishop, and Barnard, as the new shoots can be trained quickly and without damage to the wall, or the irritating noise that must be endured at intervals when they are supported with nails and shreds. The cost of wiring the walls of a moderate sized house is by no means heavy, as the materials are not expensive, and the fitting can be done by a handy labourer. Evergreen and deciduous climbers will require pruning annually; the former in the spring just before they commence to make new growth, and the latter as they lose their leaves in the autumn. In the course of the summer they should all have occasional attention, and

the new growth regulated, a few of the shoots removed, and the others trained in, but not too stiffly.

In country districts, where there is not much danger of the fruit being stolen, the walls of villas may be devoted to the choicer kinds of fruit trees, the south aspects to grapes, the east and west to apricots or pears, and the north to Morello cherries or plums. If out-door grapes do not ripen readily in the district, the south aspect may also be devoted to pears or apricots. Grape vines trained over the walls of a dwelling-house are very pleasing in appearance throughout the summer, and the foliage of the *Esperione*, one of the best out-door kinds, assumes in the autumn tints of the most brilliant description, and produces a startling effect. Grapes that do not mature sufficiently to be eaten are most excellent for tarts, and make very nice light wines.

The walls of the Woodstock Rectory are covered chiefly with the *Esperione* and other grapes, and from these, Mr. Robert Fenn, the well-known raiser and cultivator of potatoes, makes annually large quantities of most excellent wines, sparkling and still. I have had an opportunity of tasting them upon more than one occasion, and at the great horticultural exhibition held at Birmingham in 1872 was on a committee formed to discuss the merits of Mr. Fenn's wines, of which some twenty samples were exhibited, and they were unanimously pronounced to be of most excellent quality. Since that year Mr. Fenn has been awarded a gold medal for wines exhibited by request of Her Majesty's Commissioners at the International Exhibition. I mention this merely to show what can be done with out-door grapes.

I will now proceed to an enumeration of a few subjects that are known to be thoroughly good, and which are in fact the best in their respective classes.

Ampelopsis hederacea, better known as the Virginian Creeper, is equally adapted for town and country. All the laterals which hang down should be cut close back to the first bud from the base at the winter pruning or the plant will become unsightly, and large portions perhaps fall down in the course of the summer. *A. tricuspidata* has a more slender habit than the preceding, and smaller leaves, and is most valuable, as it adheres to walls as firmly as the ivy, and is well suited for quickly covering low walls and small dwellings. One of the very best of hardy climbers.

Berberis Darwinii is exceeding good for training over low walls, say of three or four feet high. It has small shining leaves, and in the spring becomes sheeted with yellow flowers.

Bignonia radicans major is good for covering large spaces. The growth is robust, the foliage handsome, and large clusters of tubular crimson flowers are produced at the tips of the branches. Its roots to the wall much the same as the ivy, and the shoots must not be shortened until the winter pruning, when they should be cut back to one or two eyes.

Ceanothus azureus is like the *Berberis* above mentioned, useful for low boundary walls.

Clematis. Nearly all these are suitable, provided the growth is

regulated and trained in neatly. They should be pruned rather hard back, or the lower part of the wall will become bare. *C. Jackmanni*, *C. Alexandra*, *C. Lady Bovill*, *C. Lady Londesborough*, *C. Miss Bateman*, and *C. Albert Victor*, are six of the best. The last three are spring bloomers, and the others flower during the summer and autumn.

Crataegus pyracantha. This is well known for its masses of white flowers in spring, and clusters of scarlet berries in autumn and winter. It should be trained close to the wall, and the young shoots which push out horizontally be spurred back in the course of the summer; no winter pruning will then be required.

Escallonia macrantha is very ornamental trained to walls about six feet in height. It does best in a sheltered situation.

Honeysuckle. The nettle-leaved *Lonicera brachypoda reticulata* is one of the most elegant of twining plants, and is equally adapted for the rustic porch or the lordly mansion, and requires very little attention.

Ivies. The best of these are of the green-leaved kind, comprising *Hedera lobata*, *H. digitata*, and *H. grandifolia*. The last is known as the Irish Ivy. The most desirable of the variegated forms are *H. maculata*, *H. pallida*, and *H. canescens*. All the shoots that stand out from the wall must be pruned hard back in March.

Magnolia grandiflora has a noble appearance trained to the walls of a large mansion, but it is not suited for a small villa.

Passiflora carulea is useful for draping walls with elegant foliage in sheltered situations. When strong and established it blooms freely, provided the young growth is not shortened during the summer.

Roses are not so desirable as they are commonly supposed to be; one of the best is *Gloire de Dijon*. The climbing hybrid perpetuals are also suitable.

Wistaria sinensis is one of the very finest of climbers for medium sized and large houses. The young shoots must be nailed in until the surface is covered, and in after years the shoots should be shortened back in the course of the summer to encourage the production of spurs. The white variety is less attractive than the specific form.

THE AMATEUR'S ORCHARD.

BY AN AMATEUR POMOLOGIST.



COULD that every reader of the FLORAL WORLD could have a peep into my fruit-room at the present moment, for I am well sure that it would do them good, inasmuch as it would show that the possession of a good store of fruit is not beyond the means of the amateur who can find the room for the trees. The room is by no means remarkable for its fittings, which are of the plainest and most commonplace description; but it is so well filled with fruit of the

choicest character that I am quite proud of it. I cannot say how many baskets of apples and pears that it contains, but I have no hesitation in saying that the stores are sufficient to maintain a regular supply for cooking and eating until the spring, as a proper proportion of late sorts were planted in the formation of the orchard—if my little quarter of fruit-trees is deserving of that designation.

My object in alluding to my fruit-room is not to boast of my skill in the cultivation of hardy fruits, for of horticultural skill I am bound to confess I have very little; but rather to show that amateurs may, without a very large expenditure of either money or labour, provide themselves with a supply of hardy fruits of first-class quality, and extending over about eight months of every twelve. I am also desirous of acknowledging the immense amount of assistance I have received from the pages of the *FLORAL WORLD* in the formation and management of my plantation of fruit-trees. To the issue for October, 1868, Mr. Gordon contributed an article entitled “The Villa Fruit Garden,” which set me thinking, and in the end I determined to form a fruit garden in the manner so ably explained by the writer. My grounds are not extensive, but I managed to spare a quarter of an acre from a little paddock adjoining the kitchen garden. This I had trenched over, and as the soil is of fairly good quality, neither too heavy nor too light, no manure nor fresh soil were applied. This plot of ground, which is rather more than a hundred feet in depth and in width, is large enough to afford accommodation for two hundred and twenty-five trees at seven feet apart each way, or a foot more than was advised by Mr. Gordon. They were all obtained on dwarfing stocks, and trained in the form of pyramids or compact bushes, according to their habit of growth, and nothing could be more satisfactory than the growth of these trees. All have grown freely, and such as have shown signs of excessive luxuriance—as, for example, in the production of stout shoots—have been carefully lifted in November, and replanted again. But those making a fair growth and bearing good crops have been undisturbed; for so long as the growth is not so luxuriant as to render the production of fruit-buds out of the question, no useful purpose would, in my opinion, be served by disturbing the roots.

The pruning I have done myself, and it has afforded me much interesting amusement. It is so simple that I have had no trouble, and I do not see how an amateur can go wrong, provided he bestows some thought upon his work. All that I do in the summer is to shorten the shoots back to within about six inches of the base. This is done, as a rule, about the first week in August, but in late seasons, when, owing to the coldness of the weather, the wood does not become firm so early as usual, the shortening back is deferred for a week or a fortnight, because if it is done whilst the trees are still growing rapidly the shoots will break again, and this is not desirable. On the other hand, if delayed until late in the season, the trees will not possess sufficient vigour for the formation of flower-buds. The winter pruning consists in removing a few shoots where they are overcrowded, and in shortening a few of the longest, if necessary, for the preservation of the contour of the tree, as I am

careful the trees should not become lop-sided through the shoots on one side taking the lead of those on the other. At first we cropped the intervening spaces with potatoes and other vegetables, as much for the purpose of keeping the ground free from weeds as anything else ; but now the trees cover so much of the surface that there is no space for vegetable crops.

Every year since 1870 we have had crops more or less good, for we have endeavoured to protect the blooms from spring frosts by means of coverings of thin canvas, and by hanging branches of fir and evergreens on them, and it is quite surprising how effectual the latter have been. By protecting a portion of the trees of the choicer kinds, we have been able to obtain a really good supply in seasons in which good fruit has been very scarce. The trees, owing to their comparative smallness, can be protected in the manner indicated without much trouble, although the canvas covering must of necessity be put on and taken off as occasion may require. The fir branches are put on as the trees come into bloom, and are left until no farther danger from frost is apprehended, as when the trees are in leaf there is not much danger of the frost injuring the young fruit, excepting that towards the extremities of the branches.

I believe my orchard to be the most profitable part of my garden. In June we annually commence to gather cherries; in July, plums, a supply of which is continued until October; in August, we begin to gather apples and pears, and of these we have a supply until March, and if the season previous has been a fruitful one, we have good samples of the latest kinds in April. Previous to the trees referred to coming into bearing, we depended entirely for our supplies upon a few standards, as hundreds of other owners of small gardens do; and I need hardly say that the fruit was meagre in quantity, and the quality indifferent, for it is not often that old standards represent first-class varieties.

The proportions of the several fruits are as follows:—90 apples, which is, perhaps, the most useful fruit that can be grown in the amateur's garden; 70 pears, which yield a long and abundant supply of dessert fruit of the finest quality; 50 plums, which are found of the utmost value for cooking and preserving, as well as for dessert. I have about seventy varieties of the several fruits, and for maintaining a regular supply throughout the seasons in which the respective fruits may be had in perfection. The varieties, with but few exceptions, are the same as those mentioned in the article referred to, and as the selection could not well be improved, I cannot do better than refer those of my readers who are disposed to follow my example, to it.

A very nice crop may be grown on half the above space—namely, an eighth of an acre for a hundred or fifty trees. Even fifty trees would yield a very acceptable supply, but would not suffice to maintain a continuous supply for a long period. I understand that apples on the Paradise or pears on the quince do not succeed if the soil is light and rests on gravel or chalk, but on loams and clays they appear to be quite at home. At all events, my soil is a rather deep loam, and the trees are in the most healthy and productive condition.

BEAUTIFUL DESSERT APPLES FOR WINTER USE.

BY THOMAS TRUSSLER,
Nurseryman, Edmonton, N.



HIGHLY-COLOURED fruit contributes so much to the attractiveness of the dinner-table when laid *à la Russe*, especially during the winter season, when everything is dull and cold without, that it behoves the planter to study the colouring as well as the quality of the several fruits. There is not much choice amongst grapes, for we have nothing better than the deep purple of the Black Hamburgh, or the rich amber of the Muscat of Alexandria; the finest winter pears are pretty much alike so far as colour and appearance are concerned, but amongst the apples there is a wide range for selection. Some of those of the finest quality and remarkable for their productiveness have a very dull skin, and are by no means attractive, whilst many others equally good in quality and quite as productive have a skin of the most brilliant crimson, or striped with crimson on a rich yellow ground. There are a dozen that are of great beauty, and these tastefully arranged, in combination with the more sombre coloured pears and other fruits, produce a very rich effect upon the dinner table. They are in fact so good in every way that they should form part of every plantation of apple trees. Highly-coloured fruit is not much required during the summer and early autumn months, and in making a selection from the varieties, I shall confine myself to those in season during November and the three following months, the principal portion being at their best during the Christmas and New Year's festivities.

The twelve that can be the most strongly recommended as combining high colouring with fine quality and heavy cropping are as under:—

Adam's Pearmain, a large pearmain-shaped fruit, in season from December to February. The skin is pale yellow streaked with bright red on the sunny side; the flesh is crisp, juicy, and delicious.

Api or *Lady Apple*, a very small round fruit, pleasant in flavour, and having a clear shining skin of the most brilliant crimson. It is very beautiful upon the table, and is usually plentiful in the fruiterers' shops during the winter.

Barcelona Pearmain is a medium sized fruit, with a highly aromatic flesh, and skin of the most brilliant red in the sun, and rich yellow in the shade. It is at its best from November to March. The tree crops heavily.

Blenheim Orange, when well coloured, is very beautiful, and as it is one of the finest cooking apples as well as being of fair quality for the dessert, it can be strongly recommended. In season from November to February.

Cellini, although properly considered a culinary apple, deserves mention here, for it is of fairly good quality for the dessert. The

fruit is of medium size, the skin rich yellow, and streaked and mottled with bright reddish crimson on the sunny side. Its season is comprised in the months of October and November.

Court Pendu Plat, a medium-sized roundish apple, of the richest crimson on the sunny side, the flesh rich and pleasantly acid, and the tree a heavy cropper. Its season is from November to April.

Fearn's Pippin is somewhat similar to the variety immediately preceding it, and remarkable for its fine rich, red colour, splendid flavour, and good bearing qualities. In use from November to February.

Lord Burghley, a medium-sized fruit with golden yellow skin, overlaid with deep shining crimson on the side exposed to the sun; the flesh is tender, rather sweet, and full of juice. It is fit for use about the middle of December, and remains in excellent condition until the end of April.

Northern Spy, an American apple of large size, handsome in shape and richly coloured, the skin being beautifully streaked with bright red on a yellow ground; the flesh, as in the case of most American apples, is tender, juicy, and perfumed. In use at the same time as the variety immediately preceding.

Winter Pearmain, a large conical fruit of excellent quality, both for cooking and dessert. The skin is richly painted with red on the sunny side. The flesh is rich, crisp, rather sweet, and pleasantly acid. The tree is very productive. In use from December to April.

Worcester Pearmain is a new apple, of surpassing beauty. The fruit is rather above medium size, and the skin is of the most intense crimson colour. It is of excellent quality, both as a dessert and kitchen fruit, and the tree is said to bear heavy crops. Like other new fruits it is as yet expensive, but not extravagantly so. The raiser is Mr. R. Smith, of Worcester, who is now distributing it in the ordinary course of trade. It is in use during September and the three following months.

Several of the kitchen apples make splendid trophy groups, but in my opinion they ought not to be put on the table, although I know it is done sometimes.

KEEPING RIPE GRAPES IN WINTER.

BY WILLIAM COLE,

The Grove Vineyard, Feltham, Middlesex.



It may not be amiss to remind those readers who have grape-vines in their greenhouses, or are fortunate enough to possess a vinery, that grapes after they attain maturity can be kept in the most excellent condition for a considerable period after they are removed from the vines. The length of time they can be so kept depends entirely upon the sort and the time it will hang upon the vine. The Black Hamburgh and other thin-skinned grapes cannot well be kept over Christmas;

but the Alicante, Lady Downes, Gros Colman, and the Calabrian Raisin will remain perfectly sound until March, or even April. One of the chief points in keeping ripe grapes during the winter is to maintain a dry atmosphere about them, and this is quite impossible in a greenhouse, or a vinery filled with plants; for the latter will require supplies of water at intervals, and the dampness arising from them will so charge the atmosphere with humidity, as to render it a work of extreme difficulty to prevent the decay of the grapes. The advantage of removing the grapes from the vines is immense, for it sets the houses at liberty to be filled with bedding and other plants, and it renders it possible to prune and dress the vines when there is very little work going on outside, which to my mind are two very important considerations.

Nothing could be more simple than keeping the grapes perfectly plump and fresh after their removal from the vines, and I will at once briefly explain it. Procure as many soda-water, lemonade, or similar bottles as there are bunches of grapes, fasten a piece of wire or string round the neck of each, by which to suspend it to the shelves of the store-room, and then put in each a dessert-spoonful of crushed charcoal; fill with perfectly clean water, and hang them up in the store or fruit room. Any room that is dry, and not likely to be influenced much by the weather outside, will do. Cut each branch about nine inches below the point where the bunch is joined to it, and at once insert the end of the branch in the bottle, so that the bunch will hang down in its usual manner.

No part of the branch above the bunch must be removed, for it is found that when they are cut across beyond the bunches the berries soon shrivel; they also shrivel if the branch is separated from the vine half-an-hour or so before its insertion in the water. The bunches should be examined occasionally, for the purpose of removing any berries showing signs of decay, to prevent their contaminating others. But as a rule, they should be sent to table before there are many decaying berries that require removal.

This plan of keeping grapes has been in operation six or seven years, and in no one season has there been anything approaching a failure. Amateurs, therefore, who have grapes still hanging in their greenhouses may at once cut, and put them in bottles as above advised, without any anxiety whatever. It was at first feared that there would be a deterioration in flavour through the insertion of the ends of the branches in water; but several years' experience has shown that there is no real danger to be apprehended on that score.

CRINUM MOOREI has flowered finely at Glasnevin this season, and justifies Dr. Hooker's figure and eulogistic description of it in the *Botanical Magazine*. It is a grand hardy herbaceous plant, and, in common with others of this interesting genus, is a thirsty soul.

THE CENTURY PLANT.—The variegated form of *Agave americana* has lately flowered in the grounds of Windmill Lodge, Bishop's Stortford, and attracted a considerable amount of attention. In this case the history of the plant was certainly over ninety years, but how much over no one could say.

November.

GROWING STOVE-PLANTS IN A COLD-HOUSE.

BY M. DE TERNISIEN.



THIS may sound paradoxical, but it is strictly and mathematically correct. I manage it thus:—In a spare corner of a common glass-house I have put up a block of clay bricks. In this I have set a fireplace, *i.e.*, some fire-bars, with a small door, and a horizontal flue running level with the fire-bars to a length of about five feet. From the further extremity of the flue rises some earthenware piping, by way of chimney. This I have surrounded with ten to twelve inches of clay. Over the fireplace is a loft or hollow space, forming a sort of cavity in the brickwork about two feet six inches in depth, which is filled with tan covered over with peat-earth. In the tan I have formed miniature frames with panes of glass.

When a fire is lit in the fireplace, it warms the bricks through, as also the tan and peat-earth. The heat rising in the tan, communicates itself to the glass boxes and their contents, setting up a gentle, close, moist heat. The syringe must be freely used.

In the aforesaid frames I grow, if the expression may be permitted, *Bertolonius*, *Sonerilas*, *Dichorisandras*, etc. Under such conditions, these beautiful little specimens of the Almighty's handiwork thrive amazingly. To describe them is difficult, indeed impossible, but I must make an attempt. Imagine charming little rosettes upon beautiful green, speckled, some with white and some with pink. What enhances the beauty of the foliage is that the spots stand out as in relief. In *Bertolonia margaritacea* the leaves are studded with innumerable small pearls; in *Bertolonia roseo-punctatissima* tiny rubies shine forth from a like setting. The flowers of these plants, pretty as they are, are their least ornament. In another frame I grew a collection of small kinds of *Maranta*. These, too, are charming plants, with handsome velvety leaves striped in many colours. They thrive equally well in this warm, moist temperature. Another frame contains *Dichorisandra*, *Eranthemum*, *Fittonias*, a few *Crotons*, etc.

All these plants do wonderfully well under the conditions described, and at comparatively small cost. In the course of twelve months I burn 120 fr. (£5) worth of coal, or, more correctly speaking, coal-dust, which stands me in only half as much as large coal. In winter, that is to say in the coldest weather, I keep the fire going from 6 A.M. to 10 P.M. This does not last long, as the winters in this neighbourhood (Cherbourg) are very mild. In February and March I light the fire at 10 A.M. and keep it in until 8 P.M. In April and May I begin at 4 P.M. and continue the fire till 8 P.M. During the months of June, July, August, and September I leave off firing altogether, resuming about October 15th.

I have not yet tried *Anactochilus*; but I am convinced that these delightful little orchids would also do well. Here would be another jewel to add to my collection. Unfortunately they are expensive plants. I ought to add that in summer, when the sun sends its rays

right through my small glass house, I shade with a woollen cloth. Wool is a bad conductor of heat, and suitably tempers the solar heat, contributing thereby to the maintenance of a uniform temperature and humidity. If a linen cloth were used the leaves would flag, and the plants would probably suffer.

My method of heating is the most primitive, the simplest, and cheapest that can be conceived; no thermosiphon, no hot-water pipes, no steam. Only some clay and a few bricks, some iron bars and a small iron door. In winter-time the clay-bricks diffuse heat enough to keep out the frost from every part of the cold-house, and so two ends are served at once.

Of course I write for growers with limited purses. The rich have many resources from which their less affluent brethren are debarred. Not indeed that the wealthy can dispense with their poorer neighbours, for all experience shows how mutually dependent are our lives upon one another.

And now to conclude with a list of the plants I grow in my miniature stoves. I presume that the same plants could be grown in living rooms by placing them in portable glass cases:—

No. 1 Case.—*Maranta illustris*, *Jagoreana*, *virginalis*, *Mackoyana*, *regalis*, *roseo-picta*, *hieroglyphica*, and *pulchella*.

No. 2 Case.—*Dichorisandra vittata*, *undata*, *mosaica*; *Bertolonia guttata albo punctatissima*, *roseo-punctatissima*, *margaritacea*; *Gravesia roseo-punctatissima*; *Sonerila margaritacea*; *Eranthemum igneum*.

No. 3 Case.—*Fittonia argyrcneura*, *Pearcei*; *Croton interruptum*, *undulatum*; *Eranthemum marmoratum*; *Caladium chantinii*; *Hoya bella*.

You will see that I dot my i's; it is well in horticultural matters. We cannot bestow too much care and attention on plants, especially on plants as delicate as those just enumerated, which many amateur horticulturists regard as altogether beyond their reach.

BRIGHT FLOWERS FOR DULL DAYS.

BY A TOWN AMATEUR.



IN every garden containing a conservatory (or even a greenhouse) an endeavour should be made to keep it gay with flowers from October to March; for during the period embraced by these two months there are, practically, no flowers out-of-doors; and if flowers are required in the conservatory at any season of the year, I take it to be when there are none outside, and when also the weather is so dull and cold, as to make one be glad to take advantage of the comfortable temperature of the plant-houses. Winter-flowering plants are plentiful—far more so than is supposed to be the case; but as a grand display of flowers can be produced with greater facility during the spring and summer than at any other time, the amateur is apt to

devote his chief attention to the cultivation of those subjects blooming during the seasons last mentioned. For many years past I have filled my conservatory during the summer with ferns, palms, and a few of the bold-growing, ornamental-leaved plants; for we have such an abundance of flowers of all kinds, more especially of roses, in the garden, that they are not so much wanted in-doors. I am, therefore, well able to bestow more care and attention upon those things which may be had in bloom during the winter, and my display of flowers is much admired by my friends. I have also a little plant-stove, thirty feet in length, and ten feet in width; and as this also contains a fair proportion of plants blooming in winter, we have, during the Christmas and New Year's festivities, a profusion of flowers for in-door decorations.

In this communication I am simply desirous of making better known those subjects which contribute so much to the attractiveness of the conservatory and plant-stove from the present moment until the month of March next. I shall say very little about their cultivation, for I am not at all anxious to bore the reader with a long string of cultural details; but as I am anxious to do all I can in assisting those who may be wishful to grow any of the subjects that will be mentioned, I shall be happy to advise them on their making their wishes known through the Editor.

The winter-flowering greenhouse plants are not so brightly coloured as those occupying the stove; yet, as a much larger number of readers can cultivate them, they must here have the first place. *Acacia affinis* is one of the finest of the winter-flowering species of this great family; but it requires so much space, that it is only suited for a lofty structure, and I have discarded it. *A. armata* is more generally useful, and very distinct. It is very compact, has dark green leaves, and bears a profusion of its golden ball-like flowers. I prune my specimens annually, as they go out of bloom; and when they commence to break, shift them into a larger pot, using a mixture of peat, loam, and sand. Neat specimens from one to three feet high are the most attractive. The winter-flowering Carnations are highly valued, as the flowers come in so useful for bouquets. The cuttings are struck in the spring, and the plants shifted on until they are put in six-inch pots. My favourites of these are *Boule de Feu*, scarlet; *Daybreak*, rosy scarlet; *Irma*, rose; *La Belle*, white; *Liverani*, scarlet and crimson flake; *Marguerite Bonnet*, white; *Miss Jolliffe*, blush pink; *Souvenir de la Malmaison*, blush, large, and scented like a clove, and *Vulcan*, scarlet. From my knowledge of these flowers, it would appear to be difficult to go wrong in selecting varieties, as they are all so good; but the above are exceedingly beautiful, and represent the most useful colours. *Coronilla glauca* is most useful for autumn flowering, as its bright yellow flowers are freely produced, and pleasantly fragrant. If it is pruned moderately every spring, and repotted every second year, it will bloom abundantly. It should be placed out of doors during the summer, and be well supplied with water. *Celosia pyramidalis* I find very useful, as the plummy inflorescence is so attractive when intermixed with cut flowers. The seed is sown in May, the seed-

pans placed in a cucumber frame, and the plants grown on in much the same manner as balsams. Some of our specimens are three feet high, and perfect pyramids of bloom. *Cyclamens* are grown largely. I have quite one hundred specimens, representing all the shades of colour found in these lovely flowers. These are grown in the usual way. *Epacris*, of which I have about a score nice plants, contribute much to the beauty of the conservatory. *Erica hyemalis* and *E. gracilis* are also most attractive, and the best of the winter-flowering Heaths. These all have the young shoots cut rather hard back, soon after shifted into larger pots, kept in a frame for a month or so, and then placed out of doors for the remainder of the season. Managed in this way, it is astounding how well they bloom. *Primulas*, crimson and white, are, like the *Cyclamens*, grown in quantities; and to maintain a succession of bloom, we sow seed early in March, and again late in April. *Rhododendron jasminiflorum* and its varieties are charming for winter, for they require very little attention beyond being well supplied with water. Of the varieties I have *Princess Alice*, blush, very fragrant, *Princess Helena*, pink, and *Princess Royal*, rich rose. *Salvia splendens* and *S. fulgens* are both very attractive, and large specimens are readily produced. My plan is to strike a sufficiency of cuttings, grow them on freely until the end of May, and then plant them in a bed or border of rich soil. They are stopped twice in the course of the summer, and towards the end of September are lifted and put in pots, according to their size. They soon commence to bloom, and make a brilliant display.

We will now turn to the stove plants, and I will briefly indicate a few of the most useful. *Aphelandra aurantiaca* Roetzli has dark bronzy green leaves, and spikes of brilliant orange scarlet flowers. *Centropogon Lucyanus* has trusses of tubular-shaped, rose-coloured flowers. *Eranthemum pulchellum* is of small growth, and has deep blue flowers. *Poinsettia pulcherrima* may be considered one of the most attractive of winter flowers, and is well known for its large terminal heads of rosy scarlet bracts. *Euphorbia jacquincæflora* is held in high repute, for its branchlets, when well furnished with bloom, are most valuable for head-dresses. *Scutellaria mocciniana* is also very attractive, and a general favourite. These are all grown in much the same manner. Early in March four or five cuttings are inserted round the side of a three-inch pot, and these are shifted on as required, until they are put in six or eight inch pots, according to their size. As the cuttings are not divided, as many pots of each kind must be filled with cuttings, according to the number of specimens required. *Eucharis amazonica*, from which we obtain large numbers of pure white flowers, is rather peculiar in its requirements. It may be had in bloom at any season of the year; but to insure its flowering at midwinter, the plants require repotting in May and to be grown on freely, until the new growth is completed. Then they must be removed to a cooler position, and kept rather dry at the roots until the early part of November, when, by placing them in a warmer corner, and supplying liberally with water, they will soon commence to produce their lovely flowers. We have just

now a grand display of *Gesneras*, consisting of *G. exoniensis*, *G. zebrina splendens*, and *G. refulgens*. For single plants for the dinner-table, and for vases, we put one corm in a small sixty, and, when well started, shift it into a five-inch pot. For specimens we put five corms in a five-inch pot, and transfer them when the young plants are about three inches high into nine-inch pots. The corms are started about the middle of April, to insure the plants flowering in November and December. The varieties of *Epiphyllum truncatum* are most effective, whether in the form of small plants for the dinner-table, or large specimens. They can be grown on for many years, without having to renew the stock by propagation. The main point is, as soon as they have made their new growth, to place them in a sunny position, and keep dry at the roots. They should be taken into the stove about the end of October, and then be watered liberally.

In addition to the above, I grow a few other good things; but I have thought it better to enumerate a few of the best only. It will be seen that, with a greenhouse and a small stove, there need be no difficulty in having an abundance of flowers during the next two months. I have omitted all mention of the Camellias, for every one knows they may be had in perfection during the winter. And I have said nothing about Orchids, for I have only a few of them; but I have seen some in the houses of friends which are so good, that I shall look them up before long.

THE AMORPHOPHALLUS RIVIERI.

BY M. AUGUSTE RIVIERE,

Gardener-in-Chief at the Luxembourg, and Director of the Garden at Hamma, Algeria.



EARLY in the year 1859, I received some seeds from Cochin-China, amongst which were found a couple of small stray bulbs. Their origin leading me to suppose that they would require heat, I placed them in a stove-house, where they grew, increased in size, and unfolded their spathe. They proved to be arads. They remained three years in this state.

When my plants had multiplied sufficiently, desiring to know something more about them, I removed a few specimens into the temperate-house; under this treatment they took a larger growth, and acquired a more lasting vegetation. Not wishing to stop short at this point, I soon afterwards removed others into open beds, out of doors. Here the growth experienced a check, but the plants were not destroyed. Growing more slowly, they became more robust and longer-lived, and soon they acquired their maximum development. The corms became doubled in size, and put out a number of small offsets, which enabled me to propagate the species on a large scale.

I had long had the honour and advantage of being in communication with M. Durieu de Maissonneude, the learned Director of the Botanic Garden at Bordeaux, and I lost no time in acquainting him of my discovery. "It is the most beautiful plant I have ever seen," he said to me the year after, and he described it in detail. He propagated it as I had done, and then asked my permission to entrust a few of the *corms* to some amateur friends, correspondents, and collectors, to which I readily gave consent. The first blossoms detected by M. Prillieux showed to what tribe the species belonged; it was an *Amorphophallus*. As its general appearance, botanic peculiarities, and hardihood distinguished it from other previously-known species, a distinctive appellation became necessary; after some hesitation and delay, the name *Amorphophallus Rivieri* was fixed upon. Under this name it has been known ever since, and we have continued to raise it, upon a large scale, in our magnificent garden at Hamma, in the neighbourhood of Algiers.

The tuberous root of *Amorphophallus Rivieri* attains to a considerable size. In the Botanic Gardens at Bordeaux, a specimen of 3 kilogs. (6·6 lbs.), and another of 4 kilogs. (8·8 lbs.), weight have been seen. It is of a greyish-black colour, hemispherical, concave on the upper surface, having, in the centre of the depression, a small conical protuberance of a pink or purplish colour. It is nothing more nor less than a leaf-bud, from which proceeds the leaf. If the *corm* be too immature to bear a flower, it produces a leaf only. From this point should grow annually, but successively, the flower and the leaf, the flower preceding the leaf, a peculiarity which the *Amorphophallus* shares with other plants.

When the *corm* has attained a certain size, as soon as vegetation commences a sort of stem makes its appearance: this is the inflorescence. A spike appears, with a few bractiform scales about the base, which grows rapidly, attaining a height of 50 to 80 centimetres (18 to 30 in.), or more, in the course of a fortnight or three weeks. The summit then diverges, opens, and forms a sort of cornet, convoluted about its own axis, sometimes from right to left, sometimes from left to right, as I have noticed on the same individual in two consecutive years: this is the *spathe*. The disk widens towards the summit; inside it is of a purple brown; externally, of an intense green, varied with light reddish or whitish spots. From the centre of the *spathe* issues an elongated body (*phallus*), pointed, depressed, or dilated, shining, and of the same colour as the interior surface of the *spathe* itself, which it considerably exceeds in length: this is the *spadix*. It is sterile throughout the greater part of its length. The monœcious flowers are scarcely visible; they are arranged in a ring about the base of the *spadix*. The blossom is not only insignificant in regard of appearance, but its duration is short as well—happily so, I feel bound to add, as during its continuance the plant emits a horribly nauseous, moribund odour, which is found in certain *arads*, and which, at first, quickly disenchanted me with its culture under glass. Fortunately the smell had disappeared five days later. Those who are not interested botanically in the blossom would do well to remove it, and so avoid the disagreeable odour that

it diffuses. The bud which is to produce the leaf will grow all the more vigorously.

In 1870, I was enabled to observe the first fructification of my *Amorphophalli*, which occurred simultaneously at the Luxembourg Gardens and at Hamma, in Algeria. In July the fruit had attained full maturity; it is of a pulpy texture, red in colour, and clustered in catkins, having a considerable analogy to that of the common arum, or of *Arum Italicum*.

The leaf does not show until after the inflorescence has died off; then, rising from the self-same depression in the upper surface of the root, appears another bud, likewise composed of scales, from the centre of which appears a sort of stem, which grows lustily; this is the petiole, which later will have to support the full spread of the magnificent leaf. Big, cylindrical, glabrous, and furrowed longitudinally, it ascends rapidly, with a tumid but closed summit; then, as it increases in size, and attains a height of 30 or 40 centimetres (11 to 15 in.), the extremity opens, and three articulations, heretofore accrete, divide and separate, spreading out into three main ramifications. These articulations next subdivide, and produce other articulations, lateral, distichous, alternate, which in their turn produce others, thus elaborating the skeleton of a gigantic peltate, and irregularly-dissected leaf. Meanwhile the petiole continues to grow, sometimes attaining a height of three feet, and the disk forms. The extremities of the ramifications now become folded over like the reflex lips of a vase, and the leaf of the *Amorphophallus Rivieri*, with its profound inclinations, its multifold articulations, and its wing-like segments, presents the appearance of a most graceful monophyllous palm.

To the elegance of contour of the plant itself must be added the peculiar appearance of the leaf-stalk, which is somewhat rough, of a very intense green colour, from which the reddish, whitish, or purplish patches stand out in relief, a peculiarity observable likewise on the articulations of the leaf, and which gives to the epidermis generally the appearance of a serpent's skin. The spike bearing the inflorescence has previously presented the same characteristics. The petiole is round and full, but towards the base may be observed an *alveola*, in which are formed the two forthcoming buds, one to bear the next year's flower, the other the leaf, both of them being renewed annually.

The *Amorphophallus Rivieri* is almost always monophyllous, a single petiole forms, and consequently a single leaf is produced. Cases have, however, been met with in which several leaves have appeared on a single stalk. The aspect is not less pleasing, although less regular.

The culture of *Amorphophallus Rivieri* is simple, but certain precautions are indispensable to secure a luxuriant growth. My mode of treatment is the following:—The vegetation of the plant invariably begins to show itself about the middle of April. Pots should be in readiness of suitable sizes, so that the largest parts of the bulbs may be surrounded by 1 or 2 centimetres ($\frac{1}{4}$ to $\frac{1}{2}$ in.) of soil; very light earth from the orangery is preferable; they are

plunged to a depth of 4 to 6 centimetres ($1\frac{1}{2}$ to 2 in.) The pots are then set in a frame, or in a cold-house, but as near as possible to the glass, so that, under the stimulus of the sun's rays, the emission of roots may be more prompt. The soil should be kept slightly damp by watering regularly.

When a cold-house is not available, a cold-frame will do to receive the plants after potting. I say a cold-frame, because it will not do to force the plants by giving heat; this would be to defeat the object in view, seeing that the plants will have to go out in open beds at a time when the frosts are not quite over.

Up to the middle of May the plants are kept as above; they should then be brought out, taking care to stand them in the sun. The bud containing the inflorescence will not be long in making its appearance, and this is the most favourable time for planting out in the open ground. In removing the plants from the pots, care should be taken not to disturb the earth adhering to the *corms*, nor to injure the young rootlets.

A rich, and especially a light, soil, as being more easily warmed, is best for the plant, but it is not absolutely indispensable; indeed, the plant is not very fastidious in this respect. What is most needed is *sunshine*, and the plants should be placed accordingly. If the soil is poor it should be amended, and in every case it should be deeply worked.

The striking appearance of our arad adapts it for planting out singly on lawns, where it produces a very fine effect; or it may be set in groups of three or four together, or in beds. For the latter the *corms* should be sorted previously, so that the largest, which will produce the biggest plants, may be placed in the centre, the next largest in size next, and the smallest outside. Without this precaution, the beds would present an irregular appearance. They may be put in at distances of 80 centimetres (30 in.) apart, more or less according to fancy, and should be covered over with 5 or 6 centimetres (2 in.) of earth, or even more. This is an essential point to strong healthy growth, as the roots are only developed on the upper surface of the root, about the base of the leaf-bud. After planting, the ground should be covered with a tolerably thick mulching of rotted dung or leaves. During the whole period of estivation, water should be given frequently to keep the soil always damp.

If these conditions be carefully attended to, the *Amorphophallus Rivieri* will retain its graceful foliage until autumn, and constitute an ornament to the lawn during the space of four months. The leaves are very sensitive to cold, and are withered by the first frosts. As soon as they are destroyed, it is time to think about taking up the bulbs to winter them until the beginning of the next season—*i.e.*, from about the end of October or beginning of November until the beginning of April. The withered portions of the leaf-stalks should be cut down beforehand.

Whilst the *corms* are still young they are simple, but after several years' growth they put out, on the surface of their superior depressions, and also at the base of the central buds, a good many small

tuberous rhizomes of variable shape, and of a somewhat lighter grey than the *corm* itself. These are the future scions, with whose aid the species is to be propagated. They are fragile, and are readily detached from the parent root. A few which had been forgotten, and left in the ground all the winter without shelter of any sort, sprouted in the following spring, which will give an idea of the hardihood of the species.

When once the *corms* are taken up and the scions detached, the former may be kept as easily as dahlias and other similar bulbs. On or under the shelves in a cold-house, in an orangery, in a cellar, or anywhere out of reach of the frosts, they will keep well; but too dry a place should be avoided, as the *corms* lose their moisture, and become flabby, to the detriment of their buds. More than once this has been the cause of failure.

The detached scions should be spread out on a shelf in a dry place, to allow their wounds to cicatrize; after which they should be deposited in layers, or in sand, or pots, or boxes, as in the stratification of certain kinds of seeds. In the ensuing spring they should be planted in seed-beds, where they will form subjects, which, in their turn, after a couple of years' growth, will be ready for decorative purposes.

In this way the *Amorphophallus Rivieri* is grown in open ground; but it would be a shame that a plant so ornamental should not be used for in-door decoration as well. For this purpose we should proceed as follows:—About the beginning of April the *corms* should be potted, as directed above, and the pots set in a stove; towards the middle of May the plants become developed, and should then be given abundance of air. It would, perhaps, be best to set them in an airy cold-frame. All through the summer water should be given abundantly overhead and at the foot of the plants. When they have attained a sufficient size, they may be placed in the rooms, where they will find few rivals. Single subjects are generally used. Here they may be kept for a fortnight. They will then require refreshment, and to this end should be put in the cold-frame again for a week; after this they may be brought back again for a fortnight, and so on until they are done with.

On the approach of autumn, when the leaves of the pot subjects begin to fade, the waterings should be less frequent, and from October until April they should be discontinued altogether. The plants should then be repotted in pots of larger size if required, and with fresh earth. In winter time the pots should be shelved under glass. The season of flowering is likely to be materially influenced by the mode of culture: for example, the plants we raised at first in the stove invariably showed their inflorescence in December, January, or February; whilst those reared in the temperate-house were as late as April. With the method we now practise, *i.e.*, taking up the bulbs, keeping them, and replanting in April, it is May or June before the spathes appear, which allows us to set out the plants in the open ground, without risk of injury.

It may be imagined that the hardy character of our *arad* enables it to dispense with shelter and to winter in the ground, where

the climate is warm enough. In Spain and Italy, and on the Mediterranean shores, the comparatively mild winters do it no harm. In Algeria, in the garden at Hamma, where we have cultivated it for several years past, and where it grows so readily that it may be considered as naturalized, the bulbs are left out in the open ground.

Such is the *Amorphophallus Rivieri*. Its size, and the peculiarity of its foliage, the singularity of its petiole and ramifications, the elegance of its shape, and withal its hardihood, render it one of the most ornamental plants for a conservatory, or for in-door or out-door decoration. For several years past the gardens of the Luxembourg have shown specimens growing, singly or in groups, on the lawns and in beds. The general effect has been magnificent. It is a new plant to add to our list of exotic flowers.

CUCUMBERS AT CHRISTMAS AND ALL THE YEAR ROUND.

BY A KENTISH GARDENER.



LETTER has been placed in my hands by the Editor, in which a correspondent asks for advice on the cultivation of cucumbers generally, and more particularly on the production of winter crops. The Editor, who has long been acquainted with the success which has been achieved in the cultivation of cucumbers in the gardens under my charge, asks me to advise the correspondent as to the steps that he should take, and it is with much pleasure that I comply with the request. I shall not attempt to write a long treatise on the subject, for I have not the time, and I am afraid that the space cannot be well spared just now.

First of all, I would say that the secrets of producing cucumbers during the dull months of winter, in a condition fit for use, are few in number, and by no means difficult to understand. In the first place, it is no use to attempt to grow them, excepting in a properly constructed and sufficiently heated house. Hipped or span-roofed houses are the best, and cucumbers grown in winter in small lean-to houses are often bitter through an insufficiency of light. Secondly, sufficient heating power must be at command, to prevent the plants suffering from a low temperature in severe weather. Whether grown upon a hot-water tank or upon rubble, the heating medium must be sufficient to maintain a bottom-heat of 80°, for plants in a fruiting state will not continue so long with a less warmth at their roots. Thirdly, to have them through November, December, and the first two months of the new year, the plants ought to be raised either from seed or cuttings in the month of August previous, and planted out in the beds not later than the first week in September. Fourthly, the main object should be to encourage a vigorous growth

November.

during the earlier stages, and in doing this give plenty of air both night and day, to enable the new growth to be both stout and firm. Towards the end of September air must be admitted more cautiously, as the nights are sometimes cold and damp, and the fires must be started about the same time, to keep the temperature to its proper height, and also to expel any excess of moisture. Also bear in mind that a close stagnant atmosphere at this season of the year is a frequent cause of mildew, which must be warded off by timely attention, or the plants will soon be destroyed. Fifthly, you must not stop the young growth severely after it has reached the trellis. One or two pinchings of the strongest leaders, about the middle of October, is all that will be required. After that time they will not make more growth than is needful for the production of fresh fruit.

As regards the temperature of the house up to that time, much will depend upon the state of the weather. If a nice growing temperature of 70° can be obtained during the day, and by early closing 60° during the night, the plants will be better without the aid of fire-heat. A high temperature in the house up to this time only creates a weak spindly growth, which, when winter comes with its long nights and dull days, is next to useless for the production of fruit. Care, too, must be taken not to over-crop through the first part of the season, if a continuous supply of fruit is required. The cultivator must aim at securing vigorous-grown plants by the end of November without the use of much artificial heat, and then they will be in good condition to go through the winter satisfactorily. Depend upon it, nothing beats a healthy root-action, and a strong vigorous growth, obtained as much as possible under the most natural conditions. Every leaf made after the middle of November must be preserved with the greatest care, for after that time no more are produced than are really required. The leaves must be kept clean and healthy by gentle syringings on the mornings of mild days, when air can be admitted to dry up the superfluous moisture quickly. A gentle fumigation of tobacco must be given directly there is the least trace of green-fly or thrips.

A temperature of 70° to 75° by day, and 60° by night, is a safe temperature for so dull a season of the year. In the spring, plants that have been in bearing for two or three months very often show signs of weakness; therefore, they must not be excited too soon. The middle or end of February will be plenty early enough, and then, as the days lengthen, a day temperature of 80° by fire-heat may be maintained. Previous to increasing the day temperature, give the surface of the bed a top-dressing three inches in thickness of very short rotten dung, the fattest that can be obtained, or, what is better still, equal parts dung and good lumpy fibrous loam: this should be warmed before being put on the bed. The surface roots will soon find their way into this, and in a short time throw new life and vigour into the plants. In March, syringing, both night and early morning, may be practised with benefit, and a humid atmosphere must also be maintained by the use of evaporating troughs, and by frequently damping the paths of the house. Remember that cucumber plants absorb an immense quantity by their leaves. In a few weeks from

this time they will begin to bear vigorously, and to keep them going steadily the roots must receive constant assistance by a good soaking of clear, warm, weak manure-water at least once a week. In June, cut away some of the oldest growth, and give the bed another surface dressing equal to the first; also continue the application of manure-water. If this is done, and the plants attended to carefully through the summer, they will yield a productive crop until the season comes round again for planting a fresh stock for the winter.

WINTERING THE AFRICAN LILY.



It should be generally known that the African lily (*Agapanthus umbellatus*) may be wintered in any place where it can obtain a moderate amount of light and be kept free from frost. I keep a couple of dozen large plants through the winter months in a place originally intended for a store-room, in which I can keep a fire during frosty weather. The plants are placed on a rough stage raised in front of the window. I stand them out of doors in a sheltered place in April or May, if the weather is favourable. They were originally grown for placing along the sides of a broad walk; but I have since had a conservatory built, for the furnishing of which I find them extremely useful at a time of the year when flowering plants are scarce. The treatment they receive naturally causes them to bloom late, and they come in exactly at the time they are most wanted. I find them so easy to manage, that I would advise amateurs who are hard pushed in the latter part of the summer-time to keep up a supply of bloom in their conservatories, to grow a stock of agapanthus, if they have any shed or outhouse in which they can manage to winter them. As to soil, it is hardly necessary to say anything regarding it, for they will do in almost any good stuff; but mine are potted in two parts loam, one part rather rotten dung, with the addition of a little leaf-soil and sand. I reduce them in the spring of every other year, to keep them to a serviceable size, to effect which it is necessary to pull them to pieces, and I find they do not bloom so freely that year as the following; therefore it is best to do a part one year, and part the next. I would suggest that they be allowed plenty of root-room, or they will take it for themselves, by bursting the pots into countless pieces.

J. S.

MR. LAING, of Standstead and Rutland Park Nurseries, Forest Hill, was awarded two large silver medals for two collections of new golden bronze-leaved pelargoniums at the International Exhibition, Cologne.

BRUSSELS INTERNATIONAL HORTICULTURAL EXHIBITION.—The Honorary Presidency of the London Committee of the Brussels International Exhibition and Congress was some time since accepted by the Prince of Wales. Great efforts will be made to make both the Exhibition and Congress of the utmost practical service, more particularly by the discussion at the latter, by representatives of all nations, of the important subjects comprised in the Exhibition programme.

November.

THE GARDEN GUIDE FOR NOVEMBER.

ERE, in the northern gale,
The summer tresses of the trees are gone,
The woods of autumn, all around our vale,
Have put their glory on.

The mountains that infold
In their wide sweep the colour'd landscape round,
Seem groups of giant kings in purple and gold,
That guard the enchanted ground.

I roam the woods that crown
The upland, where the mingled splendours glow,
Where the gay company of trees look down
On the green fields below.

My steps are not alone
In these bright walks; the sweet south-west, at play,
Flies, rustling, where the painted leaves are strown
Along the winding way.

And far in heaven, the while,
The sun that sends the gale to wander here
Pours out on the fair earth his quiet smile—
The sweetest of the year.

O autumn! why so soon
Depart the hues that make thy forests glad;
Thy gentle wind and thy fair, sunny noon,
And leave thee wild and sad?

WORDSWORTH.



ALPINES suffer more from wet than frost; choice kinds had best be potted and put in frames, as during January there is usually much havoc committed among alpines on rockeries.

ARTICHOKES to be dressed for the winter by removing any late heads, the stalks of which can be inserted in a bed of earth under cover till wanted; next remove the large leaves, and mould up the plants without throwing any soil into the centre.

ASPARAGUS may be forced by the roughest of methods when there are plenty of leaves and large deep pits. Make up a forcing-bed, on a plot of spare ground, by means of a few boards to form the boundary of the pit, or turf walls where turf is plentiful. Five or six feet of leaves, without dung, will do very well, and when the roots are planted, rough boards put aslope to carry off rain and snow may be used to cover in lieu of glass frames. During hard weather any amount of dry litter may be heaped over, and a supply of this delicious vegetable be had for the mere cost of the roots in the first instance. Asparagus should have air and light when the shoots appear, as it is valueless unless the tops have two inches or so of green growth.

AURICULAS, CARNATIONS, PICOTEES, and PANSIES IN POTS to have air frequently, to prevent mildew; slight frosts will not hurt them so much as a confined and damp air.

CAMELLIAS DROPPING THEIR BUDS are the subject of frequent complaint at this time of year. We have frequently advised the use of liberal waterings after the buds are set and the wood as hard as necessary; and we can only repeat, that in the majority of cases the buds drop because the roots are dry.

CUCUMBERS to be kept safe as to bottom-heat, or they will begin now to drop their fruit, or to show canker at the collar. Be prompt, therefore, to renew the linings, if needful, where fermenting material is used. Recently-collected leaves will, with the help of manure once turned, yield a very steady heat, and the better in large masses.

ERICAS of the winter-blooming kinds are to be kept as well aired and as hardy as possible. When requiring water, give the roots a good soaking, choosing bright mild weather for it, if possible, and repeat the watering next day, if any doubt whether the ball has been moistened through. After this let them go nearly dry again, but never beyond a certain point of dryness, or the ball will get hard. The general stock of Cape heaths will bear a few degrees of frost without harm, if kept well aired at all favourable opportunities. What is most likely to injure them is a

dry fire-heat, and a too dry state of the roots. But they will want very little water at this time of year, and should have no encouragement to grow.

FORCING OF FLOWERS to be commenced now. First clean the glass, to make sure of the utmost possible amount of light; then get together the fermenting materials—leaves and sweet dung chiefly—and over this lay six inches of tan or spent hops to plunge the pots in. Put in nothing but what has been prepared for the work, and has ripe wood and well-formed flower-buds. Azaleas, Camellias, Gardenias, Roses, hybrid Rhododendrons, double Plums and Peaches, double Cherry, Weigelia, Tree Pæonies, Chimonanthus fragrans, Rhododendron ciliatum, Cytissus Atleeana, Kalmias, Andromeda floribunda, Daphnes, and Jasminium nudiflorum, are all cheap and easy subjects to force, and all beautiful in their season.

FROZEN PLANTS.—The amateur must always bear in mind that plants kept dry and well aired can endure two or three degrees more frost than plants of the same kind in a more damp condition. As with the best precautions valuable plants will sometimes get wholly or partially frozen, a word of advice now may be useful all the winter through. To recover frozen plants, the safest procedure is to keep them *in the dark* till they thaw, and to let the thawing take place *slowly*. A dry, *still air* is also essential; a frozen plant placed in a draught, in the sunshine, or in undue warmth, even if in darkness, will probably go to a pulp as soon as it is completely thawed; but if thawed slowly in dark and stillness, will recover, if the freezing has been only to a moderate degree.

GREENHOUSE.—At every opportunity remove dead leaves, trim away dead snags or mildewed shoots, give water if needful, and see that the drainage of the pots is safe. Use tepid water to all plants in a growing state, and as little as possible to everything.

HERBS should be taken up and potted, in case of severe weather. Parsley and mint are generally scarce in February, because there is no care taken in time to secure supplies. Large roots of parsley potted now will keep green and fresh till wanted. The roots of mint should be potted in leaf-mould, and the plants plunged in an asparagus bed, or placed on a flue to force it gently. Parsley may also be protected on the ground by means of hooped mats and litter.

HYACINTHS that have filled their pots with roots may now be pushed on by placing them over a moderate bottom-heat. In the early vinery the dung-bed will answer admirably, as the vapour will give the foliage a green, rich healthy hue, and the flowers will come in fine spikes.

KITCHEN GARDEN.—The most excellent results may be insured by deeply trenching the soil, and laying it up in ridges, to be fully exposed to the weather. Many really bad soils become good soils when broken up deeply and mixed with a portion of the subsoil, even though that subsoil may be by itself as bad as the other.

RASPBERRIES to have the old canes cut away, the new canes thinned to three or four of the strongest to each stool, and a good mulch of half-rotten dung laid down over their roots.

ROSES are frequently left in "by the heels" for weeks together at this time of year. It is very bad practice; the frost is sure to get to their roots; and in the event of mild and moist weather they are sure to throw out fresh roots, and those fresh roots are sure to be destroyed when they are removed to be properly planted. Therefore plant at once, head them up firm, and stake securely.

SEAKALE may be planted now in well-prepared ground in well-drained positions. The ground must be deeply trenched and liberally manured, and the manure thoroughly incorporated with the soil. Begin forcing now by first covering the stools with conical mounds of sand or coal-ashes (not leaves, which spoil the flavour). Place the seakale pots over as many stools as are to be started now, and fill the spaces between and over the pots with a mixture of stable dung that has been once turned, with leaves, straw, and other litter, beating it firm as you proceed, and leaving the whole smooth and tidy nine inches above the top of the pots.

SUCCULENT PLANTS must now be arranged in their winter quarters. In a mixed collection, the best place for them is a top shelf in the full light, and where they are not likely to suffer by drip.

HORTICULTURAL AFFAIRS.



THE INTERNATIONAL EXHIBITION OF POTATOES held at the Alexandra Palace, on September 30 and 31, proved an unqualified success. In extent and excellency it exceeded the anticipations of the most sanguine of its promoters, for every prize offered in the schedule was warmly contested, and the productions were throughout of a high order of merit. In all the classes the entries were most numerous, and in the more important of the smaller classes they ranged from twenty to thirty in each class, and in some of the classes for single dishes there were upwards of forty entries. Altogether the appearance of this vast array of potatoes was far more attractive than might have been expected, for the various collections were tastefully set up, and, to relieve the flatness inseparable from an exhibition of this kind, medium-sized foliage and flowering plants were placed in lines down the centre of the tables. All the more popular sorts were, as a matter of course, strongly represented, and in addition the visitors had an opportunity of becoming acquainted with varieties that do not often make their appearance upon the exhibition table. In the great class for twenty-four varieties, in which a silver cup of the value of £10 and £8 in money were offered as the first prize, the entries were numerous, and the collections all more or less good. The first prize was awarded to Mr. Richard Dean, of Ealing, for one of the finest collections of potatoes ever staged. The tubers were all of medium size, very even in outline, and altogether of the best possible quality. The round varieties represented in the collection were Willard, Fenn's Early Market, a medium-sized tuber of splendid quality for a first early; Rector of Woodstock, Princess Louise, Brownell's Beauty, Barron's Perfection, Onwards, Early Dimmisk, Red Emperor, Model, Blanchard, English Rose; and of kidneys, Wonderful Red, Prince of Teck, Snowflake, Extra Early Vermont, Bresee's Prolific, Fenn's International Kidney, a very handsome cylindrical tuber of rather large size; Salmon Kidney, Sutton's Lady Abbess, also extremely handsome; Cobbler's Lapstone, Mona's Pride, and Early Oneida. Mr. James Pink, gardener to Lord Sondes, Lees Court, Faversham, was second in the same class, and had a splendid collection. Mr. Shirley Hibberd had a fine collection of fifty varieties, to show the advantages resulting from the adoption of the ridge system on heavy clay soils, as explained in these pages on more than one occasion.

THE ROYAL HORTICULTURAL SOCIETY'S EXHIBITION OF FUNGI, CONES, ETC., on Wednesday, October 6, was a thin dreary affair, sufficiently extensive to indicate that a show was intended, and sufficiently small to prove that the fungi fancy is worn out, and has no real hold on public sympathies. A few novelties were shown in the Council Room, and there were large collections of apples from Messrs. W. Paul and Son, of Waltham Cross, and Mr. Dancer, of Fulham. Amongst the few fungi shown were some interesting species from Mr. James English, of Epping; Mr. Burnett, gardener to Mrs. Hope, the Deepdene, Dorking; and Mr. Beech, Castle Ashby. A pretty collection of cones, with the accompanying foliage, was shown by the Hon. and Rev. G. T. Boscawen, the majority of them grown at Lamorran, Cornwall. Mr. Smith, of Worcester, sent samples of an extremely handsome dessert apple, named *Worcester Pearmain* which is characterized by its brilliant crimson colour. It is of medium size, roundish conical, with closed eye; the flesh is white and tender and well flavoured. Mr. William Paul sent a seedling apple called *Beauty of Waltham*, in the way of Blenheim. Mr. R. Harvey, of Bury St. Edmunds, sent a nice dessert apple called *St. Edmund's Pippin*; it is medium sized, conical, with russety skin; the flavour is that of the Golden Russet. Amongst the plants there was a fine group of *Celosias* from Mr. Willis: a splendid *Renanthera coccinea* with fifty flowers, from Messrs. Veitch and Sons; and a splendid double scarlet Zonal from Mr. George Smith, of Tollington Nursery, Hornsey Road. It is a sport from *Vesuvius*, and one of the best plants of its class at our command.

THE R. H. S. EXHIBITIONS, 1876, have been increased by the addition of a show in May. The following are the dates in the revised schedule; March 15,

May 3, June 7 and 8, July 19 and 20, November 15. The May, June, and July exhibitions will be held in the great tent.

THE CHISWICK TRIAL OF ONIONS has proved completely successful, and the results will be of especial service to the seed trade. Over a hundred named kinds were grown, and careful comparison has reduced them to less than a score. In this respect it is a repetition of the celery trial. The following prove to be distinct: Danver's Yellow, Yellow Globe, Silver-Skin, White Spanish, Blood Red, White Tripoli, Red Tripoli, and James's Pear-shaped.

MESSRS. STUART AND MEIN, of Kelso, have favoured us with samples of Chilian beet, notable for immense variety and richness of colour. Although the gigantic size of this beet limits its use to gardens of a certain class, its colours have no parallel, and the samples from Kelso are the richest we have seen. The broad leaf stalks are in some instances of a clear ivory-white, in others intense orange, and thence pass through all shades of red, carmine, and crimson, the glossy surface considerably augmenting the effect.

MESSRS. JAMES CARTER AND Co. have been awarded by the jurors of the Cologne Exhibition a silver medal for the excellency of their grass seeds supplied to the Committee-General for laying down a portion of the Exhibition grounds.

M. EUGENE VERDIER'S Seedling Roses constitute an important feature in his horticultural undertakings, as he flowers on an average 30,000 every year.

THE ROYAL AQUARIUM AT WESTMINSTER is rapidly approaching completion, and bids fair to prove the grandest thing in the aquarium way ever attempted. It is a great undertaking, and an immense amount of talent has been brought to bear upon it by the combined energies of architects, engineers, and naturalists, all of them being well backed up by spirited business men commanding an ample capital. It will be, in its way, a macrocosm of inventions. The glass roof is being fixed by Mr. Rendle, and admirably represents his patent process, while the glass employed has been toughened by De la Bastie's process. The show tanks, 31 in number, two of which contain 40,000 gallons of water each, will require 2000 square feet of glass one inch thick, and 500 feet half an inch thick, all of which will be similarly toughened. Everywhere the utmost precautions are taken to prevent contamination of the water by contact with metals or cements—vulcanite, asphalte, slate, and stone being chiefly used for aqueducts and holders, both of fresh and salt water, while every pipe is accessible on all sides, so that, in case of leakage, repairs may be accomplished without difficulty. The beautiful new building in Tothill Street, Westminster, will not only contain aquaria, and present a marvellous exhibition of marine and river life, but it will combine the attractions of a winter garden, a picture gallery, and a concert room, and there will be added the occasional excitement of a flower show.

FICUS REPENS, a charming plant, so generally employed for covering walls of plant stoves, appears to be much hardier than is supposed to be the case. A writer in the *Monatschrift* (Berlin) records a proof of its hardiness. Having occasion, he says, to pass through Mingrelia in the autumn of 1873, he visited the ruins of a fine garden at Sugdidi, which was overrun by Omar Pasha in 1853. Among other remarkable things were the north and end walks of what had been a magnificent orangery. These were literally covered with a luxuriant profusion of climbing roses, wisteria, rubus, tecoma, passiflora, etc.: but most noteworthy was a large mass of *Ficus repens*. In the gardens around dahlias were cut to the ground, and the tips of the shoots of tea roses were already nipped by frost, but the *Ficus* was unscathed, and had resisted the cold of twenty winters. Although Sugdidi is favourably situated, the writer estimates that the thermometer must fall at least as low as 14° Fahr. This pretty creeper would therefore succeed in the warmer parts of the United Kingdom, and may probably be flourishing out-of-doors in some places at the present time.

AGAVE VICTORIA REGINÆ.—A splendid new species shown by M. L. de Smet at Cologne, and which gained a gold medal there, has passed into the hands of Mr. Peacock, who is exhibiting one of the plants at the Alexandra Palace. It is one of the most distinct Agaves in cultivation, having triangular leaves, marked with white on the margins, and devoid of spines, excepting one black curved one on the top of the leaves.

MINIATURE APPLE ORCHARDS.—The advantage of the new style of planting pyramid and bush trees over the old method of wholly planting standard trees, finds

(remarks the *Gardener's Chronicle* of October 2) excellent illustration in Mr. Francis Dancer's market garden grounds at Little Sutton. One large portion is planted with lines of bush trees of Small's Admirable Apple, the trees eight feet apart each way, and they are literally borne down to the ground with the great weight of the fruit they are now bearing. Pyramidal trees of Cox's Orange Pippin Apple, planted in close lines, are found bearing heavy crops of beautiful fruit, large in size, and brilliantly coloured. On instituting a comparison between these and the large standard trees planted years ago, it is found that the latter require large spaces of growth, that their crops are not over numerous or particularly fine, and that they interfere with the circulation of air among and the fall of light on the smaller trees about them. The space occupied by one standard tree would be equal to that occupied by six or more of the bush trees, while the roots must have spread in all directions in the soil beneath. Gathering becomes an easier and quicker process; ladders are not required, and the handling of ladders among trees sometimes does them injury. Not one of the least of the considerations to be put forward in favour of bush over standard trees is that of a finer quality of fruit being obtained.

TO CORRESPONDENTS.

GREENHOUSE MANAGEMENT.—*L.*—The greenhouse plants will not require much water during this and the two succeeding months, but they must have sufficient to prevent their suffering from drought. Whenever any of the plants are watered, the supply must be sufficient to well moisten the ball of soil, and then no more must be applied until the soil has become rather dry again. If the water is applied in driblets at this or any other season of the year, the surface of the ball will alone be moistened, and the lower part will become dust-dry, to the injury of the roots. It is very important to water the plants early in the morning during the winter season, so that all superfluous moisture may dry up before the evening. A bright day should as far as practicable be taken advantage of, so that the ventilators can be opened for a few hours afterwards. If during a period of dull weather the foliage of the plants appears to be suffering from dampness, make up a rather brisk fire in the morning, about ten o'clock, and let it burn briskly for about two hours, and at the same time open the top ventilators, to insure a thorough change of the atmosphere. In frosty weather the fire must not be driven too hard, for a high temperature in frosty weather is most injurious to greenhouse plants. It is important to remove decaying leaves without delay.

PLANTING GRAPE VINES.—*R. H.*—Previous to planting the out-door vines, trench the ground to a depth of two feet, and add a few inches of maiden loam if practicable, or, if the soil is naturally poor, a dressing of half-rotten stable manure well mixed with the soil will be beneficial to the vines. Plant any time between now and the beginning of March. Black Cluster and Royal Muscadines are the best kinds for the open wall. The Black Hamburgh would not ripen its fruit in ordinary seasons. The indoor vines should be planted at once, and cut back to within three or four inches of the soil, and in succeeding years prune on the spur system. The vines planted out must not be fruited next year, or they will be ruined. If you have any to spare, leave them in the pots, cut back to about eight feet from the soil, and let them fruit in the pots.

SCARBOROUGH LILY.—*E. G.*—Like yourself, many cultivators fail in cultivating *Vallota purpurea*, commonly known as the Scarborough Lily, satisfactorily, because they withhold the water altogether in the winter, and keep the soil dust-dry for several months. The plants, of course, require less water during the resting season than when they are in full growth; but if the soil is kept quite dry during that season, the fleshy roots are dried up and paralysed, and consequently unable to start into action when the new growth has to be made in the following spring. Immediately the plants start into growth in the spring, a portion of the old soil should be shaken from the roots, and the plants potted in entirely fresh stuff. Supply liberally with water throughout the growing season, and in the autumn, in withholding the supply, do so in a gradual manner, to prevent the foliage and roots

shrivelling. The *Vallota* is an evergreen ; therefore, to compel it to shed its leaves is the reverse of good treatment, and cannot be done without inflicting a terrible injury upon it.

WINTER MANAGEMENT OF PEACH AND NECTARINE TREES.—*Amateur Fruit-Grower.*—The peach and nectarine trees ought not to be pruned and nailed in until the early part of next spring. The branches should, however, be unnailed at once, tied in bundles, and be either fastened to the wall or secured to stakes at a distance of a foot or so from it. The great value and importance of unnailling these trees is not well understood, or the system would be more generally adopted. It should be borne in mind that the greatest enemy the trees have to contend with is spring frost. Therefore, the more we can retard the expansion of the flowers, the less likelihood will there be of their being injured. That unnailling the branches and fastening them at a short distance from the wall does retard the flowers, there can be no doubt ; and a moment's thought will show us that branches of trees at a few inches from the wall will not be influenced so much by a few hours' bright sunshine during the winter months as others fastened close to it. The branches are not only much warmer during the time they are under the influence of the sun, but they are exposed to the heat which is absorbed by the wall, and then given off as the atmosphere cools. It simply amounts to this, that the cooler the branches are kept, the longer the flowers are before opening, and, as every week makes a difference in the severity of the weather, the less likelihood is there of their being injured by frost. Where labour is scarce, and as there is always more work to be done in the spring than time can be spared to do properly, the trees may be pruned and dressed at once, and then fastened loosely to the wall, as suggested above. Very little can be said about pruning peach and nectarine trees beyond what is already known ; therefore it is only necessary to suggest that all weak and badly-ripened shoots should be removed altogether, or be cut back to one or two eyes. It is a very common practice to cut very strong-growing shoots back to two or three buds, which, instead of mending matters, only makes them worse, by encouraging the production of wood of even greater vigour. Strong shoots should be laid in nearly their whole length, or be removed altogether. Thin out the wood, to allow of plenty of room for the young shoots next season, and, as far as practicable, leave only that which is thoroughly well ripened. Abstain from encouraging spurs on peach and nectarine trees, because, if a good crop of fruit cannot be had from trees the wood of which is trained in the old-fashioned way, it is very certain that it cannot be had from trees treated on the spur system.

LIBONIA FLORIBUNDA.—*G. H. S.*—This beautiful free-flowering greenhouse plant is by no means new, yet it is not very extensively cultivated. It partakes somewhat of the character of that once-popular plant, *Cuphea platycentra*, for both the habit of plant and shape of flowers are similar. Its numerous flowers are diffused over the whole of the plant, which at this period of the year gives it a very striking and pleasing effect, if intermixed with other flowering plants. It is very easy to propagate and grow. Cuttings of the young wood should be inserted early in the spring, and treated in the same way as you would the ordinary kinds of soft-wooded plants, the pot being plunged in a nice bottom-heat. The plant, being very compact and short-jointed, does not need after it is potted to be so frequently stopped ; the main point is to get the lower part of the plant well furnished with branches in its first growth. It is in the earlier stages only that the stopping of shoots is essential. It will thrive in good rich loamy soil, and may stand out of doors with the majority of greenhouse plants during the summer months. In common with many other winter flowering plants (as for example, the *Poinsettia*), the *Libonia* loses its leaves if kept too cold in October and November. The leaves may not fall at the time, but afterwards, when the plant is in flower, it will be found that many of the leaves are dead. Excess of damp, or too low a temperature in winter, will very much mar the beauty of this useful plant.

PLANTING FRUIT TREES.—*Amateur.*—Planting fruit-trees ought to be completed by the end of November. The trees ought not to be planted when the ground is frozen, because the surface-soil which has been well pulverized by the action of the weather is the best for filling in about the roots. Besides, it is not desirable to cool the earth by means of frozen soil, which in all probability will not be thoroughly thawed before the spring, when the roots ought to be in full activity. If the trees come to hand just as a frost has set in, place them in an outhouse

November.

or shed, and put a few mats about the roots to prevent their being injured by drought or frost. It is also a very good plan, especially in dealing with a large number of trees where the accommodation is limited, to select a sheltered corner in the open air, and remove the soil as deep as it is frozen; then lay the trees in by the heels, and heap sufficient dry litter or leaves over the roots for protection; and as dry material is a more efficient protector than wet, lay a few boards or a bit of tarpaulin over it to keep it dry. It is also bad practice to plant when the soil is in a pasty condition, either from heavy rains or recent frosts. If it is not convenient to wait until the earth is sufficiently dry before planting, prepare a few barrowfuls of light, dry soil, such as the sweepings of the potting-bench, and place a few shovelfuls immediately over the roots; then tread the soil in just firm enough to keep the tree steady with the aid of a stout stake, and leave the finishing off until the soil is in a better condition. It is very objectionable to tread the soil about the roots of fruit or any other class of trees when wet, because it makes it so firm and pasty that they are unable to penetrate it, and the growth made the first season is weak in consequence.

T. P. P.—A portion of the shoots should be nailed in, and the others pruned back to within one or two buds of the base. The pruning and training should be done just before the plant commences to make new growth in the spring. The shoots ought not to be nailed in too close to the wall.

Mrs. G., Ripon.—It is a common occurrence for the flowers of some varieties to become malformed in a similar manner to those sent.

EXHIBITIONS TO BE HELD IN NOVEMBER.

- 10 AND 11.—ROYAL HORTICULTURAL SOCIETY.—*Exhibition of Chrysanthemums and Fruit.*
- 10 AND 11.—BRISTOL CHRYSANTHEMUM SOCIETY.—*Annual Exhibition.*
- 10 TO 12.—NORTH-WESTERN AMATEUR CHRYSANTHEMUM SOCIETY.—*Annual Exhibition.*
- 13.—ALEXANDRA PALACE, MUSWELL HILL.—*Exhibition of Chrysanthemums by W. Cutbush and Son.*
- 13.—EALING DISTRICT CHRYSANTHEMUM SOCIETY.—*Annual Exhibition.*
- 16.—KING'S ROOT SHOW at *Great Coggeshall, Essex.*
- 16 AND 17.—BOROUGH OF HACKNEY CHRYSANTHEMUM SOCIETY.—*Annual Exhibition.*
- 16 TO 18.—CRYSTAL PALACE.—*Exhibition of Poultry.*
- 17.—PONTEFRACT HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 18 AND 19.—CARTER'S ROOT SHOW at the *Agricultural Hall, Islington.*
- 18 AND 19.—BURY ST. EDMUNDS HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 18 TO 20.—WOOLWICH CHRYSANTHEMUM ASSOCIATION.—*Annual Exhibition.*
- 19.—WEBB'S ROOT SHOW at *Wordsley, Stourbridge.*
- 20.—SUTTON'S ROYAL BERKS ROOT SHOW at *Reading.*
- 23 AND 24.—BRIXTON AND STREATHAM HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 25.—ROYAL AGRICULTURAL SOCIETY OF IRELAND.—*Private Winter Exhibition.*
- 27.—CHEETHAM HILL HORTICULTURAL SOCIETY.—*Annual Exhibition.*

THE PANDANUS AND ITS KINDRED.

BY GEORGE GORDON.

(With Coloured Illustration of a group of Pandanus in Eastern Africa.)

THE Pandanads, or Screw Pines, comprise a genus of plants alike remarkable for nobility of aspect, elegance of outline, and economic value. In the latter respect they are not surpassed by many other forms of tropical vegetation, for owing to the peculiar formation of the roots, they are especially adapted for binding sandbanks where hardly any other plants are able to obtain a foot-hold. The fruits, or drupes, are available as an article of food in times of scarcity. The leaves and the fibrous matter obtained from them are employed in the manufacture of ropes, nets, and matting of various descriptions; and with the fibres obtained from the aerial roots, hats, baskets, mats, etc., are made by the natives of the countries to which the pandanads are indigenous.

As decorative plants, they deservedly stand high in the estimation of English cultivators, for there are but few plant stoves in which examples of one or more of the species are not found, and all the most ornamental kinds make their appearance annually at the principal exhibitions, in conjunction with other plants remarkable for the beauty of their foliage.

There is a remarkably fine collection of Screw Pines at Kew, and many of the specimens are of immense proportions as compared with those usually met with under cultivation; but even these fail to convey an adequate idea of the striking effect produced by huge groups in their native habitats. It is, therefore, anticipated that the coloured illustration of a natural group of Pandanus in tropical Africa would be especially interesting to our readers. The illustration is a copy of a painting by T. Baines, Esq., in the Kew Museum. The locality where the sketch was taken is thus described by Mr. Baines:—"Some miles from the mouth of the Zambesi, as the mangroves (which have performed their office in converting the accumulating shoals into land capable of bearing a superior vegetation) begin to be supplanted by other trees, the most striking feature in the landscape is the tall Pandanus, which towers above the brush that skirts the various channels of the delta, and in the distance, especially when thickly draped with creeping plants, presents the appearance sometimes of poplar groves, and sometimes of village spires; it seems to begin where the mangrove—*i.e.*, the kind which forms the advanced guard in reclaiming the land from the sea—begins to cease, and where palms of various kinds—dwarf fan palm, wild date, Doum palm, zamias, a kind of *Strychnos*, bearing an orange-shaped fruit, large flowering *Hibiscus*, and occasional cocoa-nuts—begins. Some of these channels are so narrow, that in passing through, the vessel would brush the reeds on both sides, while the main streams would be several hundred yards in width. The specimens shown in the sketch were situate in a perfect tangle

of old mangroves, with their aërial roots and luxurious vegetation overgrowing them, so as to conceal and render more precarious the treacherous footway over which we have to pick our way. The tree was covered with convolvulus, and was exceedingly beautiful. This was within the tidal influence, and the stream would be brackish at high water, or fresh when the volume of the river was sufficient to overpower the tide. These Pandani did not appear to extend far beyond where the river ceased to be brackish."

The species represented on the left hand side of the plate is *Pandanus candelabrum*, one of the largest growing and most striking of the genus. The branches spread out all round the trunk, and depend in a graceful manner, and the ends which are furnished with a tuft of elegant green leafage turned upwards, giving the trees a very distinct and beautiful appearance.

Although not so beautiful as some others, *P. odoratissimus* is one of the most important species from an economic point of view. In an able paper on the "Screw Pines and their Allies," contributed to the "Student" (page 1), for 1868, Mr. J. R. Jackson, Curator of the Kew Museum, refers to this species as follows:—"It grows in the Islands of the Pacific Ocean, China, and the East Indies, being common along the banks of the canals and back-waters of Travancore, where it is planted for the purpose of binding the soil. The long leaves are full of tough fibres, which are used for making cordage of various thicknesses, as well as for making hunting-nets, and the drag-ropes of fishing-nets. Matting of all descriptions is likewise made from them. Some of the sleeping-mats, which are dyed or stained various colours, are fine specimens of native plaiting. The leaves are likewise used to make umbrellas, and they are said to furnish an excellent material for paper-making. The fibre from the leaves is commonly used in Tinnivelly, when mixed with flax, for making ropes. The aërial roots are applied to a variety of purposes in India. Manufactories exist in some localities where hats, baskets, mats, etc., are made from them. On account of their light, spongy nature, they make excellent stoppers for bottles in lieu of cork, and the more fibrous part, when beaten out and the pulp removed, is used for brushes for whitewashing, painting, etc. The roots are used medicinally by the native practitioners, and an oil prepared from them has the repute of being a cure for rheumatism. The flowers are odoriferous, as the specific name indicates. Besides the numerous uses already mentioned, the inner or pulpy part of the drupes is eaten as an article of food in times of scarcity. In some parts of North Australia, indeed, the fleshy drupes of the Pandani are commonly eaten, being held in the mouth and sucked until the fleshy portion is consumed. In the Society Islands the women make very beautiful mats of the leaves, which are first prepared by burying them in the sand near the sea for about a month; this makes them soft, they are then carefully scraped with a shell which removes all irregularities, leaving that portion of the leaf intended for use fine and soft; the more care exercised in this preparation the finer and softer are the mats. After being thus prepared, the leaves are drawn across the edge of a shell previously notched or toothed

at regular intervals, by which means they are divided into long narrow strips of equal width, and are ready for plaiting."

One of the best known, in this country, of the strong-growing green-leaved forms is *P. utilis*, a very handsome species, grown largely for exhibition. The leaves are of a rich glaucous green, with fine deep red margins, which, as well as the back of the midrib, are armed with dark red spines. They are rather broad, and range from six to eight feet in length, according to the strength of the specimen. Young plants have slightly pendulous foliage, and are well suited for decorative purposes generally. At a more advanced stage they make grand exhibition specimens.

The sacks and bags in which sugar is exported from the Mauritius, where the plant is very common, are manufactured from its leaves. It is, indeed, so valuable for bag-making, that it is cultivated extensively at the Mauritius for the sake of its leaves. In speaking of this Pandanad, the late Rev. W. Ellis, in his "Three Visits to Madagascar," says:—"The Pandanus exhibits a form of growth peculiar to the vegetation of the sea-shore in many tropical regions. It thrives well in pure sand near the water's edge. It is also an exceedingly useful tree. The trunk is durable, and is employed in the structure and fitting of native canoes. The leaves in the South Sea Islands make excellent thatch, and the fruit or nuts are baked and the kernels eaten. In Madagascar the leaves are used chiefly for covering packages to exclude rain during transit from the coast to the interior. It is extensively cultivated in Mauritius, and its leaves used for making bags, large quantities of which are brought from the Seychelle Islands, and all the sugar produced in Mauritius is exported in bags made from the leaves of this singularly growing but useful tree."

In referring to other species met with in Madagascar, Mr. Ellis observes:—"I had seen nothing either in the Mauritius or Polynesia resembling them, especially one kind seldom attaining above ten or twelve feet in height, having a number of leaves in the centre of the crown, apparently glued or stuck together at their extremities, giving to the centre, or crown, a singular form; while the disentangled leaves that stretched out horizontally or hung down parallel with the stem, seemed very much like the leaves with which the Chinese line their tea-chests. Another species of Pandanus was to me equally new and remarkable. The stem of this was straight as that of a fir-tree, and the branches horizontal with feathery tips of flag or short ribbon-formed leaves. The tree was frequently forty or fifty-feet high, crowned with an upright plume, and at a distance might have been mistaken for a larch, but for its stiff and formal growth. I did not see it near the shore, but amongst the low wet places inland."

The Freycinetia, Cyclanthus, Marquartia, and Carludovica are closely allied to the Pandanus, but they are all of less importance, both as regards their decorative and economic value. One of the species of Carludovica, namely, *C. palmata*, possesses some amount of interest, for from its leaves the celebrated Panama hats are made. The best account of this plant is that from the pen of the late Dr.

Berthold Seemann, who did so much in familiarizing us with the vegetation of South America. Dr. Seemann remarks:—"The leaves are from six to fourteen feet high, and their lamina about four feet across. In the Isthmus, the plant is called *Portorico*, and also *Jipijapa*, but the latter appellation is most common, and is diffused all along the coast as far as Peru and Chili; while in Ecuador a whole district derives its name from it. The Jipijapa, or Panama hats, are principally manufactured in Veraguas and Western Panama. The hats are worn almost in the whole American continent and the West Indies, and would probably be equally used in Europe, did not their high price, varying from two to one hundred and fifty dollars, prevent their importation. They are distinguished from all others by consisting only of a single piece, and by their lightness and flexibility. They may be rolled up and put into the pocket without injury. In the rainy season they are apt to get black, but by washing them with soap and water, besmearing them with lime-juice or any other acid, and exposing them to the sun, their whiteness is easily restored. So little is known about these hats, that it may not be deemed out of place to insert here a notice of their manufacture. The 'straw,' previous to plaiting, has to go through several processes. The leaves are gathered before they unfold, all their ribs and coarser veins removed, and the rest, without being separated from the base of the leaf, is reduced to shreds. After having been put in the sun for a day, and tied into a knot, the straw is immersed in boiling water until it becomes white. It is then hung up in a shady place, and subsequently bleached for two or three days. The straw is now ready for use, and in this state sent to different places, especially to Peru, where the Indians manufacture from it those beautiful cigar cases, which fetch sometimes more than six pounds a-piece. The plaiting of the hats is very troublesome. It commences at the crown, and finishes at the brim. They are made on a block, which is placed upon the knees, and requires to be constantly pressed with the breast. According to their quality, more or less time is occupied in their completion; the coarser ones may be finished in two or three days, the finest take as many months. The best times for plaiting are the morning hours and the rainy season, when the air is moist; in the middle of the day and in dry, clear weather, the straw is apt to break, which, when the hat is finished, is betrayed by knots, and much diminishes the value."

It now remains to be said that the Pandanads require for their successful cultivation a stove temperature, and a compost consisting of three parts each of turfy loam and peat, and one part of sharp silver sand. The compost prepared for the variegated-leaved kinds should contain a much larger proportion of sand, and about a fifth part of small crocks should also be added. Moderately copious supplies of water at the roots at all times, and, during the summer season, a moderate amount of atmospheric humidity are conducive to a healthy growth. They are readily increased by means of the side-shoots, usually produced in abundance at the base of the stem, and these can be readily removed; when detached put them singly into small pots, and apply water sparingly until they are nicely

established. The plants in all stages of growth should be kept in pots, rather small in proportion to their size.

The best kinds for general cultivation are—

P. elegantissimus, a beautiful green-leaved species, in the way of *P. utilis*, but smaller and more elegant in outline. Valuable in a small state for dinner-table decorations.

P. ornatus, a large-growing species; useful for spacious houses and exhibition specimens.

P. graminifolius is a pretty species, of very small growth, with elegant grass-green leafage; small specimens are specially adapted for drawing-room decoration during the summer.

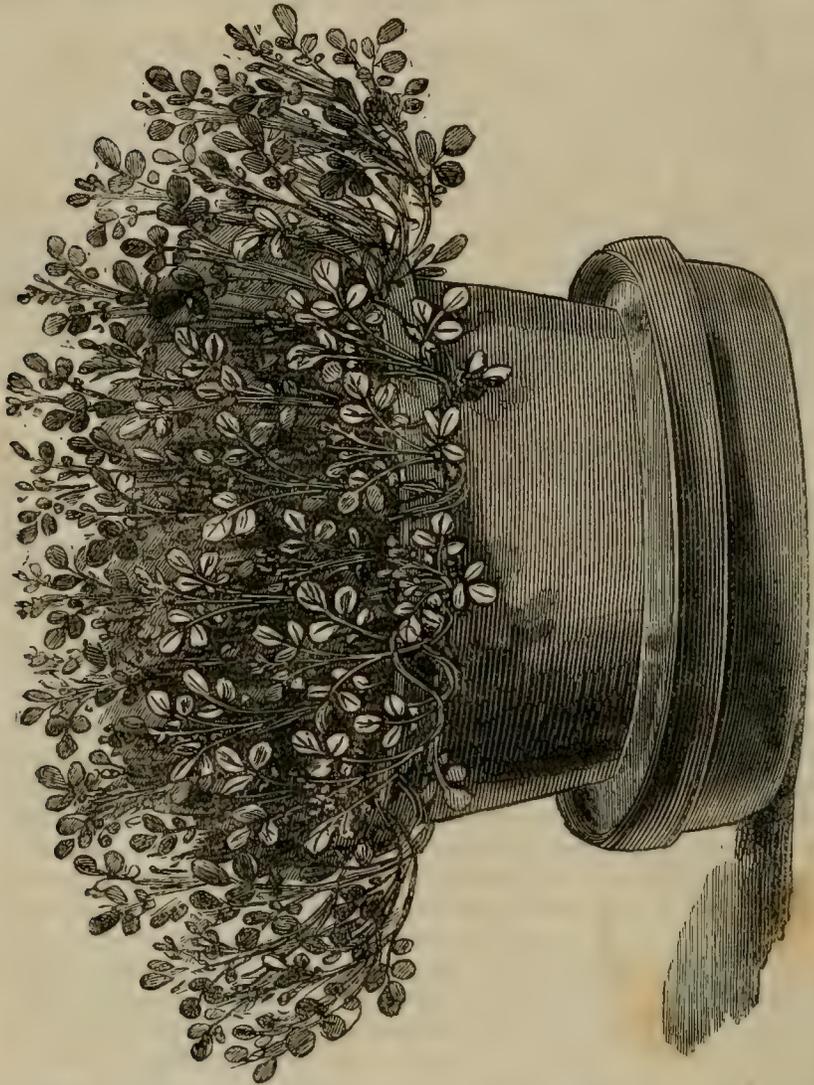
P. Veitchi is the most beautiful of all the kinds in cultivation; the leaves are broad, elegantly recurved, and richly marked with longitudinal lines of silvery white. It is far superior in attractiveness to *P. Javanicus variegatus*, and the spines on the leaves are so small that they occasion no inconvenience when the plant is handled, whilst the spines of the last mentioned are so large that they lacerate the hands terribly, unless the greatest care is exercised.

POT-CULTURE OF THE WATERCRESS.



S EVEN years ago, I came into possession of a brook suitable for the growth of watercresses. It passes through two of my gardens, and then pursues its way across a meadow, affording me command of about a quarter of a mile run of open water. I made it an amusement to obtain as many distinct varieties as possible of watercresses, a few by means of seeds, but mostly in the shape of plants from localities famed for distinct and fine production. These were allotted separate spaces, and kept separate, so as to form a series of distinct plantations for purposes of comparison, but the comparisons made were always unsatisfactory, and many times the plantations were renewed by means of fresh samples obtained, in many instances, at considerable trouble. I might have gone on for the rest of my life obtaining cresses from different districts without ever making a comparison that was worth recording, or arriving at any conclusion, save that which I will now set before you. Every distinct cress brought here loses its character in the very first new growth it makes, and acquires another character which is peculiar to the locality. Thus the beautiful brown cress from Springhead loses its brown colour, becomes of a rich dark green, and shows a decided tinge of purple in the stem. It is the same with all other sorts. A friend secured me a handsome bronzed cress from Bedford, and a very metallic green cress from Grays, and they underwent precisely the same transformation, coming out the same rich dark green colour, with the same tinge of purple on the stems. As names are useful and the plant acquires here a distinctive character, I call my plant the Stoke Newington Purple Cress; but the name has

no value, and my purple cress would, no doubt, soon become a brown cress if transported to Springhead. It follows, however, that a general and useful deduction may be arrived at from the facts. It is evident that the special character of a watercress is due to the special circumstances of its production. The soil, the water, and the climate influence the growth, and probably the quality of the



WATERCRESS IN DEEP PAN.

water is the most important matter of all. The finest cresses grow in the purest water, on a chalk bottom. There was, and probably is, a charming brook of ice-cold water flowing rapidly through the chalk in the quarries at Grays in Essex. From that brook I have taken the finest growth of cresses it has ever been my lot to behold. The samples obtained from loamy soils, near London, have never equalled in quality such as I have had from the chalk; and it is

quite certain that although the plant will grow in sewage-tainted water, it does not need sewage, but thrives best in pure water, slightly charged with calcareous matter. I kept this fact in mind in modelling my new system of watercress culture, and I beg attention to it as the prettiest fad ever heard of for a gardening amateur.



WATERCRESS IN SHALLOW PAN.

Having an abundant supply from the brook for the trouble of gathering, this fad system of production would appear to represent a waste of time, but it proves far otherwise, for from the day when I began to supply the table with Erfurt cresses grown in pots, they have been in constant demand, and have been pronounced the most delicious cresses, as they certainly are the most elegant in appearance. The Erfurt variety is of a brilliant grass-green colour, the

stems a shade paler than the leaves ; it shows no tint of brown or bronze, is very reluctant to flower, and is peculiarly tender and delicately flavoured. Were I to plant it in the brook it would, of course, lose these distinctive characteristics, and pass into the purple-stemmed form proper to the locality. One point gained, then, is that by the pot system I am able to preserve a certain type of plant that suits me, and that is a matter of no small importance. A few other advantages attend the system. Fastidious people who suspect sewage in a brook will not eat the cresses that grow there. By growing them in pots you can employ any kind of water you please, and the water used here is that supplied to the house from the New River. There is a time in the summer when cresses in open water are wiry, and pungent, and pushing into flower, and unfit for the table. But you can have pot cresses then as tender as at any other time ; for you can start a batch of cuttings to insure a tender growth when established plants would be running up to flower, and you can put the pots and pans in a cool and partially-shaded place to moderate the growth. So, again, when the open water is frozen, and cresses become scarce, you may have a good supply from a pit or frame by preparing a sufficient number of pots in time and keeping them in the fullest vigour possible by exposing them to the free light and air until shelter from frost becomes absolutely necessary. Thus the pot culture ensures a supply of cresses all the year round, and if properly managed the quality will be of the very best.

We now come to the practical part of the business. A fair trial has been made of many different methods of cultivation, and I have settled down to a routine that I will now describe. The favourite pot is one that was made for me some ten years ago for specimen fern-culture by Messrs. Adams, of Belle Isle. It measures fifteen inches across and is nine inches deep. This is half filled with lumps of chalk, old mortar, and broken bricks of the size of one's fist, then a little moss is laid on, and finally a good body of rich soil is heaped up, and made firm by pressure, so as to have a convex shape. Very small cuttings of the cress are then dibbled in all over the soil, about three inches apart, and the pot is then stood in a pan of water, three or four inches depth of water being sufficient. In case such pots as mine are not available, common fifteen-inch seed pans answer admirably. These should have a layer of broken chalk or old mortar, and a good body of rich soil heaped up to a convex surface, and when planted be placed in pans of water. In hot weather it is desirable to put the newly-planted pots and pans in a cool shady place for a few days, but as soon as growth commences they should be removed into a place where they will be fully exposed to the sunshine, for a first-class sample cannot be grown in the shade.

It may occur to you that the rough lumps of chalk and old mortar may be dispensed with, but you will find, as I have done, that they are really essential to first-class production. So, again, it may be suggested that to plunge the pans to the rim, or even deeper, will be for the advantage of the plant ; but here again I

have found that a better growth is obtained by a depth of three or four inches than by complete immersion. I potted up a lot, and plunged them to various depths in a water trough made for experiments with water plants, and we got the best growth in every case from pots that stood in only a few inches of water, and we actually had to knock out some that were deeply immersed, after obtaining from them only one small gathering. So interested was I in this pretty fad that I tried every method I could think of, and actually grew a fair sample in common punnets filled with moss and floated in pans of water. The deep pot is better than the shallow pan, and the soil should be good enough for fuchsias or pot roses; say cucumber bed, or something of that sort. It matters not how rough it is, and to mix sand with it is to waste time and material.

A fifteen-inch pot will supply at one cutting half a peck of first-rate cresses in the height of the growing season. At this time of year one good pan would yield by careful gathering a quarter of a peck. Three full gatherings are the utmost you can take from the pan in the summer, and as soon as the growth becomes wiry it should be knocked out and replanted. The same hard stuff may be used again and again, but the soil must be fresh, and the smallest cuttings make the best growth. The management will of course vary somewhat with the seasons. If I were planting now for frame culture, I should put in rather large, well-rooted pieces, and should peg them down to promote surface-rooting. In the summer the growth is so rapid that you may gather in a fortnight from the time the pots are started, but as the heat declines the growth, of course, is less rapid. We have a nice lot now that were planted in fifteen-inch pans on September 18. On October 8 I gathered from them a nice dish—a period of twenty-two days. Some that were planted on October 11 are now (November 6) just fit to supply a first cutting, and will probably be several times cut from during the winter. In this case from planting to first cutting is a period of twenty-eight days.

Although the season is far advanced, there is time even now for anyone to make a fair beginning with watercresses in pots. It is not at all needful to look after any particular variety in the first instance, for all are good, and it is the easiest thing in the whole range of horticultural practice to convert into plants the young tops taken from a bunch of shop cresses, or even to use the partially rooted stems for the same purpose, provided they have a few healthy leaves upon them. As a matter of course, there must be a frame or pit for their protection, or a place on the stage very near the glass in a greenhouse; but while the weather continues mild they should be fully exposed night and day. Those who begin with a few will in due time enlarge the undertaking, and find it capital amusement to supply the table with the most delicious watercresses by the system I have thus hastily described.

S. H.

THE EFFECTIVE ARRANGEMENT OF SPRING FLOWERS.

BY W. GARDINER.



Since the flower-beds and borders are usually filled with spring blooming plants during the month of November, I have prepared a few notes on their effective arrangement, with a view to assist those amateurs who are not well acquainted with them.

I shall not attempt to describe the cultural details connected with getting up a stock of spring bedders, but, instead, relate a few of the points of my own practice, and at the same time give a few examples of planting, which have been found here to be worthy of general adoption. We have a long narrow border, which is to be planted as follows. Next the grass verge will be a row of Double White Daisies, and then rows of the following in the order in which they are named: Double Red Daisies, Golden Feather, *Aubrietia deltoides*, and *Arabis albida*. Here are five distinct varieties of early spring flowers that will, from March until the end of May, furnish a display of colour; but, owing to the favourable position, I expect them to be at their best from the middle of April onwards. None of these subjects are difficult to handle. They were taken up and divided at the end of last May, and planted in a shady border, and the only attention they received afterwards was one or two good soakings of water during August, when the weather was dry.

The most showy subjects for distinct beds, or for prominent bits of colouring, are *Alyssum saxatile compactum*, yellow, and *Iberis gibraltica*, white; both are fine and showy. The following arrangements produce a charming combination: Centre of Alyssum, with an edging of Iberis, reversing them in the next match bed; then, again, at centre of another bed, *Myosotis sylvatica* edged with Alyssum. The proportion of blue must be considerably larger than the other, or the strong tone of the yellow will kill it. It will be well to bear this in mind when arranging the Forget-me-nots, for even the white variety, when used in equal quantities, is too overpowering. It will thus be seen that there is no lack of tasteful combinations, if we know how to use the plants. What can be prettier for a moderate-sized bed than a centre of either the Alyssum or Iberis edged with a broad band of *Aubrietia*? All flower at the same time, and will satisfy the most exigent critic.

Here, again, is a round bed, ten feet over, divided into four quarters by a line of the Golden Feather, placed at right angles from the centre of the bed. In one quarter we have *Aubrietia deltoides*, in the corresponding one Double Red Daisies, and in the other two Double White Daisies and the Cliveden Blue Pansy. The last arrangement is admirably adapted for Forget-me-nots alone. By planting the divisional lines with the white variety, and filling in the segments with the blue, the effect will be remarkably pleasing.

The next pair may be filled with blue Pansies, edged with Golden

Feather; the next with variegated Arabis, edged with either Double Red Daisies or *Aubrietia deltooides*; the next with Cliveden Yellow Pansy, edged with Double Crimson Daisies.

If you cannot wait for flowers, and want a cheerful bit of colouring that will last good all the winter, plant the bed thus: Centre of Single Wallflowers, next a broad band of *Stachys lanata*, next two rows of *Arabis variegata*, next Double Red or Crimson Daisies, and finally an edging of *Euonymus radicans variegatus*. A cheerful border may be had by the following arrangement: For the back row, plant a wide band of Wallflowers; next a band of the same width of *Stachys lanata*, then a double row of Blue Forget-me-nots, next one row of the White Forget-me-not, next two rows of Double Red Daisies, and edge with *Aubrietia*. Here is another example for a ribbon border, still more showy, and admirably adapted for a conspicuous position: Plant next the walk or grass-verge a wide row of Double White Daisies, next Purple *Aubrietia*, next Double Red Daisies, next Double Lilac Primroses, next White Arabis, or Golden Feather may be substituted for the Arabis. I might give other examples of a like character, and then not exhaust the list of subjects; but enough has been given to show how inexhaustible are the materials available for spring gardening. I have not named more than half the plants that are used for that purpose.

GARDEN ROSES.

BY W. KEMP.



IN the selection and cultivation of Roses for the decoration of the garden, and for furnishing cut flowers for the drawing-room and other indoor apartments, it is necessary to take a quite distinct course from that which would be desirable were the blooms required for competitive purposes. In the one case the chief aim is to produce a few blooms of the finest quality; and in the other an abundance of flowers is essential, so that they will make the garden gay with colour and redolent with their delightful perfume, and also yield a plentiful supply of flowers for cutting. In the selection of varieties it is therefore necessary to give preference to those possessing a vigorous habit and bearing an abundance of flowers of fairly good quality, decisive colouring, and fragrant. Fortunately, some of our finest exhibition roses combine these good qualities in an eminent degree, and it need hardly be said that they are of special value for garden decoration, as the high quality of the flowers adds materially to their value. Some of the best show roses are so weakly in constitution that they require high feeding, extra care, and a severe thinning of the buds, to insure bloom suitable for exhibition, and it is varieties of this class that must have no place in the garden.

Again, in the cultivation of garden roses they must be planted wherever they will add most to the beauty of the pleasure grounds,

and be the most readily inspected when at their best; whilst those from which the blooms for show purposes are to be gathered, must be planted in the kitchen-garden, or in some situation where they will not be within view of the windows, for the top-dressings of manure applied in the early part of the season are necessarily unsightly, and as the flower buds have to be thinned severely, at no time do they make much of a display; certainly not sufficient to compensate for the drawbacks above mentioned.

The attention of the readers of the **FLORAL WORLD** is now directed to roses adapted for garden decoration, because November and December are the two best months in the whole year for planting, and to insure trees of the best quality, purchases should be made as early in November as possible. It matters not whether the trees are in full leaf, or whether they have shed a part of their foliage. They can, after the end of October, be replanted with the full assurance of their doing well. By purchasing early the buyer has the first pick, and by planting in November the work can as a rule be done more expeditiously, and with a greater degree of comfort, than later in the season; and as the soil is warmer, the roots are placed under conditions more favourable to their speedy development.

It would be most difficult to say where roses should be planted in gardens when intended for decorations, because of the great differences which exist in their conformation; but it may be said with advantage that they should not be planted in the forecourt, neither should large masses be formed in prominent positions near the windows, for there are seasons of the year when groups of rose trees, especially standards, are rather unsightly. Again, borders, filled with roots of large timber trees, even if they are not shaded by the branches, ought not to have roses planted in them, for, owing to the poverty of the soil, it is impossible for them to make much progress, and in the end they become victims to the aphid and other enemies that prey upon roses when half starved or in an otherwise unhealthy state.

Roses cannot well be planted in soil that has been too deeply stirred, or which has had a too liberal application of manure. Therefore in the preparation of the beds spread a layer of either old hotbed or pigs' manure over the surface, and then proceed to dig it over to a depth of twelve inches, or, what is better still, have it trenched six inches deeper. The roots will then be able to penetrate to a great depth, and drought and other adverse influences will have but little effect upon the trees. If the soil is light and sandy, six inches of clay or strong loam may be worked into the soil, as the digging proceeds, with advantage. But the application of clay is not of sufficient importance to justify the expenditure of a large sum of money. When the roses are to be planted at intervals in the borders, or blanks in the beds to be filled up, the stations should be marked out, and holes made about two feet in diameter and eighteen inches in depth, and then filled in with manure and soil, the latter to be taken as far as practicable from the surface.

Bush roses, either on their own roots, the Manetti, or the brier, are, when of large size, the most attractive in the garden; but if the

cultivator prefers standards or half standards, there is no good reason why they should not be had. The main objection to the standards is the unsightly appearance they present when occupying prominent positions upon the lawn. Some of the most effective beds of roses I have seen for many years were those I met with in the course of the past season in a grand old rectory garden, in which roses formed by far the most important feature. These were circles from eight to ten feet in diameter, and therefore large enough to hold a goodly number of plants. In the centre of these were standards about four feet high; round those half standards with two-foot stems; and outside of these were rows of dwarfs, good-sized bushes furnished with foliage to the surface of the soil. The stems, which are such an eyesore when the standards stand out singly, were quite hidden from view, and as they all had good-sized heads, the effect was marvellous as compared with the pitiable objects met with in many gardens. Smaller beds in the same garden were filled with half standards and dwarfs. But as bush roses soon attain large dimensions, there is no necessity for planting half standards in small beds for the purpose of preventing them having a flat appearance.

Deep planting is objectionable, for when the roots are buried too deeply the growth is not usually so satisfactory as could be wished. In planting dwarfs on the Manetti, it is a good rule to plant deep enough to bury the junction of the stock and graft two inches below the surface, and standards should be planted a trifle deeper than they were before, as indicated by the mark which is invariably visible on the stem when received from the nursery.

We now come to the selection of varieties combining the qualities mentioned above as being desirable in garden roses. A list of about sixty of the finest garden roses has been prepared, and to this number may be added any varieties that the cultivator may have seen and taken a fancy to. They are grouped in their respective classes, and arranged in their several colours, to assist the amateur in arranging them satisfactorily. As the whole collection may be purchased at a first-class nursery for less than five pounds, it will be seen that a large capital is not at all necessary to embark in the delightful pursuit of rose growing.

HYBRID PERPETUALS.

Pure white.—Madame Alfred de Rougemont, Coquette des Blanchés.

Pink and tinted white.—Anna Alexieff, Anna de Diesbach, Auguste Mie, Bessie Johnson, Captain Christy, Caroline de Sansal, Charles Verdier, Madlle. Marie Cointet, Marguerite de St. Amand, Madlle. Bonnaire, Madlle. Claire Cordier, Peach Blossom, Princess Mary of Cambridge, Thyra Hammerich.

Rose and deep pink.—Antoine Mouton, André Dunand, Abel Grand, Baroness Bothchild, Centifolia Rosea, Charles Verdier, Gloire de Vitry, Elie Morel, Louise Peyronny, La France, Lyonnais, Madame Thérèse Levet, Madame C. Verdier, Richard Wallace.

Light crimson, carmine, and cerise.—Beauty of Waltham, Madame Clémence Joigneaux, Comtesse d'Oxford, E. Y. Teas, Etienné Lovet,

Françoise Michelin, John Hopper, Jules Margottin, Madame Domage, Madame George Schwartz, Marie Rady, Marquis de Castellane, Victor Verdier.

Crimson-scarlet, red, and carmine.—Abbé Bramere, Alfred Colomb, Annie Wood, Camille Bernardin, Casimir Perier, Docteur Andry, Félix Genero, Général Jacqueminot, Madame Marie Rady, Madame Victor Verdier, Marie Baumann, Maurice Bernardin, Président Thiers, Sénateur Vaisse.

Purple, blackish-crimson, and crimson-scarlet.—Antoine Ducher, Baron de Bonstettin, Charles Lefebvre, Duke of Edinburgh, Ferdinand de Lesseps, Horace Vernet, Louis Van Houtte, Maréchal Vailant, Pierre Notting, Xavier Olibo.

PERPETUAL BOURBONS.

Baron Grouelle, pink; Baronne de Maynard, white; Catherine Guillot, deep pink; Louise Odier, bright rose; Michel Bonnet, rose-peach; Rev. H. H. Dombrain, rich reddish crimson; Souvenir de la Malmaison, blush.

TEA-SCENTED.

Belle de Bordeaux, pink; Devoniensis, black; Eugène Desgaches, rose; Homer, salmon; Gloire de Dijon, yellow; and Cheshunt Hybrid, purplish rose. The tea-scented varieties here mentioned are the hardiest in the section.

THE CHISWICK TRIAL OF BEDDING PANSIES AND VIOLAS.



SINCE the introduction by Mr. B. S. Williams of *Viola Perfection* a few years since, the bedding violas and pansies have multiplied so rapidly that cultivators became perplexed in making their selections, and, in consequence, the Royal Horticultural Society determined to have a systematic trial of all the varieties in commerce for the purpose of eliminating inferior sorts and indicating the superiority of others by conferring the distinction of first and second class certificates upon them. Accordingly, in September, 1874, a collection, comprising all the sorts procurable, was planted out in a selected position in the Society's garden at Chiswick; and as the season has been favourable to these flowers, they have bloomed most satisfactorily, and excellent opportunities have been afforded for determining their relative merits. For the latter purpose, the Floral Committee of the Society visited the gardens several times in the course of the early part of the summer, and closely examined the varieties of which the collection consisted. In all, nineteen varieties were certificated.

The names of the varieties which were considered sufficiently distinct and good to merit a certificate are as follows:—

Alpha.—Flowers large in size, and of a rich blue purple colour, vigorous and free-flowering.

Bedfont Yellow.—Rich golden yellow, flowers large, and the growth compact and vigorous.

Blue Bell.—Deep blue, flowers of medium size, and produced continuously from early in March until quite late in the summer; it is very effective, of free growth, and altogether desirable.

Blue Perfection.—Mauve, shaded maroon, flowers of medium size, fine habit, and free flowering.

Dickson's Golden Gem.—Rich yellow, the flowers of medium size, the plant dwarf and free flowering.

Dickson's Queen.—White, flowers large and freely produced; rather later than some others, nevertheless exceedingly good.

Dickson's Snowflake.—White, free flowering and effective, but hardly so good as the preceding.

Dr. Stuart.—Purple mauve, flowers rather small, but produced in great profusion.

Lilacina.—Lilac, the top petals shaded blue, the lower petals shaded red; flowers of medium size, the plant dwarf and compact; first rate.

Lily White Tom Thumb.—White, with yellow eye and dark pencilling, flowers small, growth vigorous and spreading; fine.

Lothair.—Rich purple, with yellow eye and bronzy red spot on lower petals; habit dwarf and compact.

Magpie.—Dark mulberry, with a white spot at the tip of each petal; rather tall and free in growth, a most abundant bloomer, and although one of the oldest bedding pansies in existence, it is still one of the best in its line of colour.

Mulberry.—Dark reddish plum, habit spreading and compact, and the flowers are borne well above the foliage; distinct and good.

Novelty.—Purple, shaded red, flowers large, rather tall, but of fairly good habit, and useful for its distinct and effective colour.

Queen of Lilacs.—Lilac, with faint shade of red, flowers rather large, and produced profusely throughout the season; habit strong, but compact. One of the finest of the lilac-flowered varieties.

Sovereign.—Deep rich buttercup yellow, very dwarf, free flowering and most effective.

The Tory.—Blue-purple, flowers large and good substance, habit good; a free and continuous flowering variety of great merit.

Tyrian Prince.—Purple, with mulberry shade, flowers large; habit robust yet compact.

White Swan.—Pure white, flowers of medium size, and borne well above the foliage; habit compact and good.

The foregoing comprise the very finest varieties in cultivation, and, it will be readily granted, more than sufficient for any one garden. The violas and pansies are so similar in character that it has not been considered desirable to separate them in preparing this report. As our readers have been already informed, the bedding pansies and violas are most valuable for the embellishment of the flower garden during the spring months. Indeed, no other class of plants are capable of producing such a rich and telling display of colour. Their only drawback consists in the risk of their perishing on cold wet soils during the winter season. To insure a satisfactory display of

bloom during the spring season, they should be planted as early in September as the beds can be prepared, to afford them a chance of becoming well established before the cold weather overtakes them. They may also, on deep loamy soils, especially in the Northern counties, be employed as summer bedders; but it is proper to add that there is always a risk of their going off towards the end of July. The blue varieties are very effective intermixed with variegated geraniums, and if they die during the summer it is not of so much consequence, as the geraniums will soon fill up the space. As all the varieties enumerated are first-rate, readers will have no difficulty in selecting half-a-dozen varieties or so, as the brief descriptions accompanying the names will furnish them with the necessary information respecting the colours of the several varieties.

BEAUTIFUL WINDOWS AND BALCONIES IN WINTER.

BY A TOWN AMATEUR.



YOU will, perhaps, permit me to say, first of all, that, as a resident in the suburbs of the metropolis, I am not overburdened with room for gardening operations, and have consequently to take advantage of all the space available for plant-growing. As the house in which I reside is in full view of the road, I have made the embellishment of the balcony and the windows quite a hobby, and my efforts have so far been attended with a fair measure of success. The windows and balconies are, more or less, attractive throughout the year, and the plants employed in decorating them are by no means costly or difficult of cultivation. From early in April until November they are gay with flowering plants, and during the remaining part of the year they are furnished with evergreens of various kinds which have a very rich appearance. In April and May, the flowers consist chiefly of bulbs; and from the last-mentioned month until the early part of October geraniums are exclusively employed. The pom-pone-chrysanthemums are then brought into requisition, and, as soon as they are past their best, they are removed to make way for the evergreens, and it is to these I would now direct attention.

I am all the more anxious to refer to this matter because the shrubs so generally employed in window and balcony decoration have but little to recommend besides their cheapness; for it is not often that anything beyond the common euonymus, the old aucuba, and the tree-box is seen on the window-sill of a villa residence, whereas there are at least a score of really good things adapted for the purpose. In the selections of evergreens for the window, it is needful to keep in mind the importance of their being perfectly hardy, and not liable to injury by the somewhat rough usage to which they are necessarily subjected. I have fairly tried nearly all the hardy evergreens, and have found some of those which are really considered to be quite unfit for the purpose to be of the ut-

most value. *Aralia Fortunei* is quite hardy and valuable for its large palmate foliage. *Aucubas*, of which there are now many varieties, are especially valuable, as they can be grown in the border during the summer, and lifted and potted in the autumn and again returned to the border in the spring without suffering in the least. The green-leaved female form, *A. japonica femina viridis*, is, in my opinion, the best of all the aucubas; but it is well to have a few plants also of the common form with spotted leaves. They are both more effective when furnished with berries. Of the tree boxes, which are useful for contrasting the best are *Buxus balearica*, and *B. sempervirens latifolia*, as they have larger leaves than the common box. The latter is not to be despised by those to whom a little extra expense is a matter of some importance. *Common laurels* are quite unfit for this purpose, because of their coarseness; and the *Portugal laurel*, which has a very pleasing appearance, suffers so much when lifted and potted, and from a little neglect when kept in pots, that it cannot be recommended. *Euonymus japonicus*, notwithstanding its being so common, is desirable, for it forms neat bushes, and its dark leafage brings out the variegation of the other shrubs to wonderful advantage. *E. j. latifolius albo variegatus* and *E. j. aureo variegatus*, which have silvery and golden variegation respectively, are most valuable because of their neat habit and effective colouring. *Ivies*, trained to neat trellises, are very pretty. The Irish and Algerian are the best for general purposes. All the variegated forms are also very attractive. *Skimmia japonica* is a very pretty little plant for an outer line in a window-box, and also for a marginal band to a large vase or basket when well furnished with its brilliant vermilion berries. It may be lifted in the autumn and potted without receiving any injury, if the work is carefully done.

In addition to the foregoing, some of the coniferous plants are most valuable for windows and balconies. A few of the best are the *American* and the *Chinese Arbovites*, *Cupressus Lawsoniana*, when from one to two feet in height, *Retinospora obtusa*, *R. pisifera*, *Thuja Lobbi*, and *T. tartarica*. These should not be grown in very large proportions, but their upright habit and feathery spray form a pleasing contrast to the round heads and distinct leafage of the shrubs enumerated above. They should all be put in pots of the smallest size possible, and if they are not turned out of the pots and planted in a border in the spring, the pots should be plunged in a border in a rather shady situation, but not overshadowed by trees, and care taken to supply them liberally with water during the summer season. Any pruning that may be necessary to keep the plants compact and in proper shape should be done in the spring when they are removed to their summer quarters.

THE LIST OF BOTANIC GARDENS, AND OF PROFESSORS, CURATORS, AND CORRESPONDENTS on matters botanical and horticultural, originated a few years since by Professor E. Morren, has lately been revised, and the third edition is now before us. It is a complete directory, and is supplemented by an index of names and an index of places. From the first of these we find that it gives the names and addresses of about 900 teachers and promoters of botanical science.

CELOSIA PYRAMIDALIS PLUMOSA FOR WINTER DECORATIONS.

BY R. S. YATES,

Nurseries, Sale, Cheshire.



YOU will, I am well sure, agree with me that there are not many plants of greater value for winter decorations than *Celosia pyramidalis plumosa*, for you have seen our plants on more than one occasion, and are well able to appreciate the rich and striking effect they produce when at their best. But to possess any great value the specimens must be well grown and represent a first-class strain. This celosia is not much known in its true character, for, more often than not, those who take it in hand have, for their trouble, stunted plants, bearing miserable tufts of the size of the top joint of the little finger for side branches, and a tuft at the top that may be likened to a finger cut from a worn-out glove. The general appearance is that of a cockscomb run wild. Now a good specimen raised from seed saved from a good strain will attain a height of five or six feet, and be furnished nearly the whole length of its stem with side-branches, each bearing a large tuft of inflorescence that may be likened to a bunch of feathers or a spike of the pampas-grass. Nothing can be more elegant than these plumes, and in colour they are of surpassing richness. The colours vary from the most intense amethyst or vinous purple to pale yellow and buff, tinted orange. Each plant produces, of course, plumes of the same colour; but from a packet of seed you obtain all the colours here mentioned. The great size, intense colour, density, and lustre of these plumes, render them amongst the most remarkable of all known vegetable productions at this season of the year; and a specimen of the size here mentioned will produce sufficient separate plumes for a long series of decorations.

People who have been accustomed to the miserable examples so common in gardens suppose, when they see our specimens, that we are in possession of some important secret bearing on their cultivation. But it is not so, for there is really no secret at all. We begin with good seed, but precisely the same as is saved for supplying customers, and we treat the plants generously throughout. They like heat and moisture and a rich, mellow, loamy soil, to which a moderate proportion of well-decayed manure and leaf-mould have been added. They must also be shifted on into larger pots; for if you would have specimens of the stature of a man, and well-furnished with the plummy inflorescence, the plants must not, whilst in a small state, be kept in the pots a day longer than they have well-filled them with roots. To this point I would direct special attention, because of so many failures occurring through the plants being kept starving in small pots until they have become so stunted that the most skilful management will fail in setting them right again. The cultivator should, at the beginning, determine upon the

size of the pots in which he intends to bloom them, and until they are put into these, they should be repotted immediately the roots form a close net-work round the outside of the ball. Each shift should be into pots two sizes larger than those previously occupied; and, to make everything as plain as possible, I would add, that the most suitable sized pots in which to bloom celosias are those nine, eleven, and twelve inches in diameter, the intermediate size being, perhaps, the most suitable for the amateur. When these pots are well filled with roots, rather weak liquid manure should be applied alternately with clear, soft water, and the supply continued until they are fully in bloom. They may be flowered in eight or even six-inch pots; but in these it is impossible to develop the true character of this distinct and ornamental plant.

The seed may be sown in February and the two following months; but the most suitable period for seed-sowing is that comprised within the first and second weeks in March. Sow in shallow pans, in precisely the same manner as you would seed of primulas, or other choice things. Cover the seed with a mere dusting of soil, then lay a sheet of glass over the pans, and place in a propagating or cucumber pit. When the young plants are plainly visible above the surface, remove the glass, and as soon as they are large enough to handle, prick them off into thumb-pots, and shift on as already advised. They do exceedingly well in the same temperature and with the same degree of atmospheric humidity as melons and cucumbers, and, by mentioning this fact, I shall perhaps do more service than by giving a table of temperatures for various stages of growth. They should be exposed to the full light throughout, and receive abundant supplies of water at the roots. It may be added that the plumes will remain bright and fresh for a long time after their removal from the plants, and are well adapted for dinner-table and every other form of indoor decoration.

THE CHRYSANTHEMUM IN 1875.



CHRYSANTHEMUM SOCIETIES have of late years multiplied so rapidly, and the exhibitions have become so numerous, that it is quite impossible to do more in these pages than speak of them in a general way. As will have been seen in the list published in the issue of the FLORAL WORLD for November, there have been several exhibitions in all the weeks excepting the first, and a brief report of each would require a whole number, and, owing to their similarity, the reports would be wearisome to our readers. We shall, therefore, content ourselves by saying that the finest exhibitions were those held at Brixton, Stoke Newington, Bristol, and Woolwich, and give the names of the finest varieties staged at these shows. The Royal Horticultural Society's exhibition was, so far as the chrysanthemums were concerned, of a very indifferent character; and if it had not been for the large display of winter fruits, it would have been a very

poor affair. At Bristol and Brixton, fruits and miscellaneous flowering plants were strongly represented, and these exhibitions were far more interesting and attractive than those consisting exclusively of chrysanthemums. One of the most interesting exhibitions this year was that held within a stone's throw of the London Bridge Railway Station, a district most unfavourable to the cultivation of plants of all classes. All the plants and cut blooms staged were grown within a few hundred yards of the place of exhibition, and a splendid display they made, for the numerous classes were well filled, and the plants were furnished with good flowers and excellent foliage, and the cut blooms were of splendid quality. Both plants and blooms were so fresh in appearance that it was difficult to believe that they had been grown in one of the most densely populated and smokiest districts in the Metropolis, and that, too, by labouring men.

As was evident by the specimens and cut blooms at all the exhibitions, this has not been a "chrysanthemum year," for, taken on the whole, they have been considerably below the average. Owing to the heavy rainfall during the months of June and July, they made an excessively luxuriant growth, and the wood did not become sufficiently matured to produce blooms of really first-class quality.

Notes were made of the best varieties staged in the several exhibitions, and for the assistance of those of our readers who may be desirous of commencing the cultivation of these invaluable autumnal flowers, or of adding to their present stock, we have prepared a list of the finest varieties, and have arranged them according to the purpose for which they are best adapted.

BEST FIFTY INCURVED VARIETIES, WITH FINELY-FORMED FLOWERS.—Alfred Salter, Beethoven, Beverley†*, Blonde Beauty, Bronze Jardin des Plantes†, Cherub, Dr. Brock, Duchess of Buckingham, Duchess of Wellington, Empress of India, Fingal†, Florence Nightingale, General Bainbrigge†, General Hardinge, General Slade, George Glenny†*, Gloria Mundi, Golden Beverley, Golden Eagle, Golden Dr. Brock†, Golden John Salter, Guernsey Nugget, Her Majesty†*, Iona, Isabella Bott, Jardin des Plantes†*, John Salter, Lady Harding†*, Lady Carey, Lady Slade, Le Grand, Lord Derby†, Miss Mary Morgant†, Mrs. G. Rundle*, Mr. Brunlees, Mrs. Sharp†, Mr. Evans, Mr. Gladstone, Mr. W. H. Morgan, Pink Pearl, Prince Alfred, Prince of Wales, Princess Beatrice, Princess of Wales, Princess of Teck, Rev. J. Dix, Queen of England, White Globe, White Venus, Yellow Perfection.

BEST FIFTEEN LARGE ANEMONE-FLOWERED VARIETIES.—Antonius, Empress*, Fleur de Marie*, George Sand*, Gluck*, King of Anemones*, Lady Margaret, Louis Bonamy, Marguerite d'Anjou, Mrs. Pethers, Prince of Anemones, Princess Marguerite, Queen Marguerite, Rose Marguerite, Sunflower*. These are only suitable for exhibition as cut blooms, and are of no use to the amateur.

BEST THIRTY WITH INCURVED AND REFLEXED FLOWERS, for Exhibition Specimens or Conservatory Decoration.—Alma†, Anne Salter†, Aurea Multiflora, Cardinal Wiseman, Carissima, Christine†*, Chevalier Damage, Countess of Granville†*, Dr. Sharp, Fingal,

General Bainbrigge, Gloria Mundi†*, Golden Christinet†, Golden Cluster, Her Majesty, Rival Little Harry, Lord Clyde, Lord Ranclagh†, Julie Lagravèret†*, Le Grand, Mrs. George Rundlet†*, Mrs. Forsyth, Prince Alfred, George Glenny, Prince of Wales, Progne, Sparkler, Vesta†, Virgin Queen, White Christinet†, White Venust†.

BEST THIRTY POMPONES, for Exhibition Specimens or Conservatory Decoration.—Acis, Aigle d'Or, Amy†, Andromeda, Aurore Boréale†, Bob†*, Cedo Nulli, Fanny, Florence, General Canrobert†*, Golden Auroret†*, Helenet†, Innocence, Mrs. Hull, Judy, Little Beauty†, Madame Eugène Domage*, Madlle Marthet†*, Madge Wildfire, Miranda, Miss Julia, Mrs. Dix, Mrs. Turner, Président Decaisne, Prince Kenna, Rose d'Amour, Rose Trevenna†*, St. Michael, Salamon, Stella, White Travenna†*.

BEST EIGHTEEN JAPANESE, for the Conservatory.—Aurantium†, Cromatella†, Dr. Masters*†, Elaine*†, Fair Maid of Guernsey†, G. F. Wilson, Garnet†, Grandiflora*†, James Salter*†, Madame Godillot†, Nagasaki Violet, Prince Satsuma†, Red Dragon*†, Red Indian, The Daimio†, The Mikado, The Sultan*†, Wizard.

BEST FIFTEEN OF ALL CLASSES, for the Amateur, selected from the above.—*Large-flowered*—Chevalier Domage, Gloria Mundi, George Glenny, Mrs. George Rundle, Dr. Sharpe, Prince Alfred, Princess Beatrice. *Japanese*—Elaine, James Salter, Garnet. *Pompone*—Golden Aurore, Fanny, Madame Eugène Domage, Madlle. Marthé, and Rose Trevenna.

Those who may require a fewer number of either of the above classes should take first of all those marked thus *, and if these are not sufficient take in addition those marked thus †.

DAHLIA COCCINEA.

BY HENRY CANNELL,

Nurseries, Swanley and Woolwich.



URING the past summer, I had in my nurseries at Swanley upwards of one and a half acres of dahlias, and although the collection comprised all the finest varieties in cultivation, I am bound to say that one of the most attractive of all was *Dahlia coccinea*, from which it is supposed all the varieties of the florists' type have descended. It was introduced rather more than seventy years ago, and in the race after the varieties with double flowers it has been quite lost sight of, to the injury of our gardens. As it is now comparatively unknown, I will say, for the information of readers interested in these flowers, it is as unlike a dahlia of the ordinary type as it well can be, excepting in the foliage. The flowers are quite single, perfectly flat, and measure from three to four inches in diameter. The colour is an intense crimson scarlet, and as the flowers are borne in the most profuse manner possible, and well above the foliage, well developed plants, standing singly or in

clusters, produced very rich effect in the border. The plant has a neat dwarf and compact habit, the height ranging from eighteen to twenty-four inches, according to the character of the soil. I intend growing it very largely, for there can be no question as to its value for bedding purposes, and for the mixed border, and it only requires to be known to be planted largely in private gardens. I know of no more valuable bedding-plant for amateurs, as it can be grown in quantities without the aid of glass, or, at the most, the shelter of a cold frame in the spring, to protect the young growth from spring frosts, and enable the cultivator to push the plants on, and have them of a good size by the time they can be planted out with safety. The roots can be wintered in any dry place where they will be safe from frost; and if there is no glass, they may be potted in March, and placed in a warm, sheltered position, and be protected at night with mats or canvas; or, if there is any difficulty in adopting this course, they can be planted in the border or beds, and when the young growth makes its appearance above the surface, a flower-pot turned over them in the evening will afford ample protection.

There is, I understand, a form similar in character and the shape of its flowers, with pure yellow flowers; but of this I cannot say much at present. It will, in all probability, be of considerable value as a yellow bedder. It would be interesting to know what has become of *Dahlia scapigera*, a species with white flowers, similar in shape to *D. coccinea*. It was introduced to the Birmingham Horticultural Society's Gardens through the Berlin Royal Gardens, about fifty years ago, and was figured in the "Botanist," vol. iv., t. 161. The flowers are pure white, and the average height of the plant is two feet. Like the rest of the genus, it is a native of Mexico.

THE GARDEN GUIDE FOR DECEMBER.

How beautiful this night! the balmiest sigh,
Which vernal zephyrs breathe in evening's ear,
Were discord to the speaking quietude
That wraps this moveless scene. Heaven's ebon vault
Studded with stars unutterably bright,
Through which the moon's unclouded grandeur rolls,
Seems like a canopy which love had spread
To curtain her sleeping world. Yon gentle hills,
Robed in a garment of untrodden snow—
Yon darksome rocks, whence icicles depend,
So stainless that their white and glittering spires
Tinge not the moon's pure beam—yon castled steep,
Whose banner hangeth o'er the time-worn tower
So idly, that wrapt fancy deemeth it
A metaphor of peace;—all form a scene
Where musing solitude might love to lift
Her soul above this sphere of earthliness;
Where silence undisturbed might watch alone,
So cold, so bright, so still.

SHELLEY.



ARICULAS.—Remove the old decayed leaves, but in doing so be careful not to injure the plants. The plants must never be dust-dry, let the weather be ever so severe. Beware of damp, and during frost avoid watering until a favourable change occurs, if possible.

BUSH FRUITS may be propagated by cuttings of ripe stout shoots of last year, and the buds to be removed from the bottom of the cutting to within four inches of the top, so as to form a clear stem and prevent suckers. Lay on a thick

INDEX.

—o—

- ABUTILONS**, 118
Æthionema coridifolium, 134
African lily, wintering, 345
Agapanthus umbellatus, 345
Agave americana, flowering, 333
Agave Victoria Reginae, 349
Alexandra Palace, 154, 317, 318
Alphand's "Parks and Promenades of Paris," 194
Alpine plants for borders, 129
Amateur's arboretum, 321
Amorphophallus Rivieri, 338
Anæctochili, 289
Annuals, bedding, 109
Apple orchards, miniature, 349
Apple tree, enemies of, 223
Apples for the million, 124; keeping under leaves, 286; winter dessert, 331
Aquarium, Westminster, 349
Arboretum, amateur's, 321
Aucuba japonica in the Regent's Park, 156
Azaleas, 159
- Bamboos**, 278
Beans for exhibition, 159; Voice's trainers for, 283
Bedders, new, 266; spring, 144
Bedding arrangements at the Crystal Palace, 298
Bedding plants, hardy, 115; preparing, 135
Beds, planting flower, 96
Bee-keepers' association, 253
Bee-keeping, 52
Begonias tuberous-rooted, 114
Berberidopsis corallina, 97
Birds for the household, 240
Boldoa fragrans, 29
Boiler, Deard's, 128; Read's, 31
Books noticed, 61, 62, 187, 251
Bouquets, hand and buttonhole, 43
Boussingaultia basselloides, 28
Bright flowers for dull days, 335
- British wild flowers**, 91
Broccoli, 86
Bulbs in pots, 261
Buttonhole bouquets, 43
- Cabbage**, 48
Cacti, 191; globular, 1
Camelias, 128
Campanulas, 183
Candytuft Mount Lebanon, 134
Cannell's system of heating, 26
Capsicums, 49
Carnations, clove, 306
Carnivorous plants, 223, 253
Carrots, 87; all the year round, 180
Cedar, red, 190
Celery, 86
Celosia pyramidalis, 370
Cement for flowers, 287
Century plant, 333
Chair, Abercorn, 150
Christmas rose, 306
Chrysanthemums in 1875, 371
Church decorations, flowers for, 248
Cinerarias, raising, 189; seedling, 162
Citrus japonicus, 127
Clematis, Jackman's exhibition of, 188; and roses, 269
Clianthus dampieri, 247
Climbers, greenhouse, 192; hardy, 325
Clove carnations, 306
Cole's vineyard, 222
Cologne exhibition, 297
Comparettia coccinea, 33
Corn salad, 47
Conservatory, spring flowers for, 295
Crinum moorei, 333
Crocus culture, 261
Crocuses, winter flowering, 93
Crotons, notes on, 81
Crystal Palace, carpet bedding at, 16, 298
Cucumber, Duke of Edinburgh, 84
Cucumber frame, heating, 62
Cucumbers, 48, 343

- Currants, 254
 Cyanophyllums, standard, 62
 Cyclamen seed, 128
 Cyclamens, Persian, 94

 Dahlia coccinea, 373
 Dahlias, bedding, 158
 Daphne indica, 63
 Dinner table decorations, 311
 Dipladerias, 161
 Drains, roots in, 200
 Drill, seed, 149

 Elm, enemies of, 228
 Endive blanching, 253
 Epacris, 31
 Eucalyptus globulus, 270

 Fairy orange moss, 257
 Fern case, worms in, 127
 Fern cases, exhibition, 68
 Ferns, British, 157; filmy, 203
 Ficus repens, 349
 Figs, 231; dropping, 62
 Filmy ferns, 203
 Finger post, 59
 Flower beds, planting, 96
 Flowers, cement for, 287; new, of 1874,
 95; electro plated, 133; raising
 hardy, 215; sending by post, 280;
 winter, 335
 Flowering trees and shrubs, 225
 Frames, Voice's ventilating, 282
 Frame plants, 206
 Fruit crop of 1875, 271
 Fruit room, new form of, 292
 Fruit trees, for amateurs, 328; plant-
 ing, 351
 Fuchsia fulgens, 63
 Fuchsia rickartoni, 94
 Fuchsias, seedling, 239; specimen, 98

 Games, garden, 137
 Garden, formation of the kitchen, 120
 Garden games, 137
 Garden Guide, 27, 58, 89, 125, 152,
 219, 249, 213, 316, 346
 Gardeners Royal Benevolent Institu-
 tion, 189
 Garston vineyard, 155
 Geraniums for everybody, 38
 Ghent, fruit show, 253; horticultural
 industry of, 29
 Gladiolus, a double, 45
 Glass metal, 190
 Gooseberries, gigantic, 272
 Gourds, 87
 Grapes, choice, 307; houses for, 4;
 keeping in winter, 332; Muscat, 66;
 new way of growing, 174; select, 9;
 and strawberries, 79

 Grape-vines, management of, 50; plant-
 ing, 350
 Greenhouse management, 350
 Greenhouse plants, new, 235
 Greenhouses, new patent, 151

 Hair, sprays for the, 208
 Hardy herbaceous plants, 273
 Hardy climbers, 325
 Harvest hymn, 315
 Heating apparatus, new, 252
 Heating, Cannell's system of, 26
 Hellebores, hybrid, 279
 Hemp, the, 165
 Hepatica angulosa, 129
 Herbaceous plants, hardy, 273
 Hollyhock disease, 190
 Honey fair, 253
 Hyacinth culture, 261
 Hyacinths, notes on, 263
 Hydra, the, 301

 Impressions of plants, 282
 Insectivorous plants, 253

 Kales, 191
 Kalosanthos, 213
 Kitchen garden, formation of, 120
 Knife, budding, 151
 Kumquat orange, 127

 Lapagerias, hardiness of, 94
 Lawn, salted, 224
 Lawn weeds, 191
 Leaves for garnishing, 57
 Leeks, 87, 102
 Lettuce, 49
 Libonia floribunda, 351
 Lilies for the conservatory, 309
 Lily of the Valley, culture of, 14
 Lindley medal, 29
 Linnean society, 222
 Lobelias, bedding, 140
 Lycastes, 25

 Manure, stable, 56
 Manures, chemical, 158
 Moss, fairy orange, 257
 Mulberry, new, 78
 Mushroom culture, 12

 Narciss culture, 261
 Narciss, double, 255
 Nectarine trees, 30, 62; winter manage-
 ment, 351
 Nettle, the, 165
 Nertera depressa, 257
 New flowers of 1874, 95

 Odontoglossum roezli, 190
 Onions, 87; Chiswick trial of, 349

- Onion grub, 30
 Orchard, the amateur's, 329
 Orchids, for everybody, 146; miniature, 33; variegated-leaved, 289

 Pæonies, herbaceous, 85
 Palms, 157; conservatory, 131
 Pandanus, 353
 Pansies, 356
 Paper, Newman's botanical, 155
 Paris, parks and promenades of, 104
 Parrots, management of, 70
 Parsley, 88
 Parsnips, 88
 Peach trees, 62; winter management, 351
 Pears, on Cotoneaster stocks, 246; desert, 155
 Pea, the Glory, 247
 Peas, 49; Laxton's new, 40
 Pelargonium, the yellow, 156
 Pelargoniums, new, 156; not flowering, 128; select variegated, 112; zonal, 275; choice zonals, 10, 38
 Pelargonium Society, 29, 155; annual meeting, 286
 Phloxes, cultivation, 23
 Plant cases, Boyle's, 151
 Poinsettia pulcherrima, cultivation of, 36
 Polyanthus, 157
 Post, sending flowers by, 280
 Potato prizes, 93
 Potato trial, American, 94
 Potatoes, 88; for light soils, 319; catalogue of, 55; exhibition of, 155, 348; in 1875, 244
 Poultry feeder, 149
 Primula pulcherrima, 156
 Primulas, 157.
 Promenade trees, 71

 Radish, 88
 Ransome's lawn mowers, 254
 Rochea falcata, 32
 Root cuttings of roses, 3
 Rose, the Christmas, 306
 Rose trees, propagation of, 3
 Roses, new, 141; in 1875, 258; pot, 164; and rose shows, 194; varieties that originate by sports, 165; town, 193; in the window, 177; and clematis, 269; garden, 363
 Royal Botanic Society's anniversary, 286
 Royal Horticultural Society's new arrangements, 285; position of, 221
 Saffron meadow, 189
 Sarcodes sanguinea, 9
 Saxifraga stracheyi, 155

 Scarborough lily, 350
 Seed drill, 149
 Seeds, sowing, 76
 Sending flowers by post, 280
 Senecio macroglossus, 93
 Shading plant houses, 182
 Shakespeare's Wallflower, 80
 Shrubs, flowering, 225
 Silene pendula compacta, 83
 Snails, 30
 Snow plant, 9
 Sowing seeds, 76
 Spinach, 88
 Sprays for the hair, 208
 Spring bedders, 144, 362
 Spring flowers, 197; for the conservatory, 295
 Staphylea pinnata, 93
 Stenogastra multiflora, 77
 Stephanotis floribunda, 318
 Stocks, intermediate, 237
 Stove plants, new, 235
 Stove plants in cool house, 334
 Strawberries, 201; and grapes, 79
 Structure of plants, 277
 Sutton and Sons, seed stores, 216

 Thermometer, Cox's, 150
 Tomato, 88
 Trees, beautiful, 321; flowering, 225; planting fruit, 351; promenade, 71; for shelter, 31; wall, 62
 Tulip culture, 261
 Turner's Nurseries, Slough, 313
 Turnips, 89

 Vallota purpurea, 350
 Vegetable marrow, 89
 Vegetables, choice, 59; forcing, 21; to be sown in July, 210; useful, 46, 86, 102
 Veitch's fruit prizes, 252
 Veronicas, shrubby, 31
 Vine borders, 7
 Vines, management of, 50; planting, 8; in pots, 286
 Vinery, the amateur's, 50, 4, 66; for muscats, 66
 Vineries, constructing, 4
 Violas, 366
 Vitality, dormant, 93

 Wall, the other side of, 239
 Wallflower, Shakespeare, 80
 Wall fittings, 151
 Water-can, perfect, 150
 Watercress, 357
 Wild flowers, 91
 Window flowers, 368
 Winter flowers, 335
 Wistarias, standard, 18

COLOURED PLATES.

- | | |
|---|--|
| <p><i>Acer polymorphum palmatifidum</i>, 321
 <i>Anæctochilus xanthophyllus</i>, 289
 <i>Berberidopsis corallina</i>, 97
 <i>Comparettia coccinea</i>, 33
 <i>Dipladenia brearleyana</i>, 161
 <i>Echinopsis pentlandi</i>, 1</p> | <p><i>Hepatica angulosa</i>, 129
 <i>Nertera depressa</i>, 257
 <i>Pandanus</i>, group of, 353
 <i>Rose</i>, Paul Neyron, 193
 <i>Rose</i>, pink, Gloire de Dijon, 65
 <i>Weigela Middendorffiana purpurata</i>, 225</p> |
|---|--|

WOOD ENGRAVINGS.

- | | |
|---|--|
| <p><i>Æthionema coridifolium</i>, 134
 <i>Araucaria imbricata</i>, 108
 <i>Bois de Boulogne</i>, 106
 <i>Bostrichus chalcographus</i>, 230
 <i>Bostrichus typographus</i>, 230
 <i>Butterfly</i>, nettle, 167
 <i>Candytuft</i>, Mount Lebanon, 134
 <i>Cannell's system of heating</i>, 26
 <i>Case</i>, fern, 69
 <i>Chair</i>, Abercorn, 150
 <i>Cossonus linearis</i>, 229
 <i>Cucumber</i>, Duke of Edinburgh, 84
 <i>Cupressus lawsoniana</i>, 107
 <i>Distaff</i>, Italian, 171
 <i>Drill</i>, seed, 149
 <i>Elm</i>, enemies of, 229, 230
 <i>Fern case</i>, 69
 <i>Frames</i>, Voice's garden, 282, 283
 <i>Fuchsia</i>, Mrs. H. Cannell, 101
 <i>Heating</i>, example of Cannell's system,
 26
 <i>Hemp</i>, leaf of, 172
 <i>Hydra fusca</i>, 304, 305
 <i>Hydra viridis</i>, 302
 <i>Knife</i>, new budding, 151
 <i>Lemna major</i>, 302
 <i>Nettle butterfly</i>, 167</p> | <p><i>Nettle</i>, sting of, 166
 <i>Orobanche ramosa</i>, 173
 <i>Palm</i>, <i>Rhapis flabelliformis</i>, 132
 <i>Pea</i>, Dr. Hogg, 41
 <i>Pea</i>, Supplanter, 42
 <i>Pea</i>, Unique, 40
 <i>Psyche in the flame</i>, 169
 <i>Rhapis flabelliformis</i>, 132
 <i>Scolytus destructor</i>, 229
 <i>Seed</i>, drill, 149
 <i>Silene-pendula compacta</i>, 83
 <i>Stenogastra multiflora</i>, 78
 <i>Strawberry house</i>, 79
 <i>Trainers</i>, Voice's, 283
 <i>Vinery</i>, lean-to, with outside border, 5
 <i>Vinery</i>, lean-to, with border inside and
 out, 6
 <i>Vinery with heated border</i>, 67
 <i>Vinery</i>, span roof, with inside borders,
 7
 <i>Vinery and strawberry house</i>, 79
 <i>Voice's garden frames</i>, 282, 283;
 trainers, 283
 <i>Wasp</i>, sting of, 166
 <i>Water can</i>, perfect, 150
 <i>Watercress</i>, culture of, in pots and
 pans, 357</p> |
|---|--|

coating of half-rotten dung between gooseberry and currant bushes, and in dry weather prick it in with a fork, so as to avoid injury to the roots. Raspberries to have a heavy mulch, which is not to be pricked in; any disturbance of their roots is a great injury.

CAMELLIAS.—Extremes of temperature, moisture, or drought will cause the buds to fall; and it will be as well now to see that all Camellias are really moist at the roots, for sometimes, after the roots become dry, the water passes away on the outside of the ball, without any benefit to the roots whatever. A dry heat is very injurious to Camellias now.

CARNATIONS AND PICOTEES must have abundant ventilation and very careful watering. If any appearance of fly, which is easily detected on the top grass of the plant, fumigate twice.

CAULIFLOWERS, LETTUCES, ETC., in frames and hand-lights, must have plenty of air during mild weather by removing the glasses entirely on fine days, and keeping them tilted during rains. If any signs of mildew, sprinkle with sulphur.

CHRYSANTHEMUMS may be disposed of very easily by setting aside in a cool greenhouse one store pot of each variety it is intended to propagate, and destroying all the rest. Good stools in six-inch pots will furnish any number of cuttings when required. Cultivators who have no glass can pack the roots close together under a wall or fence, where some dry straw can be thrown over them during severe frost.

CINERARIAS throwing up their flower-stems to be put in an intermediate house for early flowers. The most backward to be repotted at once, so as to make fine specimens for a very late bloom. Keep the stock clean, use sulphur where mildew occurs, and fumigate for green-fly.

CONSERVATORY.—Let nothing suffer now for want of fire-heat. Forced bulbs will require warm positions, but Heaths, Epacrises, and other hard-wooded plants, must be at the cool end. For succession now, Mignonette, Primulas, Violets, Lily of the Valley, *Luculia gratissima*, Poinsettias, Euphorbias, and *Justicias* are particularly valuable. Keep the atmosphere pretty dry, to prolong the bloom of Camellias, Azaleas, etc. Average temperature, 45° by night and 55° to 65° by day.

FRUIT TREES to be planted with all speed; if delayed much longer, the next year's crop may be lost. Fill in with soil in a friable condition, for no tree will prosper if the roots are puddled in with wet pasty earth.

GREENHOUSE to have as little fire-heat as will be safe, and to be kept as dry as possible. On the occasion of a sudden frost, there is a tendency to get up a brisk heat at night, and much harm is inflicted on plants by running the temperature up to 60° or more, and then leaving the fire to go out, so that by the morning they are exposed to a temperature of 35° or less. The amateur must endeavour to avoid such extremes. By a little watchfulness it may generally be known when frost is to be expected; the fire should then be lighted early in the day, and allowed to go very low at night, and be banked up the last thing, so as to burn slowly till morning.

KITCHEN GARDEN.—There ought not to be now a single square yard of unoccupied ground that has not been deeply dug since the last crop was taken off. Deep stirring and successive frostings of the soil are immensely beneficial, and there will never be much success in the culture of edibles where there is any fear of hard work in winter. The out-door work of this month must be regulated by the weather.

MITCHAM HOUSE to be kept as near 60° as possible. For a steady temperature will greatly prolong the bearing of the beds, but if they are nearly at the end of their productiveness, make up fresh beds at once for succession. At this time of year it will be necessary to make a new bed every month to insure a constant supply.

POTATOES for planting may now be brought out from the store, and placed in shallow baskets on dry moss or hay, and the baskets put in the full daylight in a position where frost cannot touch them. They will soon green over, and when they begin to sprout the sprouts will be short, hard, plump, purple, and not liable to snap off in the process of planting.

RANUNCULUS and **ANEMONES** of common kinds for showy masses maybe planted now, but choice and valuable kinds must be kept in the drawers till the beginning of February, and in the meantime get the beds ready by deep trenching and laying up the earth in ridges.

RHUBARB and SEAKALE.—Those who have not begun to force should do so now, either in the open ground or by potting. As a very mild heat suffices, this season's leaves and litter, if plentiful in bulk, will do as well to make up a bed for the purpose as dung. If the latter is used, it should be turned three times before making the bed, or the heat will be too fierce and too transient.

ROSES require protecting, and hitherto neglected, must have attention at once, as we are now approaching the season of real winter. Plantations of Roses should now be mulched with half-rotten dung, the looseness of which will protect the roots from frost. Roses to be planted should be got in without delay while there is yet a chance of fair weather, as if neglected now it will be better to defer planting till the end of February.

HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY'S EXHIBITION, on the 10th and 11th ultimo, was remarkably good, so far as the fruit was concerned, but the chrysanthemums were exceedingly poor, for the plants and cut blooms were alike few in number, and not first-class in quality. The display of fruit was very large, and of a magnificent character. The grapes and pine-apples were plentiful and good, and of apples and pears there were nearly two thousand dishes. One of the most remarkable contributions to the gathering was a collection of about thirty *Dracænas* raised from seed in the nurseries of Mr. John Wills, at Anerley. A gold medal was awarded to the collection, and this, we understand, has been presented by Mr. Wills to his talented manager, Mr. Bausé, who, it may be remembered, raised the remarkable series of *Coleus* introduced to public notice a few years since.

BOROUGH OF HACKNEY (LATE STOKE NEWINGTON) CHRYSANTHEMUM SOCIETY held its annual exhibition on November the 16th and 17th, and, as usual, it was remarkably successful, the display of cut blooms being very large and fine. A very interesting feature of the show was an exhibition of watercresses by Mr. Shirley Hibberd, illustrative of his system of pot-culture, as explained on another page.

MR. AND MRS. SHIRLEY HIBBERD celebrated their silver wedding at their residence, Bridge House, Stoke Newington, on Tuesday, November 2nd, when a large party of relatives and friends assembled to honour the occasion.

A TESTIMONIAL TO MR. ALEXANDER MCKENZIE, the horticultural superintendent of the Alexandra Palace and Park, is in process of organization. It will have our hearty support, and we hope very many of our friends will go with us, for it is high time Mr. McKenzie's devotion to the public good met with wider and deeper recognition than the ordinary course of business insures. The honorary secretary is J. Bertram, Esq., of the firm of Bertram and Roberts, Alexandra Palace, Muswell Hill.

MR. W. B. HELMSLEY, the author of the "Handbook of Hardy Trees, Shrubs, and Herbaceous Plants," has been appointed to the office of Librarian to the Lindley Library at the Royal Horticultural Society. Mr. Helmsley will attend in the library on Wednesdays in each week.

MISS HASSARD has written a charming book entitled, "Floral Decorations for the Dwelling House," which will be published shortly by Messrs. Macmillan, price 5s.

MR. GEORGE GORDON was on the 3rd ultimo entertained at a public dinner by the East Tower Hamlets Horticultural Society, and presented with a valuable pin, in recognition of the services rendered to the society by officiating as judge at its exhibitions held during the past eight years.

"**HISTORIA FILICUM**" is the title of an admirable "exposition of the nature, number, and organography of ferns," by Mr. John Smith, ex-curator of the Royal Gardens, Kew.

"**TIMBER AND TIMBER TREES**" is the title of a work by Mr. H. T. Laslett, announced as nearly ready by Messrs. Macmillan.

A NATIONAL HORTICULTURAL SOCIETY.—At the meeting of the Lindley Club on Wednesday the 10th ultimo, Mr. D. T. Fish, of Hardwicke Hall, read a paper embodying a series of proposals for the formation of a National Society.

THE FRUIT OF PYRUS (CYDONIA) JAPONICA is sufficiently rare to warrant mention of the fact that a crop has been ripened in the garden of Mr. Voight, Stoke Newington. A sample before us has somewhat the appearance of a small sample of the French crab. The pleasant quince-like aroma of the fruit suggests the proper culinary use for it, which is to flavour marmalade or make a preserve entire.

STANDARD COTONEASTERS form an interesting feature in Messrs. T. Bunyard & Son's nursery at Ashford. *Cotoneaster Simonii* is worked on the common Thorn stock, and the scion grows strongly and berries profusely, and makes a highly ornamental plant for mixing in a choice shrubbery border or standing singly on a lawn. *C. microphylla* and *C. thymifolia* are also grafted in this way, but the best is *C. Simonii*, the berries of which are large, and are now of a brilliant orange-red hue.

THE DEAD LEAVES IN THE PUBLIC GARDENS OF PARIS are, says a French paper, given to the horticulturalists and growers of fruit and vegetables in the environs of Paris, in exchange for a few plants, and they use them for their hot-beds. They are at the cost of removing them, and the garden of the Tuileries furnishes about 100 loads. The leaves of the Champs Elysees, of which the quantity is double, are utilized in the nursery of the City of Paris at Passy. Those of the Luxembourg remain there, and are used to protect the more tender plants from the cold. Those from the squares and other promenades or plantations are sent to the horticultural establishment at Sèvres.

LARGE PLANE TREES.—According to the *Presse* there are two gigantic Plane Trees in the garden of Count Gozze at Canosa in Dalmatia. They are growing in a sheltered situation, whence they were transplanted, it is reported, from Constantinople, 300 years ago—about the date of the introduction of the Plane into Britain. The size of these trees is so great that a battalion of soldiers might comfortably encamp beneath the widely-spreading branches of one of them, which has a trunk thirty feet in circumference. Six of the biggest men could scarcely span the trunk with outstretched arms.

VICTORIA REGIA.—According to "Science pour Tous," an experiment was lately made at the Botanic Gardens at Ghent, to determine the weight required to submerge a leaf of the *Victoria* regia. A leaf was selected and weighted with bricks. It was found that a load of 7 cwt., which is about equal to the weight of three full-grown men of average height and size, was required to produce submersion.

GILBERT WHITE OF SELBORNE.—A very interesting series of unpublished letters (ten in number), from the Rev. Gilbert White, author of the "Natural History of Selborne," to Robert Marsham, F.R.S., Stratton Strawless, were read by the secretary of the Norfolk and Norwich Society, at their last monthly meeting. The letters were written between Aug. 13, 1770, and June 15, 1773. The contents consist of remarks on arboriculture; remarks on the rain-fall; gossip about birds and insects; and the confirmation of Mr. Marsham's supposed discovery of a bird new to Britain, the Wall-creeper or Spider-catcher (*Certhia musaria*, *Tichodrovia musaria*); extracts from his brother's—the Rev. John White, of Gibraltar, who resided there in 1756—unpublished "Natural History of the Rock," in which he describes the difference between the Crag Swallow and the Sand Marten; the former he names "*Hirundo hyemalis*," from the great numbers that frequented Gibraltar in the winter season. The last letter of the series is dated June 15, 1773, and is probably the last he ever wrote, as he survived only eleven days. It is the intention of the Society to publish these interesting letters in the next part of their Transactions.

TO CORRESPONDENTS.

W., *East Yorkshire*.—The seedling geraniums should be kept in the small pots until the spring, and then be shifted into five-inch pots. The compost used should be rather poor, because of their tendency to grow too luxuriantly to produce flowers. They would bloom earlier in the season if left in the small pots, but the flowers would in all probability be too small to show their true character. They may be kept under glass or be placed out of doors in a sunny situation, as may be the most convenient. When under glass they must be fully exposed to the sun, and enjoy a free circulation of air about them.

NAME OF PLANT.—The specimen is not sufficient for identification, or we should have been glad to oblige you.

A Keen Rosarian.—You would most likely do well in New Zealand, as you appear to possess the right kind of knowledge to enable you to make head way. We cannot, however, undertake the responsibility of advising you to emigrate to that or any other country. All the best roses have been introduced to New Zealand, and if you determine upon going there we should not advise you to burden yourself with trees, for they require very careful packing to ensure their safe transmission.

FUNGUS ON LIMESTONE.—*Emel* is troubled with a growth of fungus which forms round white spots on a limestone parapet. When the spots are scraped a pale green appears underneath. She is advised to apply sulphuric acid, and asks for advice on the subject. Now, as regards the application of sulphuric acid, we can advise at once that its employment will be decidedly injurious, and in respect of its adoption therefore we say *No*. But *Emel* will again ask how shall I get rid of the fungus? and we respond with another question—Why be uneasy about it? why not let it alone? What makes the difference between glaring new stone that people speak of as raw, and feel troubled with because it is hard and sharp and cold, and the comfortable old stone that time has coloured and softened and warmed and beautified? See the new stonework in the mason's yard, and then look at similar work in one of Sir Joshua's pictures, and demand of the philosophers an explanation of the difference. We must be philosophers for *Emel* just now. Nature plants fungi and lichens, and mosses, and liverworts, and ferns, and grasses, on limestone surfaces, whether they are rough as rocks or smooth as works of art, and these humble vegetables ripen the balustrades, and urns, and steps, and all other stonework out of doors, and in so doing enhances their beauty. Our advice to *Emel* is to leave the fungus alone and admire it. But if this is impossible, it may be advisable to scrape and scrub it off with hot brine, after which it will not be likely to appear again.

CALADIUMS.—*K.K.*—The safest course will be to shake the corms out of the old soil, and after they have been laid in a dry room or on a shelf in the plant stove for a day or two, put them in pots and fill in the space between them with dry silver sand. If the soil is at all wet the corms will perish, and they will sometimes decay when kept perfectly dry, but when buried in sand and placed in a temperature not below 60°, but few will decay. The majority of the losses of corms during the winter are caused by their being placed in a low temperature.

UNGAINLY FUCHSIAS.—*F.S.*—As the plants are so ungainly that they cannot well be pruned into shape, we would advise you to prune them back to within a few inches of the surface of the soil. This may be done at once, for convenience of wintering them in a small space, and in the spring, when they commence the season's growth, and have shoots from one to two inches in length, turn them out of the pots, shake away the greater portion of the soil, and put them in pots one or two sizes smaller. They will push up strongly from the bottom, and in the course of the season make splendid bushes.

ZONAL PELARGONIUMS IN FRAMES.—*Amateur.*—As there is no means of heating the frame by artificial means, the greatest care possible in watering will be necessary to prevent their damping off. They should have but little, if any water, from now until the middle of February next. They will not suffer any material injury if the soil is allowed to become dust-dry, and remain so until the leaves flag.

ANTHERICUM VARIEGATUM.—*Inquirer.*—This is a pretty little greenhouse plant, with elegant leafage marked with longitudinal bands of white. It was introduced from the Cape of Good Hope about three years since, and has so far proved to be perfectly hardy, but it will doubtless be best known as a greenhouse or frame plant. It may be grown to a comparatively large size in small pots, and is well adapted for indoor decorations, in combination with dark red or deep green leafage. Any ordinary potting compost will suit it, provided it is not too rich, and doubtless a mixture consisting of equal parts turfy loam, peat, and leaf-mould will be found the most suitable for promoting a free growth and developing the beautiful variegation.

DRACÆNAS—*B.R.*—*Dracænas* are most valuable for enlivening the plant stoves during the winter season, as well as for decorative purposes generally. With the convenience of a plant stove they are not difficult of cultivation. They grow freely in a mixture of turfy loam, leaf-mould, and silver sand. A light position and liberal supplies of water are alike desirable.

