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JANUARY
1911

Flowering Shrubs.

By F. W. MOORE, M.A.,
Director, Royal Botanic Gardens, Glasnevin.



IN treating of this subject I will try to confine myself to what may truly be called shrubs, and to omit reference to the many fine flowering plants which attain to the dimensions of trees, such as horse chestnut, lime, wild cherry, &c. It is true there are on the border-line such plants as lilacs, cratægus, species of pyrus, prunus, magnolia, and others, which do attain to the size of small trees, but these can be maintained as shrubs for an indefinite period, and are seen at their best in the shrub state, whereas the larger growers to be really effective must be big. I will also omit reference to large genera such as rose and rhododendron, as it would require a separate paper to deal effectively with each of these, and they should be treated of specially by experts.

Even with these exceptions it is difficult to do even meagre justice to the great number of flowering shrubs which are now available for our gardens. Each year adds to the number, and with the exception of hybrid orchids no class of plants seems to be making such rapid and permanent advance. Their merits are great. We have infinite variety in habit of plants, shape, colour, and scent of flowers and in season of flowering; we have evergreen and deciduous plants, and even our much-abused climate fails to mar their beauty. The word climate suggests a difficulty. Even flowering shrubs will not behave identically in all parts of the British Isles. The variations in temperature, rainfall, and above all in soil, influence the comparative hardiness and attractiveness

of many species; hence much that is written about a certain group as it is found in one locality may not hold good in another locality.

I am not in favour of accepting other observers' notes when writing about plants; hence all my remarks, and the dates of flowering given by me, are from observations made at Glasnevin, where the average rainfall is about 28.00 inches, and where the minimum temperature, taken by a certified thermometer in a regulation screen last winter, was —

Months	Degrees	Degrees of Frost
1909		
November	25.0	7
December	12.0	20
1910		
January	16.0	16
February	26.4	5.6
March	27.0	5
April	24.0	8

and the maximum temperature in 1909 was 77.9 on 12th and 14th August.

Perhaps the best method is to treat of the shrubs as they flower month by month. Starting on 1st January there were in flower *Hamamelis mollis*, *Jasminum nudiflorum*, and *Chimonanthus fragrans*, and *Arbutus unedo* from China, Japan, and Europe, all beautiful plants and useful for cutting, and all lasting well in water, the *chimonanthus* and *jasminum* requiring the protection of a wall to get good results. *Chimonanthus* is reputed to be a shy flowerer; it certainly will not flower in a young state, and when old much depends on the pruning. If closely spur-pruned in February after flowering, and if the shoots are stopped in July, there will, I think, be no complaints about shy flowering. By 18th January three others were

in flower—*Erica carnea alba*, *Garrya elliptica*, *Lonicera Standishii* giving a total of seven flowering shrubs for January. One tree also had opened, *Alnus Americana*. Of the four named *Garrya* is the most striking, and it is the most useful decorative shrub of early spring, perhaps not quite hardy in all situations; if not in exposed positions it will stand fairly hard frosts, and where doubtful it can be used to cover old walls and buildings, for which purpose it answers well.

The varieties of *Arbutus unedo* are worthy of attention. Compact growers, with shining, crowded evergreen foliage, they are able to hold their own in most localities, and the variety *rubra*, generally known as *Croomii*, is a great beauty, lasting in flower for nearly two months. In localities where *arbutus* fruits, the fruits and flowers are on the plants at the same time. To the seven shrubs named as being in flower in January, on 1st February two others are added, *Hamamelis arborea* and *Lonicera fragrantissima*, from Japan and China respectively. *Lonicera Standishii* and *L. fragrantissima* are species with small white flowers, which are very fragrant and which last well when cut. Both are hardy at Glasnevin. During February seventeen additional shrubs came into flower, giving a total of twenty-six species of flowering shrubs open during this treacherous and uncertain month. Of these the most interesting are *Azara microphylla*, *Corylus avellana*, the hazel, *Cydonia japonica* and its varieties, *Daphne Blagayana*, and *Nuttallia cerasiformis*. *Azara microphylla* is a graceful and beautiful evergreen from Chili. The flowers are inconspicuous, crowded on the under sides of the branches, so fragrant that the distinctive Vanilla perfume can be noticed yards away from the plant. This plant has the reputation of being tender, but it is quite hardy, and came through last winter uninjured where the *laurestina* was badly damaged. Its twigs are very useful for winter greenery. It is scarcely necessary to speak of the merits of the Japanese quince, *Cydonia Japonica*; either as a shrub in the open or trained against the wall it is one of our very best spring shrubs, and one has in the flowers every shade from white to scarlet. One of the nicest combinations on a wall is a mixture of the deep red *cydonia* and the bright yellow *Forsythia suspensa*. *Nuttallia cerasiformis* has small pendulous racemes of white flowers with a strong

hawthorn scent. It comes from California. Though not treating of rhododendrons in this paper, I may mention that three flower in February—*R. dauricum*, *R. parviflorum*, and *R. praecox*.

March brings further marked additions—thirteen additional species and varieties are added, but seven of these which were in flower in January and early February cease flowering. These are *hamamelis*, *jasminum*, *arbutus*, *Garrya*, *chimonanthus*, *Lonicera Standishii*, thus leaving twenty-seven distinct species and varieties to brighten the lengthening, but often very cold, days of March. Noteworthy amongst the additions are *ericas*, *forsythias*, *prunus*, almonds, flowering currant, and *laurestina*. Unfortunately the *ericas* are not suitable for all gardens, as some of the best of them have a marked aversion to lime in the soil. It is useless trying to grow *E. arborea*, *E. lusitanica*, or *E. Veitchii* in limestone districts, but fortunately two of the best, *E. carnea* and *E. mediterranea*, are not so fastidious, especially the former, which grows and flourishes in ordinary soils and situations without any special preparation, and is as hardy as our native heather.

E. mediterranea is found in the west of Ireland, but in severe winters it is liable to be injured by frost and broken by snow. There are several varieties, some tall-growing, some dwarf and compact, some with glaucous foliage, some with green foliage, and the colour of the flowers also varies. In the young state, when it forms dense, compact bushes, it is hardier. It flowers over a lengthened period, and is very valuable for sheltered, moist positions. *Erica arborea*, *E. lusitanica*, and *E. Veitchii* are unfortunately rather tender. The first of the plum group to open is *Prunus cerasifera atropurpurea*, more generally known as *P. Pissardi*, a garden variety, and a most valuable one. It is a veritable harbinger of good things to come, and a welcome arrival in our spring-flowering shrubs. It is very hardy, and withstands frost, hail and snow. To see it to advantage it should be planted against a dark background, not only to bring the delicate white flowers into relief but also to enhance the beauty of the soft pink foliage, which is so lovely in April and early May, much more captivating than the darker-tinted older foliage. It is closely followed by *P. angustifolia*, a very free-flowering and hardy tree from eastern United States, which flowers

in a comparatively young condition, and is really better as a shrub than as a tree. There is neither time nor space to deal individually with the merits of each individual shrub, so they must be taken in groups, and a list of all of

ing over seventy species in flower in April, which is remarkable. The seventy include some of our most valuable garden plants; although many of them are not at their best until May they will be dealt with under that month. The double and



[photo by]

PYRUS FLORIBUNDA.
In the Royal Botanic Gardens, Glasnevin.

[C. F. Hall.]

them, with the month for flowering, will be given at the end.

The advent of April finds a marked and steady increase in the number of shrubs in flower, and before that month has passed over eighty species will have opened their flowers since New Year's Day. Of these, eleven have ceased to flower, leav-

single peach, the flowering currant (*Ribes sanguineum*), also *Ribes aureum*, snowy mespilus, almond, pears, cherries, plums, skimmias are all open and gay. *Berberis Mahonia aquifolium*, in many nice varieties, with sweetly-scented flowers, brightens the shrubberies, and *B. Darwinii* is just commencing. The *Amelan-*

chiers or Snowy Mespilus group are dwarf-flowering shrubs or small trees which flower when comparatively small, and are doubly valuable. In the latter part of April and well into May they are smothered with clouds of delicate white flowers, and in autumn the foliage turns red, yellow and orange. A vulgaris and A. canadensis are the best for general purposes. Unfortunately they are generally grafted on the whitethorn, which does not seem to suit them. They are much better on their own roots. During April the many varieties of Mahonia are at their best. The terminal, closely-crowded clusters of flowers in various shades of yellow are sweet and attractive, and the foliage invaluable during the dull winter months, varying in shades from deep bronzy green to dark red, and lasting well when cut. Added to all this, Mahonias are hardy and enduring, and do well in towns. Some of the best varieties are B. aquifolium rotundifolia, A. a. nitens, B. a. atrovirens, and B. magnificum. In the last-named the flowers are not only in terminal clusters but they extend well down the stems.

The Californian flowering currant, Ribes sanguineum, and its varieties are charming old-fashioned garden shrubs which commend themselves to every one, and which require but little attention. The two best varieties are R. s. atrosanguineum and R. s. flore pleno. If the old stems are occasionally cut out at the base space is made for young and more vigorous shoots which flower better. Prunus triloba and the "Gean" prunus (Cerasus) avium open in April, as also do the first barberries, Berberis Darwinii and B. stenophylla, and the first Spiræa s. arguta, which is not only the first but also one of the very best of the group. It is simply covered with small white flowers borne in dense clusters on delicate twigs. The skimmias are nice dwarf bushes from China and Japan, perhaps a little fastidious in disliking lime in the soil, but well worthy of a little preparation and special attention. They are apparently quite hardy, and in April, when they are in flower, the air near them is sweetly redolent with the scent of the very numerous white or greenish-white flowers, and in autumn and all during the winter healthy plants are covered with bright red berries. In Skimmia japonica, still more generally known in gardens as S. oblata or S. Foremani, the flowers are unisexual.

(To be continued.)

Cypripedium Insigne.

THE trials and difficulties which formerly seemed to surround the cultivation of orchids have now, for the most part, been overcome, so that with care and a certain amount of knowledge of their habits these plants are found to be quite easy to grow. Amongst the easiest to cultivate of this class is Cypripedium insigne, or Lady's Slipper, giving no more trouble than an ordinary greenhouse plant. This is an amateur's orchid, and is the best for beginners, and it can frequently be met with in a satisfactory condition, its freedom of flowering making it a universal favourite where any number of orchids are grown. If properly treated it will, at the beginning of winter, when flowers are not over-plentiful, reward the cultivator by throwing up blooms which last a long time in beauty. The leaves are about nine inches long, and green in colour; the scapes about one foot high, bearing a single flower, generally four inches across, and shining as if varnished. The dorsal sepal is large, oval, and the apex is bent forward, yellowish-green in colour, with dull purple spots and a white margin. The petals are broad, spreading, wavy, and pale green in colour, with purple longitudinal lines, the lip being green and brown, paler near the mouth. The true characteristics of a cypripedium are not observable until the plant has reached specimen size and the flowers have come of the fullest size. To keep the flowers well up above the leaves, so that they may be seen to the best advantage, it may be necessary to tie each flower to a neat stake. This operation should be done very carefully, because the roots, being fleshy, may be easily injured by the points of the sticks. This orchid flowers more abundantly when not subjected to frequent disturbances at the roots, as they, being very brittle, frequently snap off at the least touch. It is when the growths become crowded that divisions are necessary, and the spring is the best time to perform this work. This cypripedium grows fast, and quickly fills its pot with roots; therefore when repotting them afford plenty of room for development of both roots and growths. Pots two sizes larger should be given to strong, healthy plants, and should be about one-third full of drainage, and over that a layer of sphagnum moss in order to preserve the drainage from becoming choked. Preserve all the roots

possible, but dispensing with all the old soil. The collar of the plant should be on a level with the rim of the pot, and for larger specimens a compost consisting of rough fibrous peat, loam and sphagnum moss in about equal parts, adding some broken crocks and charcoal to keep the soil free and porous. For small plants use peat and sphagnum in equal parts, with small crocks and a little silver sand. The fresh

A Border of Shrubs.

By J. W. BESANT, Botanic Gardens, Glasnevin.

THIS, like the border of herbaceous plants, can be made perennially interesting and a source of much beauty if judiciously planted and the site prepared with care.

The position of such a border is usually governed by some special circumstances or



Photo by]

CYPRIPEDIUM INSIGNE.

[J. M. Troup.

material should be made thoroughly firm about the roots. The appearance of a newly-potted plant is improved if some heads of live sphagnum be pricked in all over the surface. While the plant is making new growths a little stimulant of weak liquid manure may be given, which will help to make stronger growths. It is a useful plant to grow, as it bears removing from the greenhouse to the drawing-room, where it can be used with advantage for ornamental purposes

J. M. TROUP.

Stormont Castle, Belfast.

requirements. It may be an effective screen is needed, or a boundary defined, or a certain amount of shelter is necessary from some particular direction, and so it is decided to make a shrubbery.

PREPARATION OF THE SITE.—Having decided on the position, the dimensions must be accurately marked out before proceeding to prepare the ground for planting. Under any circumstances it is advisable to trench the whole area to a depth of at least two feet. Should the staple soil be poor, some form of manure must

be incorporated as the work proceeds. For this purpose garden refuse, leaves, road sweepings, as well as decayed farmyard manure when available, may be used, placing a good layer at the bottom of each trench and a somewhat thinner layer above the second spit, which will come just below the roots when planting. When the subsoil is largely gravel some portion of this will have to be got rid of, if too near the surface, being replaced by soil from elsewhere or by extra heavy applications of refuse, road sweepings, &c., as detailed above. As the work proceeds the ground should be made firm by thoroughly tramping the layers of manure and soil as each successive trench is dealt with; the nature and condition of the soil, however, must govern the amount of consolidation required, a naturally heavy wet soil requiring correspondingly less. In the case of clay soils it may even be necessary to provide drainage, but this must be determined on the spot.

TIME TO PLANT.—Although early autumn is an excellent time for getting out many evergreens, it is usually most convenient to carry out the work of trenching in autumn and winter. An effort should therefore be made to have all in readiness by March, when all deciduous shrubs can be safely planted, the evergreens being dealt with towards the end of the month and early in April. Of course a good deal depends on locality. In mild districts much planting may be done throughout the winter, but all should be completed some time before there is a likelihood of hot, dry weather. On the completion of planting a mulch of half-decayed leaves or manure will keep the roots cool and moist, and promote growth throughout the summer.

WHAT TO PLANT.—To obtain the most enduring and satisfactory result a judicious selection of evergreen and deciduous subjects is best. The groundwork, so to speak, is best formed of evergreens, as not only do they afford considerable shelter but they present an effective foil to many of the more beautiful early flowering deciduous shrubs. Of course many of the evergreens are valuable for their flowers as well as for their persistent foliage, notably *Olearia Haastii*, now so often met with and so valuable in and near large cities. With so much material available there should be no difficulty in making a selection to suit all tastes

and all soils. Of evergreens we have aucubas, barberries, box, cotoneasters, cytisuses, euonymuses, genistas, the better kinds of privets, olearias, bush ivies, veronicas, &c. Of deciduous shrubs there is a considerable number, including, among others, ceanothuses, daphnes, spiræas, cydonias, escallonias, deutzias, the smaller kinds of philadelphus, forsythias, fuchsias, hypericums, &c. Fuller consideration of the suitability of the various subjects for different aspects, soils, &c., must be left for a subsequent issue.

Meanwhile much useful work may be done among existing beds and shrubberies. Pruning of summer and autumn flowering shrubs should be proceeded with as weather permits; among others to be dealt with are *Spiræa japonica* and its varieties, of which Anthony Waterer may be cited as a type, *Spiræas Menziesii*, *Douglasii*, *salicifolia*, *Hypericums patulum* and *elatum*, shrubs of the Pea family which flower late in the summer from current season's growth, tamarisks, and others of like nature. Most shrubs require thinning out every few years if they are to be kept healthy and floriferous. Barberries, *Diervillas* (*Weigelia*), the strong-growing *Philadelphuses*, bush honeysuckles, and some others should have the older branches cut out occasionally to induce the formation of younger shoots from the base. Where it is the practice to rake out the leaves from shrubberies and beds these should be replaced by decayed manure, leaf-mould, or fresh loam lightly pointed in, otherwise the plants will soon starve, especially in the older shrubberies.



If I had golden store
I would make a nice little boren
To lead straight up to his door,
The door of the house of my storeen;
Hoping to God not to miss
The sound of his footfall in it,
I have waited so long for his kiss
That for days I have slept not a minute.

I thought, O my love! you were so—
As the moon is, or sun on a fountain.
And I thought after that you were snow,
The cold snow on top of the mountain;
And I thought after that you were more,
Like God's lamp shining to find me,
Or the bright star of knowledge before,
Or the star of knowledge behind me.

—From the Love Songs of Connacht
By Douglas Hyde.

The Making of a Herbaceous Border—II.

By C. F. BALL, Royal Botanic Gardens, Glasnevin.

FEW persons express the same opinion as to the arrangement of colour in a border, which is a rather difficult matter. Some prefer to keep all the different kinds of plants of one colour together, so that one colour leads to another in harmonious progression. In this way all clashing of colours is avoided, but it does not work out in practice as well as it appears on paper, for at certain times of the season one group of colour may be a blaze and another part practically a blank.

The best plan is the mixed arrangement, trying to avoid garish effects as far as possible; when they do occur, make a note at the time of flowering, and

remedy the matter in autumn. White, cream, and lemon are exceedingly useful for softening violent contrasts, foliage plants are also of use for this purpose. Colours which clash or greatly detract one from another when placed together are the main thing to avoid. Royal blue, like that of the cornflower or delphinium, should not be killed by the proximity of lavender or violet. Lavender and red are antagonistic, so must be separated. The various shades of red require careful placing, but scarlet is one of the most valuable of colours, and its effect may be intensified by surrounding with white. Pale blue or pale yellow also go well with scarlet, and lemon yellow will be pleasing with purple. Purple flowers also show up well with a groundwork of greyish-leaved plants, as *Cerastium tomentosum*, or purple crocuses

over *Antennaria tomentosum*. Pink and mauve is a delightfully soft combination. Repetition of the same kind of plant should be avoided on a short border, but is sometimes necessary on a long one, so as to have blossom all the way down. The time of flowering of each subject must be studied so as to be able to arrange the colours and also to distribute fairly equal the spring, summer, and autumn flowers.

Single plants are effective for bold subjects, but the general planting should be in groups; the larger plants may be put out in threes, the medium ones in fives, and the smaller plants in good batches. Among tall plants for the back

of the border are delphiniums, helianthus, rudbeckias like Golden Glow and *Laciniata*, *Pyrethrum uliginosum*, asters, tritomas, verbascums, eremuri and aconitums, &c. Medium sized plants are numerous and will include such as eryngiums, pæonies, Anemone



Photo by

IRIS GARDEN AT KEW.

(C. F. Ball)

japonica, doricums, poppies, gypsophila, campanulas, iris, phlox, &c

When a border has from necessity to be made in a partly-shaded place, then some of the more gaudy-coloured flowers should be omitted, for a very pleasant and restful border can be made in such a place by choosing plants of the softer colours, the aim being to get a quiet harmony rather than a gorgeous effect. Plants which will be useful are larkspurs, monkshoods, spiræas and astilbes, columbines, Siberian iris, the primrose family, anemones, as *A. japonica*, *blanda*, *sylvestris*, and *Nemorosa robinsoniana*. The softer-toned lilies, trilliums, cyclamen, *Cypripedium spectabile*, Solomon's Seal, Lily of the Valley, Christmas and Lenten roses, and such bulbs as daffodils, snowdrops, snowflakes, squills, and glory of the snow, &c.

Time will be saved by making a rough plan and one also gets an idea of what the border will be like when finished. A small piece of spare ground is a useful adjunct to the border, for here plants can be increased when desired, and if they are very small and weak when bought they can be planted until stronger; it will be useful also for annuals and biennials. Although by no means a necessity, yet a frame is a great aid for raising annuals; by this means good strong plants will be in readiness to take the place of bulbs in the border after their foliage has died down.

Plants like asters, helianthus, dionycums, &c., should be divided every two or three years. Do not chop around them, and just leave the centre part, because the centre of this kind of plant is the weakest part. The right way is to lift the whole clump, divide and plant back the outside pieces, which will always be the strongest. The deep tap-rooting plants, like eryngium, gypsophila, statice, only require to be left alone, for they dislike disturbing, and it is only after two or three years from planting that they give the best results.

When a border is planted in autumn, or even early spring, a good effect can be obtained the following summer by filling up gaps with annuals, but as a rule it is quite two years before a border is seen at its best, when all the perennials are established.

Pruning.

By FRED. W. HAMMOND.

OF all the questions which involve differences of opinion amongst the gardening fraternity, oftentimes causing fierce controversy, there is none so productive of discussion as the subject of pruning. I believe very often that the different treatments advocated arise not so much from radically opposed theories as from the different objects which the pruners have in view. For instance, the object of the pruner of closely-planted bush apple trees is to keep them within bounds, while that of another pruning, orchard trees widely planted, is to cause them to grow to the greatest size possible compatible with fruiting. The absolutely essential things in pruning are to know what one is aiming at, what object one has in view, and also that the particular method we adopt will tend

best to help us toward that object, or, to sum it up briefly, one should know exactly why one does every operation, what it effects and what it leads to.

There is so much of the rule of thumb method adopted with regard to pruning that I propose in these articles not so much to lay down rules as to how to prune, but to show why many of the operations are carried out, to try and induce the would-be pruner to think his methods out and know why he takes each cut. Of course the aim of every fruit grower is to grow fruit the best possible quality and the utmost quantity he can of it, and his pruning should be directed with that aim in view—that is, so to prune the trees that they will grow the maximum amount of the best possible fruit, not just for the time being, but for all the life of the tree. Followed further, this means that the pruner should always have in mind the object of so pruning the tree as to furnish it with the largest amount of fruit-bearing wood so placed as to allow that the fruit shall have the best chance of becoming clear, large and well-coloured.

Let us consider first the apple. For ordinary commercial fruit growing there are three forms of tree for apple growing, though one of these need only be used in exceptional circumstances, the bush, half-standard, and standard, the last named being necessary only where cattle are to be allowed to graze in the orchard. The bush is an open centred tree with a stem of about nine inches to a foot in length, budded or grafted on one of the surface-rooting stocks, of which the best is the broad-leaved English Paradise. The roots of these stocks are very numerous and of a fibrous nature, as opposed to the larger woody roots of the crab and free stocks, and tend towards the production of fruit more than wood, consequently bushes on Paradise stock can be planted at a fairly close distance, depending to some extent on the variety, but usually about ten feet apart.

The half-standard has a stem about forty-two to forty-eight inches long, should be on the free or else the crab stock, the great advantage being that small fruits—gooseberries and currants—can be grown beneath for many years if the trees are a pretty good distance apart—twenty-four feet apart in the alleys and eighteen feet from tree to tree being a good distance, having regard to the future.

The standard should have a stem six feet in length, be worked on the crab stock, the particular varieties being selected for this form for their robust habit. I have referred above to the particular advantages of growing trees in this form, so that I need not reiterate the statement here. I do not purpose describing the treatment of the tree from the bud or graft until it is fit to be planted out.

Except in very exceptional cases it is far better for the farmer or fruit grower to buy the trees from an experienced nurseryman than to try and raise them himself; further, he will be wise to buy, in the case of bushes, as two or three year old rather than as maidens. The standards and half-standards will, of course, have their "heads" already formed when received from the nursery, so no difficulty will arise with regard to them. These trees, when received, will have "heads" consisting of three or four shoots if two year old bushes or if they have been cut back one year in the case of the taller trees; if three years old or two years cut

back, each shoot will probably have upon it two more, making six or eight shoots in all. The first thing to bear in mind is the shape in which these trees are to be trained or formed.

Experience has proved that far the best for all practical purposes is the open cup shape, for several reasons, the principal being that the natural desire of the tree is to produce wood growing straight upright, as such wood receives the full flow of the sap without any check occasioned by curves or angles in its course,

and if this upright wood is allowed to remain in the tree it soon becomes a tangled mass of wood like a faggot, where neither light nor air can reach what little fruit is produced. Another reason, perhaps equally weighty, is that a far greater amount of wood favourably disposed for light and air can be accommodated in a tree by drawing it outwards

allowing it to grow this form than by more or less upright, which can be readily understood if one considers the great increase which is produced in the circumference of a circle by a slight increase in the diameter.

This shape of an open cup should be firmly fixed in the mind before the pruner starts operations, then he can deal with every tree on its merits, as its individuality necessitates. A tree of spreading growth like Bramley's Seedling will require much less drawing out than, say, Newton Wonder, which is inclined to be very upright. One sees the wisdom, therefore, of having the principle well in mind rather than having only a set of rules to apply

to all the differing habits alike.

The next point in importance, after the shape of the tree, is the vexed question as to how hard the shoots shall be pruned—that is, how much is to be cut off. Here again one finds the great advantage of some principle to go upon rather than a rule. The desideratum, so long as the tree is being formed, is that the top two or three buds which are left after pruning shall produce good strong shoots, and that all the rest of the buds below shall break into fruit spurs or into medium shoots,



Photo by

[Mackey].

A GOOD SPECIMEN OF FRENCH MARIGOLD.

which shall, when pruned eventually produce spurs.

As a rough rule, about one-third of the wood should be removed, *cutting always to a bud pointing in the direction the resultant shoot is required to take*, but each shoot and each bush must be treated as it requires. If it is seen that much growth was produced after last pruning more latitude must be allowed; on the contrary, if bare space with unbroken buds has resulted the treatment must be more severe on the next occasion. This is the ideal one must always bear in mind, though it be sometimes difficult of attainment. The stronger growing sorts like Bramley's Seedling, Newton Wonder, Warner's King, and Blenheim Orange are the more difficult to manage, since their very vigour causes the buds when they do break to rush into strong shoots rather than fruit buds.

Considerable difference of opinion exists as to what shall be done with any strong shoot which is too badly placed, either because it is in the middle of the tree or too close to or crossing a neighbouring shoot, to be permitted to remain.

A good many pruners and writers on pruning advocate spurring such shoots in—that is, pruning to within half-an-inch or three-quarters of an inch of the base. My personal opinion is that such shoots are far better cut clean out, unless they are so numerous as to leave a lot of bare wood, which would really mean that the preceding pruning had been too hard.

The reason upon which I base my procedure is that such shoots spurred in nearly always produce another strong shoot or two, and if the tree is very vigorous and not being checked by heavy fruiting one can go on spurring back this wood for several years, producing at last an ugly snag, probably without a fruit bud at all. Of the size of shoot it is safe to spur in the pruner himself can soon learn by experience in respect of each tree, always remembering that as the amount of wood in the tree increases and fruiting commences the vigour of the tree has many outlets, and it is safe to spur more than when such is not the case. A word of caution must, however, be given concerning the practice of spurring in all wood wrongly placed, weak, and not required for the formation of the tree. There are some varieties which fruit largely on the tips of the last year's growth, notably Worcester Pearmain and

Irish Peach. With these the annual shortening of the leaders and the spurring in of the side shoots means cutting away the bulk of the fruit, and the method to be employed is, first, to prune hard, so as to get considerable vigour and a large amount of wood so as to form a tree quickly, afterwards to leave it alone pretty much, contenting oneself with thinning out the growths and removing anything that is crossing or rubbing.

It should be added, however, that Worcester Pearmain on some soils will produce fruit spurs fairly well, so that one need not be so much afraid of pruning the leaders for the purpose of extending the tree, as on other soils. Stirling Castle on Paradise stock forms a good example of a tree which can be shortened and spurred in the manner described for many years, so that with a good crop the branches stand covered with apples like ropes of onions.

Ecklinville Seedling is another good natural spurrier, so, too, are Pott's Seedling, Lord Grosvenor, Duchess of Oldenburgh, and Lane's Prince Albert, but the last-named needs a lot of care in training, as it is a very straggling grower, partly because of its naturally awkward habit and partly because the heavy crops pull the boughs out of shape. Bismarck, I have found, breaks well, and on spurring the medium strength growths produces good fruit spurs, which last for several years.

The pruning tool should *never* be scateurs, but always a good sharp knife, and the pruner should aim at making good clean cuts without tearing the bark at the point the knife enters or leaves the shoots, the angle to cut to produce these desired results being about forty-five degrees, anything more being inclined to split the shoot where the knife leaves, and anything less making a long, ugly, shivering cut. In this article, as I pointed out at the commencement, I have tried to show the reasons which should guide a pruner rather than give any rule or rules of procedure.

I will endeavour next month to give some photos from my own trees to illustrate my meaning, though it is very difficult to make them appear real, since the photographic plate reduces the perspective to one flat plane.



THE young shoots of roses, and Tea roses especially, which have become very tender owing to so much rain should be protected with bracken.

Roses.

By O'DONEL BROWN, M.D.

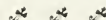


WHEN one in dreary winter picks up a rose catalogue and carelessly or carefully turns over the pages one cannot help noticing, if that catalogue has come from certain firms, that after the names of certain roses are the words "gold medal." When, as I say, one turns these pages over the thought should strike a careful observer of what means this designation gold medal, and why so few roses are awarded this coveted distinction. Is it for us a guide, a pointer as it were, to only accept these favoured few and plant them, and look on the rest as amongst the "also rans?" No, indeed, for amongst those "also rans" are good genuine racehorses—horses, I may say, that have always given a good account of themselves when they were entered for stakes, but which were not "fit" when gold medal day came round.

Roses, like horses (so I am told by folk more versed in horseflesh than I am), are not always to be had fit as fiddles on a given day. Some seasons

the climate suits or does not suit some of our varieties, just as hard ground suits some horses, and happy are the rose and his raiser who, when gold medal day comes round, finds his favourite and all things suitable. Yet how often these eccentricities play us fair or foul may be found when one goes through a catalogue over a fire on a winter's night. Not that we are to think these favoured few as extra special, rather let us look at the others and say hard luck. Hard luck indeed it is to both the raiser and all belonging to that nursery, when perchance this rose has to go out to the world without that V. C. medal to make room maybe for some coming and promising novelty which, for aught we know, will in its turn have to clear for another, this time perhaps a champion. Nurserymen have in a great degree only themselves to blame for hybridizing on such a large scale, yet they will tell you that out of hundreds of seedlings all they look for is about two per cent. of extra good varieties. The only inference I can see is that there must be lots of trash knocking about, and so there is. Some, nay, the most of it in a good nursery where a reputation is already made and which must be kept up, has to be burnt, but before being consigned to the flames it is given another test, and that is in being crossed with some other variety, for the reason that one never knows what cross-breeding will do. Some find their way into a catalogue and are boomed and pushed and shoved up until the poor amateur is sometimes badly had because he has to accept a catalogue's description. There are some of another class, however,

that should have a class for themselves—good, honest, genuine roses which had the bad luck to be unfit and not up to the mark when they were really wanted to shine or fade. Some, it is true, hardly had a fair do, but they and their raisers had to suffer. We sometimes see grand roses emanating from foreign growers, which were never presented for gold medals in London, why I cannot say. Think you for one moment that had F. K. Druschki or Lyon Rose been raised in England or Ireland that they would not have been granted "gold," and that worthily. Knowing that Messrs. Alex. Dickson are P. Lambert's agents in this country I have always wanted to ask the firm why they did not grow Frau K. Druschki at their nursery at Ledbury or Newtownards, and show it as they so often do magnificently ere the market had it. Then, again, to take an American variety, Mrs. Theo. Roosevelt, another flower one constantly sees in grand fettle. Why did none think of growing it over here and get it its rightly-deserved rank? There are many varieties I might name, but one in particular comes to my mind as eminently suitable, and that variety is Lady Ashtown. It is a very open secret that this grand rose was most unlucky, though it was in the best rose grower's hands that ever handled a rose for the highest honours. A most suitable rose for every purpose that ever a rose was meant for, it was hard and cruel luck that it was to be placed amongst the "also rans." It will not do with me, not that the rose is not a beautiful one, but I cannot give it the soil. Yet I have seen it standing in the back row of twelve vases of roses, seven in a vase, flanked by Mildred Grant, that giantess, and Bessie Brown, in London, and yet, instead of being dwarfed, almost dwarfing these big varieties. So struck was I by these blooms that I actually brought them back from London just to show folk here at home what London rose shows have for us to see. Then, again, Mesdames Melaine and Constant Souperis; the two cochets, Mme. Jules Gravereaux, K. A. Victoria, Mme. Wagram, Perle Von Godesberg, Caroline Testout, Catherine Mermet, with her daughters or sports, the Bride and Bridesmaid (I am writing now from memory and have no catalogue in front of me, and cannot say if these last three were out before the National Rose Show was started), Medea, and a host of other genuine good doers and lovely flowers which are in every way glorious and well worthy of all the care we can give them.



In the *Gardeners' Chronicle* of December 17th, Mr. E. S. Salmon records the occurrence of "sooty blotch" disease, found during October last on apples grown in the county of Kent. This disease, although common in America, is apparently new to the British Isles. The blotches represent the blackish spawn of a fungus (a species of *Leptothyrium*) that grows upon the surface of the skin of apples and pears, and is attached to it so closely that it can only be rubbed off with difficulty. Unlike scab, the sooty spot can spread from fruit to fruit in store, and is therefore a troublesome pest in the fruit room. This and another fungal disease known as "fly-speck" occurs frequently on American imported apples. Growers in this country should keep a sharp look out for either of these pests on stored apples or pears.

Irish Timber.

THE following passage occurs in an article on "Irish Timber" in the *Belfast Monthly Magazine* for January, 1841. Although written a hundred years ago I believe it is worth reproducing and will I fancy, be new to many of the readers of *IRISH GARDENING* :—

"And notwithstanding the many arguments which have been advanced to the contrary, the following instances seem to prove satisfactorily, that Ireland is capable of producing large timber. In the year 1793 there was cut down on the estate of Wm. Hoey, Esq., at Dunganstown, three chestnuts, one of which measured sixteen feet six inches, another fifteen feet, and a third fourteen feet three inches in girth; the length of one was twenty-four feet, and the other thirty-six. At Poymore Park, on the shore of Lough Neagh, in the county of Antrim, there was an oak growing within the memory of some persons yet alive that may stand in comparison with the before-mentioned celebrated trees of England. The trunk of this tree was forty-two feet girth and twenty-five feet long to the first branch. One of the branches made into an axle-tree for a bleach mill sold at £9, the remainder of the tops nearly built a lighter called the Royal Oak, which carried forty tons; this was sold for £30. Oak timber at that time sold for 1s. 6d. per foot. Our correspondent informs us the timber brought £97, but the bark being sold with other bark of the park, what it brought is not exactly known. Were more instances necessary to prove that the climate of Ireland seems peculiarly favourable to the growth of large timber, it would be easy to produce them."

Is there any instance on record of a larger tree than this having grown in Ireland? As a confirmation of the accuracy of the following account it may be worth noting that two villages in the neighbourhood of Portmore bear the names of Ballinderry (the town of the Oak Wood), and Derrymore (the great Oak Wood). I have also been informed that there is a buried forest extending for miles along the shore of Lough Neagh at this place. A specimen of this wood (which is oak) is in my possession.

J. ADAMS.

✿ ✿ ✿
I'm glad to lie on a sack of leaves
By a wasted fire and take my ease.
For the wind would strip me bare as a tree—
The wind would blow old age upon me.

—Pádraic Colum.

Lithiasis of Pear.

THE accompanying illustration is from a photograph of one of a number of pears which were handed to me by Sir Charles Ball this autumn, and which had been grown at his residence, near Killybegs, Co. Donegal. The fruit was rather hard to the touch, and on its surface were a number of pit-like depressions, lined with a whitish material, as the figure shows. At first sight the indications suggest some fungus as the cause of the trouble, but closer investigation with a strong pocket lens and with the microscope show that the whitish material does not consist

of fungus spawn or mycelium, but of dead cells derived from the tissues of the fruit, the whiteness being largely due to the presence of air in the interstices between the cells.

Every one who has eaten a pear knows that in the flesh and skin of it certain hard, gritty particles are met with. These consist of little groups or nests of thick-walled elements known technically as sclerotic cells. Sometimes their presence is scarcely perceptible, but they are nevertheless always there in pears; indeed, the presence of such cells is one of the anatomical characters which distinguish these fruits from apples in which they are always absent. The degree of development of those cells appears to depend to some extent on weather conditions, and in very dry seasons they may be more than usually in evidence.

It is to a secondary development of such sclerotic cells that the disease here illustrated is due. Sections through the pits show that the tissue beneath

them consists of very thick-walled, hard, sclerotic cells, and that the whitish material, which to the naked eye might be taken for fungus mycelium, consist of dead cells of the tissues which formerly filled the pit. These groups of sclerotic cells are produced from a kind of cambium much in the same way as corky tissues are developed.

The trouble appears to be limited to certain varieties, and it would be very interesting if a list of such varieties as have been observed suffering from this disease could be prepared for this country. The cause seems to lie in the lack of a proper supply of water to the plant. This may, of course, be due to soil or to season, or both combined. It has also been suggested that it is due in some cases to the grafting of too vigorously growing scions on feeble stocks, the small root development of the latter being insufficient to supply a well-developed crown with sufficient water for its needs.

Owing to the extra stoniness developed in such fruits the trouble is known as *lithiasis*.

G. H. P.



Photo by]

[T. Price.

LITHIASIS IN PEAR.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Brenanstown, Cabinteely, Co. Dublin.

THE work to be done during January depends very much on the weather. I think this January will find most of us with a considerable amount of work lying over from December owing to the almost continuous rains which we experienced during that month. Herbaceous borders will claim most of our attention, and those which have not been thoroughly overhauled ought to be seen to without delay. Herbaceous plants ought to be lifted, the borders deeply trenched and well manured, the plants divided where necessary, at least once in two years. If we have a large quantity to deal with, it is best to lift half this year and the remaining half next year; before lifting see that all plants are labelled. When planting aim to spread the bloom all over the border during the summer months. Do not plant four or five together, which will be blooming at the same time, for when done blooming there will be an ugly gap. Judiciously arrange the heights, but do not give the border the even slope like unto the roof of a house. See that all plants are neatly labelled. It adds greatly to a visitor's pleasure when they know the varieties. Grass lawns should have any inequalities removed; hollows remedied by lifting the sods, filling up to the required level with soil which is not too rich (if too rich it will make the grass grow "tuffy"), carefully relay the sod and roll well, sweep off worm species and keep as tidy as possible. Deciduous shrubs may be pruned and all dead wood removed. If new shrubberies are to be made group to give colour-effect during winter months, this may be obtained to a great extent by planting near each other such shrubs as *Abelia*, *Philadelphus*, &c., for grey colouring; *fuchsia*, *spiræa*, &c., for brown; dogwoods and deciduous *berberis* for red, and so on. Very many corners may be made to look pleasant although they have not a leaf on, especially if there be a good background of evergreen trees or shrubs.

Carnations, &c., should be looked over after frost, and the soil nicely firmed around them. Keep a look out for rats, they often play havoc with tulip bulbs. Prune, and tie deciduous plants on walls, and carefully attend to sheltering of half-hardy plants during frosty weather.

The Fruit Garden.

By G. DOOLAN.

THE past season has been, to a certain extent, a remarkable one. The outlook for fruit-growers during the summer months did not appear bright or promising, growers and many anticipated poor crops. True, there was a profusion of bloom, on young trees especially, but much of this failed to set. The weather during the greater part of the growing period was wet and cold. The autumn, however, was good, and fruit-growers had, on the whole, a good year. The crops were lighter and high-class fruit was somewhat smaller

than in the preceding year, but against this the prices realised were considerably better. Growers who produced quality fruit, as a result of attention to the cultural requirements of their trees, realised very satisfactory returns.

There is every indication that intelligence and skill are being brought to bear on the methods of cultivating fruit trees. The fruit shows held throughout the country testify to this fact. It is a decidedly hopeful sign, and a good augury for the success of the fruit-growing industry.

REMARKS ON PLANTING, PRUNING, &c.—Readers of IRISH GARDENING will have observed in recent issues of that journal the ample and very practical instruction on the planting and further treatment of fruit trees. It cannot be too strongly impressed on all who purpose going in for fruit raising that attention to details is necessary if the best results are desired. If a cabbage which occupies the ground but a short time requires certain conditions, such as manuring, preparation of the soil, &c., how much more a fruit tree which is to occupy the ground thirty, fifty, or perhaps eighty years. Yes, it is the details that count; careful and firm planting; staking to prevent disturbance of the roots by wind or other causes; mulching, or the placing of manure on the surface, to keep the soil moist and attract the roots upwards; pruning, to shape the tree and promote the production of good fruit spurs; spraying, to keep the tree in health and free from pests. All these are certain factors in the production of high-class fruit, which, after all, is what fruit-growers desire. It is the best that pays, therefore it should be the aim of all growers to keep their fruit trees in the very best health possible. In many places, where the soil is heavy and of a retentive nature, the recent heavy rains have made planting impossible. Where such conditions prevail, it is always better to delay planting until the ground is in a fit and workable state. Where fruit trees have arrived from the nursery and their roots placed in the ground temporarily, they are quite safe provided sufficient soil is placed around their roots to prevent injury in case of frost. Planting should be carried out immediately the ground soaks and is in a workable condition. Such remarks do not apply to light soils, as these can be worked almost at any time. It should be remembered, when planting on light ground, to place the trees deeper than in heavy ground, and a heavier mulch on the surface is also necessary, the reasons are obvious; heavier soils retain moisture, whereas light soils are liable to become dry and warm more quickly.



G. DOOLAN

Great care should be taken not to injure the branches or bark of young fruit trees, as disease or canker usually finds an entrance by such wounds, and in many cases cause the death of the tree. Whenever such wounds are noticed they should be pared perfectly clean with a sharp knife, and it a disinfectant be rubbed in the wound so much the better.

The Vegetable Garden.

By J. G. TOMER.

PERENNIAL VEGETABLES.—Choice perennial vegetable crops require, and indeed deserve, much more study, care, and attention than is usually bestowed upon them, and a suitable season is now at hand for making new plantations, or for the improvement of those already made. The first place amongst these may be assigned to the delicate asparagus. Most well cultivated soils will grow it well, but in deep sandy ground it revels. It often happens, however, that those most anxious to cultivate it cannot command soil of that nature; they may feel comforted by the fact that by the addition of suitable material any dry portion of their gardens may be brought into proper condition for the production of handsome crops for many years. When the initial portion of the work has been well and honestly carried out, asparagus beds have been known to last for fully thirty years.

The present is a good time to have beds prepared. Provided the ground is deep and dry, a very heavy dressing of rotten stable manure should be dug into the lower spit; this cannot be thoroughly or most conveniently done unless the upper foot of soil be removed entirely, at least for a portion of the bed. Manure of the same description is added in the course of returning the top spit but in a less degree, and so the work proceeds

until the bed or beds are finished. The most convenient width will be about three feet wide; beds of this size can be properly cared without the necessity ever arise of walking on them. Two rows of plants will suffice to furnish them, or, if preferred, seeds can be sown in March or April, but plants grown in this way may not be cut from until the third year. The majority therefore would decide to put in plants. Should this be done two

ridges must be cut out on the top of the bed; the tops of these being five inches under its level. On these are placed the roots, allowing them to fall down on either side, placing them about eighteen inches apart and covering the crowns five inches deep, making all level again. The months mentioned are the safest for the planting, but the preparatory should be got through at once.

SEWAGE.—Here is another choice vegetable of which there is never too much to be had, and coming to table at a period when the range of good vegetables is somewhat restricted it is doubly valuable. Rich, deeply-trenched ordinary garden soil will do it full justice, and strong roots can be planted during February and March in rows two and a half feet apart, leaving eighteen inches to two feet between the plants. Let them grow right away during their first season, but reduce the shoots to one in the month of May. An alternative method of planting is to place three roots in a triangular position about nine inches between each, these groups being four feet apart. In each case the crowns may be left two inches under the surface. The following year coal ashes, turf-mould or sand may be heaped over them for blanching purposes; those grown in sand are particularly white and solid and present a most delightful appearance on the table.

SOMETHING NEW.—As a result of the intercrossing of various forms of the cabbage family, Messrs. Sutton put before the gardening public two novel types of Brassicas, the Savoy sprout, and the cabbage sprout. Apparently they are the result of crosses between the Brussel sprout and the York and Savoy cabbages. Rather good-looking heads are formed at the top, while the stems are clothed with useful-looking sprouts, which in the case of the Savoy variety will have a special worth as adding another to our winter or spring vegetables.

EARLY POTATOES.—A very important matter that claims attention without loss of time is the boxing of early potatoes. Too often indeed this is put off until too late. Not only should they be boxed, but a good light-some position must be given to them so that the sprouts may be strong and sturdy. These may, with great profit, be reduced to one before they are planted. When conveniences exist some may be planted for forcing in pots placed on shelves in the greenhouse or use may be made of heated pits or hot-beds. The quality of this crop may not—one may say will not—be first rate, but they will be new potatoes, and as such will be appreciated very early in the year.

LETTUCES.—Sowings of these made soon on a hot-bed or even in a cold frame will produce a very welcome crop about April. Small, quick-bearing kinds of the Commodore Nutt type will prove most suitable. A thin distribution of the seeds will be very advantageous, as transplanting must be carefully done so that no check is given.

CELERY.—The late lines will deserve some little care to prevent the probable danger arising from severe frost. Litter and clean straw are often and successfully used for this purpose, but give rise to an appearance of untidiness to the vegetable quarter. Much preferable is it to make use of a few boards, which can be easily attached to stakes driven in at each side of the trench. To the cross-pieces connecting the uprights one simple tie with tar-twine will secure them from being disturbed and when not required they can be left in a handy position alongside the trenches, to be fixed in a moment on the coming of severe weather. The lean season will soon be with us, and a little good management will go far towards keeping up an unbroken supply.



J. G. TOMER

General Notes.

WE have received an advance copy of the first provisional schedule of the International Horticultural Exhibition to be held in London in 1912. The exhibition is a great undertaking, and will undoubtedly stand out as a notable landmark in horticultural progress. There are as many as 431 classes covering the whole range of possible garden subjects. The prizes will consist of a combination of cups and money, together with diplomas. The awards will be made by an international jury, and this jury will be divided up into sections, with a president and secretary for each section. At the last international show held many years ago, Ireland played a very creditable part with her exhibits, and we hope that Irish gardeners will again combine, so that we may take our rightful place among the nations in the forthcoming exhibition of 1912.

MR. F. W. MOORE of the Royal Botanic Gardens, Glasnevin, has been asked to act as organising secretary for Ireland, and we understand that circulars will shortly be issued with the view of ascertaining the best method of organising the country. Mr. Moore will esteem it a favour if those interested in the matter will communicate with him—making suggestions. No time should be lost in organising our resources and arranging the character and extent of our intended exhibits. If the matter is taken up with spirit and enthusiasm throughout the country we need have no fear of the place that Ireland will win for herself in the international competitions in 1912.

THE exhibition will be held in May, and it is hoped that suitable buildings will be procured for the exhibits, and that landscape gardening will be included in the structural scheme of the growers. As to the exhibits, the following divisions are already arranged:—1. Stove plants and cut flowers. 2. Palms, cycads and agaves. 3. Orchids. 4. Ferns and Selaginellas. 5. Greenhouse plants. 6. Roses. 7. Carnations and Pinks. 8. Hardy plants (including Alpines). 9. New and rare plants. 10. Fruits (including fruit trees in pots). 11. Vegetables. It is hoped, too, that arrangements will be made to organise a horticultural education exhibition as part of the general scheme, and to hold in connection with same an educational conference for papers and discussions upon recent improvements in cultivated plants, and the methods by which such improvements are brought about, the training of young gardeners in different countries, and the work at present being done by county horticultural instructors in Great Britain and Ireland.

AT a scientific meeting of the Royal Dublin Society last month, Dr. Pethybridge read a paper on "Considerations and Experiments on the Infection of Potato Plants with the blight-fungus by means of mycelium derived direct from the planted tubers." He said—Until recently it had been supposed that the attack of the potato crop with blight was due to infection carried by spores, and this mode of attack was held to be responsible both for the spread of the disease during the summer as well as for the primary infection of the crop each recurring season. Lately an attempt had been made, however, to explain the primary infection as been due to the passage of the spawn or mycelium of the fungus from the planted sets (which were, therefore, assumed in the first instance to be diseased) direct into the stalks which develop from them. The lecturer pointed out how difficult it was to reconcile this new view with well known facts concerning the disease. The evidence brought forward of the new theory of infection was shown to be of no value, and the author's experiments further showed that such a mode of infection as had been suggested was most improbable. As a matter of fact, if diseased tubers are used as "seed" the majority rot away in the soil and produce no plants whatever. If they grow at all they usually give rise to dwarf unproductive plants, or in rarer instances to normal ones. But in neither of these latter cases are the plants diseased if kept under conditions that preclude the possibility of infection from air-borne spores.

THE first number of the *Journal of Genetics*, issued by the Cambridge University Press, marks an epoch in the history of Gardening. Under the editorship of Professors Bateson and Punnett the journal is sure to have a most useful career. Since the principles of Mendelism have become known plant breeding has developed into a more or less exact science, and gardeners may expect in the near future many interesting and valuable results from the large number of workers now engaged upon the experimental side of genetics. The present issue of the journal contains articles on potatoes, peas, primulas, and petunias. As an example of the character of the experiments here recorded, one dealing with the potato plant may be mentioned. It is here shown that immunity from blight is a recessive character, and as recessive characters always breed true it is, therefore, extremely probable that in time there may be evolved a race of potato that will be able to resist this particular form of disease. We give a cordial welcome to the journal.

The Fruit, Flower, and Vegetable Trades' Journal (London), in a leading article on the "Coming of Ireland," directs attention to the remarkable progress that has recently taken place in all departments of horticulture in the "sister isle." It refers to the energy of the Ulster Fruit Growers' Association, to the development of apple-growing in Waterford, Kilkenny, Limerick, and other southern counties, and to the work of the Department of Agriculture in connection with the cultivation and marketing of fruit.

THE Ulster Fruit Growers' Association, realising the importance of grading and packing, has adopted the Canadian system of having three grades of apples—

select, first, and second, and packing the fruit in new non-returnable barrels or boxes of standard size; the barrels to contain ten stones net and the boxes three stones net. A green label bearing the red hand of Ulster is the distinctive trade-mark of the association. So far as grading as to size is concerned in large varieties, such as Bramley's Seedling, those labelled "select" must not drop through a ring, the internal diameter of which is $3\frac{1}{4}$ inches; while for first and second the gauge is $2\frac{1}{2}$ and $2\frac{1}{4}$ inches respectively.

THE value of fruit as a food is generally overlooked or disregarded, and yet its importance as an article of diet is insisted upon by all modern writers on health. Fruits contain all the essential nutritive substances required by the body. They exist too in an easily digestible form, and because of their peculiar nature are said to materially aid in the digestion of other foods. The use of fruit exercises a healthy influence upon the excretory functions of the body, and thereby help to keep the blood pure and so contribute to soundness both of mind and body.

ALL fruits contain water, sugars, albumens and salts, and some contain oils and fats as well. No drink can possibly be better than the juice of fruits. The sugars contribute to the heat of the body. They are oxidized or burned during respiration, and are thus a source of energy. In dried fruits, like dates and raisins, about half their whole weight is sugar. Some fruits, nuts especially, contain a good proportion of albumen or flesh-forming food. A meal of nuts and raisins is a perfect meal. Wholemeal bread and dates and raisins is another well balanced ration. Vegetable oils and fats are particularly wholesome, and there are many preparations of such in the market.

As to the salts found in fruits they can scarcely be over-estimated. They are in their nature just the kind of minerals required by the body; they exist in the right proportion and in a form that can be easily assimilated. Let us, therefore, remember the old adage "that an apple a day keeps the doctor away."

EVERY man who has the opportunity that a piece of land offers ought to grow fruit. He ought to grow fruit not as a luxury but in order to provide himself and family with food. Youth craves for fruit, and this craving is really a call of nature—a desire born of physiological need. Fruit is not a luxury, it is a necessity. In every parish in the land thousands upon thousands of fruit trees might be planted even in hedgerows and by waysides without interfering in the least with existing crops.

IN the present issue we give the first instalment of an authoritative article on pruning, specially written for IRISH GARDENING by Mr. Fred. W. Hammond, who is an English market grower in a large way of business, and his methods of pruning will be read with interest, and we are sure with profit also, by fruit growers in this country.

WE have received from *The Gardeners' Magazine* a copy of "The Gardeners' Year Book and Garden Oracle for 1911." That it is compiled by Mr. George Gordon, and also that the present issue represents its

fifty-third year of publication, are guarantees as to its usefulness and popularity. There is, first, a convenient calendar and diary, followed by full notes on the year's work in the garden; a descriptive list of the new plants of 1910; special articles on numerous garden subjects, and miscellaneous information covering a very wide range of interests. It is well illustrated, some of the plates being in colours.

THE destruction of rats is a matter that is always engaging the attention of dwellers in the country. Rats start breeding at a comparatively early age. They are also very prolific, producing from six to fourteen young in each litter. As they have several litters a year a single pair can soon stock a whole neighbourhood. In a bulletin recently published by the United States Department of Agriculture, among other poisons recommended for their extermination, barium carbonate is mentioned as the cheapest and most effective. It is without taste or smell, has a corrosive effect on the mucous membrane of the stomach, and causing thirst induces rats to seek water in the open, where they die. It may be employed in the proportion of one part of the carbonate to four parts of meal mixed to a dough with water (or even one of mineral to eight of meal will be effective). The carbonate may be spread on fish or moist toasted bread. As rats are very suspicious animals the form of bait should be frequently altered, as when they discover their companions dying from any particular kind of food they forthwith avoid it.

WE have received a copy of the "*Irish Farming World Directory and Annual*" for 1911. Although primarily intended for farmers it contains a good deal of information of special interest to gardeners. There is, for example, a fairly complete garden calendar, a list of all the important gardens in Ireland (with names of the head gardeners), a list of the county horticultural instructors, lists of provincial shows, rules for forecasting weather, and other information useful to all engaged in, or who take an interest in, country pursuits.

MESSRS. ADAM AND CHARLES BLACK have issued the new editions of the following well-known Annuals:—*Who's Who* for 1911 (price 10s.), which is more bulky than ever. It now extends to 2,246 closely printed pages. *The Englishwoman's Year-Book* for 1911 is wonderful value for 2s. 6d. It should be in the hands of every educated woman who takes an interest in the social life of her country. The title "Englishwoman" includes in this case the women of the three kingdoms. The science section is edited by Miss R. M. Barrett, of Kingstown. *The Writers' and Artists' Year-Book* is an indispensable guide to authors seeking an outlet for their work. It is published at 1s.

THE secret of the ideal garden is its perennial charm, it exists not for a few months or weeks of fleeting loveliness, but for so long as we care to enjoy it. It is a sad waste of opportunity to limit the real life of a garden to spring and summer days, contenting ourselves with bare earth and empty earth for the rest of the year. Flowers should be with us always, and in seeking the best way in which to grow them, we must give preference to methods which impose no limits upon their life and usefulness.—*Charles Thonger.*

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The present number commences the Sixth Volume of "Irish Gardening." A Title-page and Index for Volume Five has been issued, and will be sent free to any Subscriber applying for same.

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IRISH GARDENING

VOLUME VI.
No. 60

A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

FEBRUARY
1911

Flowering Shrubs.

By F. W. MOORE, M.A.,
Director, Royal Botanic Gardens, Glasnevin.

(Continued from page 4.)



IN May we find ourselves quite in the thick of flowering shrubs, by the middle of which month, in addition to most of the April shrubs, we now have at their best pyrus, including both apple and pear sections, cherries, flowering plums, berberies, magnolias, lilacs, brooms, furze, and thorns, all of which are deserving of a word of special reference and commendation. The principal survivals from April are berberis, magnolia, amelanchier, prunus, cydonia, skimmia, andromeda, pyrus, cerasus, almond, &c. Taken altogether, over one hundred species of flowering shrubs are open in May. Of the berberies, *Berberis Darwinii*, from Chili, is the first to open. In Ireland this plant is hardly everywhere, and it rarely suffers from frost. It flowers towards the end of April and all through May.

The buds are orange on the outside, bright and shining, but when fully open the flowers are a good deep yellow, in crowded clusters covering the branches, and completely hiding the deep green prickly foliage. In autumn clusters of plum-coloured fruits succeed the flowers, but unfortunately they are soon cleared by birds. *B. Darwinii*, to add to its merits, is evergreen. *B. stenophylla* is one of the most useful and ornamental shrubs ever added to our garden collections. It is stated to be a hybrid between *B. Darwinii* and *B. empetrifolia*, both natives of Chili, and it may safely be said that it is better than either of its parents, a remark which does

not apply to all hybrid plants. It is stated that Messrs. Fisher, Holmes & Co., of Sheffield, raised this hybrid, and sent it out about 1875. From it other seedlings have been raised, so that there now is quite a series of varieties, varying in size, in foliage, and in colour of flowers. Mr. Smith, of Daisy Hill, Newry, has made quite a speciality of these, and lists about a dozen distinct varieties.

The various flowering crabs open rapidly from the end of April onwards, and about the middle of May they are in full beauty. Whether as dwarf bushes or as small standards they arrest attention by their grace and beauty, and they can be kept in quite moderate size for many years by judicious pruning. One gets every gradation of colour, from the white flowers of *Pyrus baccata* and *P. prunifolia*—two species between which there is much confusion, and both of which are known as the "Siberian crab"—to the deep red buds and flowers of *P. floribunda atrosanguinea*, *P. spectabilis* and *P. coronaria*, representing India, China, Japan, Siberia, and North America. Our native crab apple should also have a place in even the most select collection, as not only are the flowers of good varieties equal to those of the best of the crabs, but the foliage turns deep red in autumn in favourable seasons. I would like to put in a word in favour of our ordinary fruit trees. Early and free-flowering pears, such as Williams' Bon Cretien, bright and free-flowering apples such as Stirling Castle, Cluster Damson, and large-flowering cherries might be planted in every collection of flowering shrubs with great advantage, but when seen in such positions the remark "they remind me of the kitchen garden" is

often made. The freest of all the crabs is *Pyrus floribunda*; it is also one of the best doers, and its habit of growth is perfect, free, graceful, gently pendulous, the long slender branches being simply smothered with flowers. The two Japanese crabs, *Pyrus Ringo* and *P. Toringo*, are both good, and there are several varieties of these, of which *P. Ringo pyramidalis* is one of the best. It has a profusion of deep pink flowers. *Pyrus Scheideckeri* and *P. neidzwetzkyana* must also be mentioned. Both these species, unlike any of the others, flower on spurs. Of the cherries, the Japanese species are the most valuable; the so-called Waterer's Cherry, *Prunus pseudo cerasus*, with its multitude of large semi-double delicate pink-coloured flowers, is known to all and valued by all. Seen against a dark background on a bright May day a well-grown specimen is an object of beauty which can hardly be exaggerated. *Prunus serrulata*, the double Chinese cherry, generally known in Continental lists as *P. Sieboldii*, is almost as good, but the flowers are smaller and rather less graceful; they are white to pale pink in colour. Of the common cherry, *P. cerasus*, there are several nice varieties; *P. cerasus dumosa* is a beautiful dwarf bush, densely covered with good white flowers. *P. C. Rhexii* fl. pl., also known as *P. C. ranunculiflora*, is a fine ornamental plant with double pure white flowers. There is also a good double form of the "gean." Of the plums, the double blackthorn, *Prunus spinosa flore pleno*, is about the best May flowerer; and of the peach group, the almond, *Prunus triloba*, single and double, and the many beautiful double forms of the peach, all add to our list of May flowering shrubs.

It is difficult to arrange shrubs in order of merit, and I am making no attempt to do so, but a place of honour must be found for the "brooms" of May. Of the very dwarf species, suitable for rockworks, the two best have been sent out from Kew, *Cytisus Kewensis* and *C. Beanii*. *C. Kewensis* is a cross between *C. Ardoini* and *C. albus*. It is most floriferous, the flowers being pale canary yellow. *C. Beanii* is rather more dense in habit, and the flowers are bright golden yellow. It is a cross between *C. Ardoini* and *C. biflorus*. Quite a group open early in May, and continue in full beauty right through the month. Besides the two mentioned, we have *C. praecox*, *C. albus*, *C. purgans*, *C.*

Ardoini, *C. biflorus* and the species which resemble it, *C. hirsutus* and *C. hirsutissimus*, and the common broom, *C. scoparius*, with the beautiful Normandy broom, *C. s. Andreanus*. Of these larger growing brooms, *C. praecox* and *C. biflorus*, the one a hybrid of garden origin, the other from Eastern Europe, are the first to flower. They are very different in habit. *C. praecox* has all the slender grace of *C. alba*, and *C. biflorus* is a stiff bush. These brooms should be planted in groups for bold effect. A good group or a single old specimen of *C. albus* always excites admiration. *Cytisus purgans* is not so much grown, but it is well worth attention.

Perhaps no flowering shrubs are better known in ordinary English gardens, and none are more appreciated, than the lilacs. They commence flowering about the middle of May, and last well into June. They fully illustrate the changes and advances which are taking place in garden plants. Some thirty to forty years ago there were about half-a-dozen well-known old varieties—those known as red, violet, purple, blue, and white, and the double forms. Now we have half-a-dozen dozen named varieties of great merit. The double white *Mad. Casimir Periere*, for instance, and the large single white *alba grandiflora*, *persica*, and *japonica* illustrate this point. Growers should be particular when purchasing lilacs to get a guarantee that they are on their own roots.

More striking than the lilacs, and not so generally seen in gardens, are the magnolias. The deciduous species and varieties of magnolia from China and Japan would probably be greater favourites if they were not so liable to injury from spring frost and hail. The petals are thick and fleshy, and easily broken and damaged. One night's frost in end of April or early May will ruin all the flowers open. A delightful little species, *M. stellata*, also known as *M. Halleana*, is the first to open. It is followed later on by *M. conspicua*, *M. obovata*, and the hybrids of these, of which *Norberty*, *Soulangeana*, and *superba* are the best.

It is hardly necessary to dilate to British readers on the merits of the hawthorns, so well known and appreciated by all. The many varieties are not so generally known as they deserve to be. The single scarlet, double scarlet, double pink, double white, the upright form, and the weeping variety are all worth any

space which can be given them. Two other May flowerers may be mentioned, the common furze or gorse, *Ulex europæus*, and the Spanish furze. For dry banks or waste places these are very useful, and their flowering season is prolonged. The Spanish furze, *Genista hispanica*, makes a nice compact bush, and is a mass of deep yellow when in full flower. A word may be said here about the pruning of these April, May, and early June flowering shrubs. If

they be closely examined it will be found that they flower mostly on the young shoots made last season; hence if they are pruned in the winter the flowering wood will be cut away. They should on no account be pruned until the flowers are fading, when they should be carefully gone over and any straggling shoots should be cut out, others shortened back, and overcrowding

prevented. New growths quickly follow this pruning, and these mature in ample time to flower next season. These remarks apply to crabs, cherries, spiræas, berberis, forsythias, ericas, chimonanthus, rhododendrons, ulex, laurestinas, ribes, brooms, and many others.

(To be continued.)



THE flowers we tend with our own hands have a habit of blooming in our expectations and filling our hopes with a sweetness which not even the most skilful hired gardeners have ever taught the most far-fetched hybrids.—*Vernon Lee.*

Potatoes.

By J. H. CUMMING, Overseer, Royal Dublin Society, Ballsbridge.

PLANTING time being at hand, it may not be amiss if I point out the importance of potatoes at this time.

No vegetable is so popular, so much esteemed and of so much value, pecuniary and otherwise, to the growers. The farmer with his several

acres looks to his potato sales for most of his cash returns, and the Irish peasant with his few roods reckons from his potato crop whether the winter will be one of plenty or of penury. Every grower between these two extremes is interested in the growing of the potato. Not less interested is the gardener, for he well knows that to send to his master's table specimens which please the

taste of his employer makes life more pleasant to him, while the reverse is the case. This being so, just as the farmer or the market grower considers the taste of his customers, so should the private gardener know the taste of his employer, and by that be chiefly guided in the varieties he grows and the way they are grown. All earths are not alike for potato growing, but I think the earth should be moulded to fit the potato, not the potato to fit the earth. In considering what kinds to grow quality should be the first consideration, quantity not being such an essential. It is advisable for all growers before



Photo by]

]C. F. Ball.

WATERER'S CHERRY

In the Royal Botanic Gardens, Glasnevin.

lifting any of the crop to mark out the best topped roots, and lift these and keep the whole produce of such roots for seed purposes. If very early potatoes of any variety are wanted more roots will require to be lifted for seed, and the large ones laid aside for planting. As the result of planting whole potatoes of different sizes, I have found that the larger the potato the earlier it ripens. No gardener should pit his seed potatoes. Get them lifted as dry as possible, and keep them in boxes, baskets, or any other receptacle where they can be examined. In the choosing of the ground for planting, preference of course is given to those portions which have not had potatoes previously, but this is sometimes not possible. In this case the ground should be trenched, and the richer the top soil the more sub-soil should be mixed with it.

In manuring it is better to use open dung—that is, rank litter, such as straw, cut grass and leaves mixed. Garden ground is usually too rich in muck for most potatoes, and they require for their full development a small quantity of lime. This can be secured in the form of ground quicklime or in shells, which can be covered with earth, and when pulverised naturally, mixed up in a compost and applied. The quantity for potatoes is five to ten cwt. of quicklime per acre. Do not overdo it, and if lime is present already in excess, by having been applied in previous years, then a good trenching will suffice in preparing the land.

The width to plant potatoes is often a matter of convenience. Some growers plant small potatoes close and large potatoes wide. Now, in certain varieties which spring from every eye, this may be necessary and advisable, but in many varieties, especially those early kinds which usually send only one shoot or sprout, it is waste of ground to plant the large potatoes wider than the small ones. In fixing the width of planting, the size of tops and the undergrowth should be noted. In gardens where space is limited, preference should, I think, be given to varieties which have a small or medium haulm, upright preferred, and a close habit of growth underground. In the South of England districts where early potatoes are grown, small-topped, close tuberous varieties are planted 12 inches by 4 inches, and lifted with four or five nice potatoes at each root, give quite a good return for the amount of ground planted.

Again, the depth at which potatoes should be planted does not receive sufficient attention. This should vary with different varieties, as some grow their new potatoes above the old set, others round it, and others below it. I am inclined to think that potatoes are generally planted too deep. Potatoes are sun plants, and the warmer and nearer the sun and air they can be planted the better. To get the best results, and especially for very early potatoes, they should be planted not more than three inches deep, and only earthing up enough to keep the young potatoes from greening. This system gives riper, larger, and a better average weight of tubers than where sets have been put 6 or 7 inches below the surface.

The importance of having all seed potatoes well sprouted before being planted is now well known, and this, not only with the early varieties but with the mid-season and maincrop sorts. In fact, results from the sprouting of the latest and longest growing varieties are more astonishing than those from the earlier varieties. Where trials have been made of diverse sizes of potato sets it has been invariably found that those of about 3 ozs., if well stored and planted at the customary width apart, have given the best results. Necessarily there is no need for exact weights. A further question is—How best should potato sets be cut? Only the larger tuber should be cut, and that from the crown and downwards, thus preserving on each cut set at least one, if not more, of the strongest eyes or buds. Cutting, when needful, is best done twenty-four hours before the time of planting, the cut surfaces being dusted with slaked lime to dry off and harden these surfaces.

As to the best varieties to grow, it is still a moot point if the best of recent introductions are of sufficient quality to make one discard old favourites. Like varieties of strawberries, all varieties do not succeed in every part of the country, and it is therefore best to grow the bulk of the crop of a proved sort that has satisfied past requirements. At the same time, trials of new sorts should continue to be made on a small scale, and the cooking as well as the cropping qualities tested. To maintain a robust constitution in the potato I attach the utmost importance to a change of seed. Some fifteen years ago, when the old Champion was then grown in Ireland more than any other variety, I planted a ton of imported Scotch

Champion and also a ton of the same variety received from a farm in Co. Galway. At lifting time the crop was equal in every respect, thus proving that a change from the boggy soil of Galway to the loamy soil of Co. Dublin gives quite as good potatoes as the costlier one of importing seed. A change of seed, even from one garden to another, is better than year after year planting the same varieties in the same garden, which all tends to lower the resisting power from the disease.

There are hundreds of varieties of potatoes on the market all being pushed as the best for a particular season. I grew 73 varieties in one season as a trial. With the exception of possibly half a dozen sorts the rest were worthless when cooked, and were only fit to adorn the exhibition table, which is not the primary use of potatoes any more than other vegetables. Although it would be absurd for any one to discard all his good old friends, yet at the present day it is necessary to be always on the look out for new ones, and not only is it necessary to be on the look out, but they must be searched for. If possible to get the benefit of a brother gardener's experience which is considered trustworthy, so much the better, but it is well to be always trying one's self. A very few potatoes of any new kind is quite sufficient for a trial.

Now, a word as to cooking. All potatoes do not give best results by the same cooking, and one should endeavour to find out the best method of cooking new varieties, and thereafter try and impart that knowledge to the cook. The treatment of potatoes after they are cooked is also an important matter, as sometimes they have to be kept for an hour before being served. A very satisfactory plan is to put a clean cloth instead of the lid on the top of the potatoes after the water was poured off them, and another warm, dry cloth on the top of the dish in which the potatoes were sent to table. This keeps them fresh and dry, and little things like these tell.



To make wooden labels last longer it is a good plan to soak them (when dry) in lime-water for a few days, and then to remove and spread them out to dry. When quite dry they are to be washed over with sulphuric acid (vitriol). This will produce a deposition of sulphate of lime in the pores, and thus the wood will resist the entrance of moisture, and so considerably retard the process of decay.

The Pruning of Plums.

By FRED. W. HAMMOND.

THE same principles which guide the pruner in the shaping and forming of apple trees apply to plums, subject to modifications which are rendered necessary by their different habits of growth. Most varieties of plums much more naturally produce fruit spurs than do many apples, so that they do not present the same difficulties for the pruner, faced with the problem of inducing wood growths to turn into fruit buds. For most, if not all, varieties of plums the half-standard is the most useful type of tree for the market grower. There are a few varieties which, doubtless, would succeed as bushes, but as a general rule neither this form nor the standard, which exposes the fruit to the mercy of the gales, is to be recommended for plum culture. At the outset, however, one word of caution needs to be given, particularly to the grower who is pruning his own trees. When trees are young the pruning must be done with an eye to the future, and not merely present, circumstances, and it must be so severe as to lay a good foundation for the growth of a big tree in years to come. Too many growers are tempted to leave the growths unduly long when they see fruit buds on the portion which they ought properly to remove, and one can sympathise with them, realising the temptation it is to get a little fruit, particularly if one is faced with financial difficulties, as many a small grower is before his trees come into bearing. Indeed I have heard old pruners, with this idea in their minds, say—"A grower should never prune his own trees." However that may be, it is a pitfall which all pruners should beware of, and not sacrifice the future growth of the tree to gain a little present advantage. A plum tree allowed to overcrop itself in its youth becomes a stunted wreck, from which state it is very difficult to rescue it: moreover, an over-vigorous tree is quickly restrained when once it commences to bear, so that it is wiser to err on the side of too severe pruning producing luxuriant growth than too light treatment with the danger of over-cropping and stunting.

Indeed the finest fruit—and this is the only sort that pays—can only be grown on trees which are vigorous and healthy. Years ago it

used to be the practice to head-over old stunted plum trees in order to throw them into vigorous luxuriant growth, particularly those sorts in which the wood, through much cropping, becomes black and lifeless; but now, that so much silver leaf disease is about, the practice is attended with considerable danger unless the wounds are at once protected with some good specific from the flying fungus spores. The different varieties of plums, like apples, have different habits of growth, and of course need to be dealt with in various ways by the pruner.

The Czar, for instance, in its vigorous youth, grows very upright, and needs much care on the part of the pruner to keep the centre of the tree open. The rule as to always cutting to a bud pointing outwards must be rigidly observed; the strong inside growths must either be spurred in or cut right out as circumstances admit, but on no account be allowed to remain, or they will, by the very nature of their upright growth, go ahead and dwarf and starve the rest of the tree.

When, however, cropping does set in in earnest this upright habit, by reason of the huge weight of crop grown, quickly becomes as open and pendulous as one could wish. The Victoria, on the other hand, has a habit much more amenable to the open-centered system of training, so much so that it is very often necessary after four or five years to cut, not to an outside bud, but to one inside, and which is therefore likely to produce an upright growth. I have said much concerning the danger of plum trees becoming stunted, but, at the risk of repetition, I must say that the Victoria is one of the most liable to that danger, and must be kept constantly growing vigorously to produce the best fruit. Even after the trees get twenty or thirty years old it is necessary to go over them year by year and shorten back some of the young growths to force the trees to keep on producing strong wood.

If there be any exception to this rule I have laid down, it is in the case of Rivers' Early Prolific, on which it is somewhat difficult to attain a crop when it is over vigorous in growth.

Added to this it is a somewhat difficult variety for beginners to prune, since it has a nasty habit of producing side growths, known amongst

pruners as midsummer wood, on the current year's growth.

These side growths, which vary from three or four inches to a foot in length, almost invariably occur just at the point at which, under ordinary circumstances, the pruner would cut. He is therefore faced with the dilemma either to cut too hard or not hard enough, or to cut to one of these growths, with the danger that the resulting shoot will not grow away but become stunted.

I think, on the whole, that it is best to cut right behind these growths if it is *in any way possible*, but if not to spur them all in short and cut to one which has a good prominent bud at its base and which is fairly well situated for direction.

The question of the stock upon which they are worked, I feel sure, governs the behaviour of many plum trees, and probably there is a stock upon which Rivers' Prolific could be worked to crop much better upon the healthy young trees than it does at present with me.

I stated just now that some few varieties might succeed as bushes. I had particularly in mind The Heron, a mid-season plum following Czar, which makes very few branches and not many growths, but produces an abundance of natural fruit spurs. I think it would be quite possible to plant trees of it 6 ft. apart each way, and for them to remain many years before being over-crowded, if they ever became so.

Of course, with such a poor grower, it is absolutely necessary to prune severely at first, or one would only get three or four branches to form the tree, instead of about fifteen to twenty which it should be furnished with.

A variety which in its upright habit of growth in its youth much resembles Czar, though it is not quite so vigorous, is Monarch. It, however, produces a greater number of less strong shoots than that variety, and so more quickly becomes furnished with branches.

It is a great cropper, and in summer the trees are frequently pulled all shapes by the crop; but the wood being thinner and more elastic than that of Czar, the trees are not made permanently so pendulous as those of the latter.

One awkward point about its habit of growth is that the fruit spurs—sometimes at first, sometimes after a few years—have not a wood bud as well as a fruit bud upon them to continue their growth; consequently, when the plum is picked the spur dies.

This death of the spurs occurring for a number of years causes a lot of naked wood, so that the older trees of the variety present a curious barren appearance for much of the length of the boughs.

It is not only a question of appearance, but every year that this sort of thing goes on takes the fruiting wood further and further from the ground, necessitating longer ladders and also giving a whip-like unstable character to the wood.

If one but dared to do it, the Monarch in its olden stages is pre-eminently suited for the heading-over process to make it throw out new wood, but, as I said just now, the danger of getting the silver leaf disease introduced through the wounds is very great.

Scarcely ever is the heading-over effectual in producing the new young wood unless the bulk of the tree is done. I have seen pruners cut back a few naked boughs in a tree in this way, but they scarcely ever break into wood, dying instead, probably because the drain

on the tree by the other branches does not allow it to break out into vigorous growth. Great caretness and cleanliness must be exercised in all the cuts made, particularly in old trees where the wounds will of necessity be of large surface, and the healing process consequently of long duration.

In addition to the silver leaf fungus, another, the monilia (or sclerotinia) fructigena is causing a lot of dead wood in plums, and must be rigidly guarded against.

To this end, whatever the age of the tree, the pruner must always be at work, cutting out any dead spurs, twigs, or boughs.

It used to be the practice to send a lad with a good thick pair of gloves to tear out the old dead spurs out of dam-

sons and some of the coarser plums, but such a practice is too dangerous now, and a good clean cut with a knife must be the rule.

As I said at the commencement of this article plums present far less difficulties to the pruner than apples, the principal necessities being to always keep the trees furnished with healthy, vigorous wood and spurs, and to be very vigilant in removing dead and dying wood, which only serves to harbour disease and filth, and is absolutely useless for the production of first class fruit.



Photo by]

BEGONIA MRS. LEOPOLD DE ROTHSCHILD.

[J. M. Trout.

[See next page.]

Winter Flowering Begonias.

Gloire de Lorraine.

THIS fibrous-rooted type of the begonia is thoroughly appreciated during the dull dreary months of winter, when they so beautifully enliven our plant-houses with their graceful flowers. For table decoration no plant looks so charming as these in winter, especially under artificial light, but it is found sometimes rather difficult to grow. The secret of growing these plants well is to do so quickly in a warm, moist atmosphere from the time the cuttings are put in until the flowering period; liberal feeding with liquid manure at the proper time, a light position, and ample room are necessary from the start, but shade should be given from the hot sun. Old plants that have ceased flowering should have their flower stems cut off two or three inches above the soil, keeping them rather drier at the roots than usual. After a short time a number of small shoots will be seen growing from the base of each, and these, when two inches long, may be taken off and inserted as cuttings; many growers are impatient, and take cuttings which are not suitable. Shoots carrying flowers or showing flower buds should never be utilised for propagating, as these always result in failure; shoots springing from the base are the best. Cuttings may be inserted singly in thumb pots, or a few cuttings may be placed round the rims of three-inch pots filled with light loam and leaf soil in equal parts, with a good dash of silver sand. The pots should then be placed in a propagating frame or even a gentle hotbed, and kept close and only moderately moist until rooted.

When they are rooted and starting into growth a little air should be admitted and gradually increased until they are removed altogether and placed on a shelf close to the glass. In a few days they should be potted off singly into small pots, disturbing the soil round the roots as little as possible. Use a similar soil to that in which they have been propagated, adding a sprinkling of fine charcoal, and again place them in the same position to keep them sturdy. When well rooted they should again be potted into four-inch pots, using a compost of two parts fibrous loam, one part leaf soil, with some fine crushed charcoal and sand. From this time daily watching will be

necessary, particularly in watering. As the plants fill up the smaller pots they may receive the final shift to five and a half or six inch pots; a quantity of dried cow manure may be added to the compost for this potting.

If a few extra sized plants are required a shift into seven-inch pots may be given, but, as a rule, six-inch pots are large enough for flowering in. They should be potted moderately firm, but not too hard, and afford thorough drainage. They may be finely sprayed overhead once a day, but give water sparingly until the plants are well rooted into the fresh soil, when abundance of stimulants may be used. Liquid cow and sheep manure, with doses of soot water and Clay's fertiliser, are very good for this purpose. When the young shoots are a few inches long the stakes should be provided, making the centre the tallest, and letting all the others slope outwardly to form a pyramid. Care should be taken to keep them frequently tied during growing season, and fumigated occasionally to keep down red spider and other insects. Ventilate judiciously on all favourable occasions as it ensures a sturdy growth, but avoid anything in the nature of a draught. The growths should never be stopped, but keep all flower buds picked off until such times as they are wanted to bloom. The plants will continue longer in bloom if transferred to a cooler temperature (say 55 degs.), but must be gradually hardened to it, and not at once removed. This begonia is well suited for growing in baskets, and they form lovely objects for a conservatory, hanging like globes of flower. If the colours are mixed the effect is all the more striking, but they should be planted during the early stages of their growth, so that the shoots can be trained into their right position.

Turnford Hall is a good white (sometimes blush) companion for the rose-coloured Lorraine and the pink form of Mrs. Leopold de Rothschild.

J. M. TROUP.

Stormont Castle, Belfast.



HELLEBORES.—These plants are often spoiled by slugs eating the tender shoots and the flower buds. This can be somewhat prevented by strewing fine ashes around the stems and by setting traps of brewers' grain. If a little straw is spread immediately under the outer circumference of the foliage the flowers will be protected from the mud splashes which take away so much of their beauty.

Sweet Peas.

I WAS much flattered at being asked to send in some notes on "Sweet Peas" to this paper. Judging from what I have seen at the shows there are a great many people who know as much or more than I do on this subject, but perhaps the following may be a help to the numerous people who would like to grow and show sweet peas good enough to win prizes for them.

I wonder how often I have been asked the question—"Who do you get the seeds from?" There is evidently a vague idea in the back of most people's minds that there is some wonderful seedsman, who supplies a favoured few, from whom it is possible to buy seeds guaranteed to produce plants (without further trouble) good enough to win anywhere the flowers are shown. But if there is such a man I don't know his address.

Buy good seeds and buy them early, and pay a fair price, and unless you have plenty of space in your garden (and, between ourselves, a very good temper) do not go in largely for novelties, try one or two of the new ones, say an orange shade and a scarlet, both difficult to get good in the Spencer form, but both grand when you have got them; but don't go in altogether for novelties—they may be a great success or they may be a great failure. Grow a fair number, at least ten plants of each variety. Don't grow too many nearly alike varieties, it is wiser to grow the varieties that are quite distinct.

The following make a good six:—Etta Dyke (white), Asta Ohn (lavender), Clara Curtis (cream), Mrs. Hardecastle Sykes (blush), King Edward Spencer (crimson), and Elsie Herbert (white, pink edge). For twelve add:—Evelyn Hemus (cream pink edge), D. Unwin or Nubian (dark maroon), Constance Oliver (cream pink), Mrs. A. Ireland (bicolor), Lord Nelson (dark blue), and Mrs. Townsend (blue picotee). Lovely, but more expensive, are Earl Spencer (salmon), G. Stark, Improved (scarlet), Edna Unwin (orange), Mrs. H. Dickson (pink shade), Sun-proof Crimson, and many others. Plant the seeds in pots, in good, friable soil (no fresh manure in it), have it moist, but not wet. It is a good plan to count the seeds, and put numbers, as well as name and date, on the label. A cold greenhouse will do to put the pots in. Not having one at present, I am put-

ting the pots in a dry, dark cellar, and find the seeds germinate well there, but of course they must be removed to a place with daylight as soon as they appear above the soil. Windows facing south or west will give them any sunlight there is in December and January; the windows should be opened when the weather is fine. When the plants are some inches high I put them out in a cold frame which faces south. The lights should be kept off all day, except in very heavy rain or hard frost. The thing to be aimed at is to get the plants hardy, not poor, weedy, starved things.

Slugs are always to be reckoned with, and a sharp look out must be kept for them. Air-slaked lime is a great preventive—lightly shaken over even the youngest seedling it seems to have no bad effects on the plants, but will kill the hardest slug and will also keep his relatives from coming to finish the destruction he has begun. When planting-out time comes this lime should be used freely, and after heavy rains it should be laid round the plants, as on warm, damp evenings the slug tribe are on the warpath.

The earlier in the year the ground is prepared the better, so that there will be no fresh manure for the roots to come in contact with. There should be a deep and wide rooting surface, not a hole or trench dug, and the surrounding ground left hard. This latter should be also well dug, so that the roots may spread into it, and that it also may retain moisture. In the holes or trenches mix the earth and manure, and let it settle with about 6 inches of fine earth over the mixture; in this, set out the seedlings, 12 inches apart is not too much if the ground has been well prepared, stake with small twigs and dust with lime.

There are three things to be remembered in the growing of Sweet Peas—1st, that they, having only a few months to come to perfection in, must be given every care, and, if possible, not allowed to get a check from any cause; 2nd, that unless the ground is properly prepared, good results cannot be expected; 3rd, it is impossible to win prizes without taking trouble.

E. O.



"It is the wisdom and goodness of gardening which makes it such a deep and enduring happiness. It is thankfulness, reverence, and love which make our gardens dear to us from childhood to old age."—Dean Holt.

St. Enda's School Gardens and Pleasure Grounds.

ST. ENDA'S SCHOOL occupies the modernised old house and grounds of "The Hermitage," Rathfarnham. It is one of a group of more or less historical residences scattered over as delightful a

bit of country as may be found anywhere in the county of Dublin. The Hermitage itself was once the residence of Edward Hudson, while the Priory over the way was the home of Curran, his friend. Emmet was a frequent visitor at both houses, and a certain path in the Hermitage wood is still known as "Emmet's Walk." Near by is Marlay, and then a little to the north by the stream as it crosses the highway is the old country house of the notorious "Buck" Whaley of the Regency days. The school grounds cover an area of fifty acres of well-drained, rich drift soil, overlying the carboniferous limestone that here begins to rise, and at near distance tails out into the rough bracken- and furze-covered hills that lead still higher to the granitic Three-rock, Kilmashogue, and Ticknock mountains. The grounds are well watered by a noisy stream that races down from the hills to spread itself out into a picturesque, island-studded lake not far from the house. Here are found charming semi-natural water gardens skirted by a mixed wood that encircles the whole demesne.

The cultivated gardens cover an area of five acres. They lie on the north side of the house beyond a wide lawn bordered with trees, shrubs, and flowers, and made additionally attractive by the presence of an artificial fountain and extensive water basin. The gardens include flower and vegetable gardens, fruit grounds, conservatories, greenhouses, vine and peach houses, propagating pits, and all the other conveniences and necessities of a well-equipped country mansion. Here the boys are taught practical gardening as a complimentary subject to laboratory work and out-door demonstrations in biology and nature study. The boys work for a

certain number of hours a week with the gardeners, just as apprentices would do, until they are fit to take charge of individual plots on their own responsibility, the idea being to interest the lads in cultural operations, and to foster in them all a love for open-air pursuits.

Twenty-five acres of open ground are given over to the lads as hurling and football fields, and as



1. The Garden, North Side.

2. The House from the Garden.

3. The Garden, South Side.

the woods and pleasure grounds are also open for trespass it will be seen that the whole fifty acres are devoted either to educational or recreative purposes.

But what will interest gardeners most is that St. Enda's College has perhaps the most remarkable member of their craft to be found in the United Kingdom. This is *mícheál mág Róadóir* (in English, Michael Rogers), whose name all over Irish-speaking Ireland and among Gaelic scholars and students everywhere is one to conjure with. He is a well-known author.

His books are standard works of Irish literature; they are prescribed texts for the examinations of the National University and the Intermediate, and are in general use in the Gaelic colleges. He is obliged to dictate all his works, for in common with many of his countrymen in Connaught, who attended the National Schools of thirty years ago, he cannot read or write. In these schools children who knew only Irish were taught through the medium of English, with the result that they learned to read or write neither language, and acquired but a smattering of English for conversational purposes.

So it is that Michael Rogers, the author of works obligatory to students of Irish in the National University and the Intermediate Colleges, would be described by the Census Reports as illiterate. He is a most interesting personality and an eloquent talker. He has won six gold medals for oratory at the *Oipeáire* competitions, in each of which occasions his speech was impromptu. He has spent twenty-five years of his life as a gardener. He began his career in the gardens at Summer Hill, near Killala, Co. Mayo, but later found his way to Dublin. Since the opening of St. Enda's he has been head-gardener there, and in addition to his other duties he teaches practical gardening to the boys of the school.

It should, perhaps, be explained that St. Enda's School, which was founded in 1908, set out "with the object of providing a secondary education distinctively Irish in complexion, bi-lingual in method, and of a high modern type generally." This being so, it is quite according to the high aims and objects of the school to have such a brilliant Gaelic scholar as chief of the gardening staff.

The following are the names of some of Mr. Rogers' works:—

Dúeáda éireann ("The Lies of Ireland"—a folk-tale); Three Folk-tales in the collection known as "*Óran an éorl Binn*"; several folk-tales incorporated in collections of

Dr. Douglas Hyde; "*Mac mic Iarógáire Dúróe Lumuig*" ("The Son of the Son of the Yellow Fisherman of Limerick," a folk-tale); "*Lúb na Cailige*" ("The Hag's Loop"—a folk-tale); "*Beatha dotha tí néitl*" ("The Life of Hugh O'Neill").

We are not at present concerned with St. Enda's as a college, only so far as it affects nature study and gardening, but we may be permitted to say that we know of no school in Ireland (or for the matter of that in England either) that approaches so near to the ideals of all true educationalists. The headmaster is an enthusiast with the rare ability of transmitting his enthusiasm to all who come within the circle of his influence—staff



1. One of the Cascades. 2. The Waterfall and Old Bridge. 3. The Boys' Bathing Pool.

and scholars alike. His love of nature and a belief in its study as a factor in the education of youth suggested in part the selection of the Hermitage as a suitable home for his school, and we cannot conclude this brief sketch better than by the quotation of an extract from an introductory article in the last number of *An Macaoim*, the official magazine of the college:—

“ ‘Tis wonderful the life a bit of water gives to a place,’ said my predecessor’s gardener when conducting me on my first tour over the Hermitage. The stream makes three leaps within our grounds, and over each cascade thus formed a bridge has been thrown. When the river is in spate, as now, I hear the roar of the nearest cascade, a quarter-of-a-mile off, at night from my bedroom. It reminds me of the life out there in the woods, in the grass, in the river. And in truth I don’t think more of wild life can be crowded into fifty acres anywhere else so near Dublin. It is not merely that the familiar birds of Irish woods and gardens seem to swarm here in numbers that I do not remember to have seen paralleled elsewhere, but that the shy creatures of the mountains and hidden places abide with us or come down often to visit us, as if they felt at home here. With a smothered cry a partridge or a snipe will sometimes rise from your feet in the wood; when you come through the fields on some wide place of the stream you will not seldom surprise a heron rising on slow wings and drifting lazily away; often a coot will plash in the water. But the glory of our stream is its kingfishers. You catch athwart the current, between the steep-wooded banks, a quiver of blue, a blue strange and exotic amid the sober greys and browns; then another and another, sometimes as many as five at a time, like so many quivering blue flames. We are all under *geasa* to cherish the rare, beautiful creature that has made our stream its home. There are fiercer and stronger fishers that haunt the stream too. Once or twice I have seen the lithe eager form of an otter gliding behind the sallies where the stream cuts deep. I think it is partly to that freebooter we owe it that the trout are not as numerous now as they were of yore. Yet we will not intervene between him and the fish; let them fight on their old war, instinct against instinct.”



COME, fill the Cup, and in the Fire of Spring
The Winter Garment of Repentance fling;
The Bird of Time has but a little way
To fly—and Lo! the Bird is on the Wing.

Planting a Shrub Border.

By J. W. BESANT, Botanic Gardens, Glasnevin.

LAST month some consideration was given to the preparations for planting and an indication made of the wealth of material available. The length and breadth of the border, together with its distance from the house, or whether it is separated from a walk by a stretch of lawn, are points which to some extent will govern the selection of shrubs and the size of the groups to be formed.

Huge borders, such as the one in the Phoenix Park, stretching for a long distance in front and rear of the Viceregal Lodge, are very seldom met with, and hardly fall within the scope of these notes; such a border, however, is of immense interest to all lovers of shrubs, and affords many lessons to intending planters who may purpose operating on a much smaller scale.

A narrow border within view of the dwelling-house should be furnished with shrubs of medium growth only, and should include a choice selection of the best flowering kinds.

Some evergreens, as before mentioned, are necessary. Such kinds as *Berberis stenophylla*, *B. s. Irwinii*, *B. s. reflexa*, *B. buxifolia nana*, *Cotoneaster microphylla*, *C. thymifolia*, *C. buxifolia*, *C. horizontalis*, *Euonymus radicans*, *E. Carrieri*, *E. japonicus* and varieties, *Olearia Haastii*, *O. nummularifolia*, *Lonicera pileata*, *Genista hispanica*, *Cytisus purgans*, *C. albus*, *C. præcox*, *Hypericum calycinum*, *Erica carnea*, which flourish in loam, will all be found useful for our purpose, presenting much variation in form and habit. The majority of the foregoing are beautiful flowering shrubs, as well as being evergreen, while the cotoneasters are furnished with red or crimson fruits in autumn, and *Lonicera pileata* often bears a crop of blue berries. Beautiful deciduous shrubs for such a border will be found in *Daphne Mezereum* and its white variety; *Escallonia langleyensis*, with red flowers; *Escallonia Philippiana*, white; *Deutzia crenata*, *Philadelphus microphyllus*, *P. Lemoinei erectus*, *P. avalanche*, and *P. Gerbe de Neige*, all with white or creamy flowers; *Fuchsia corallina* and *F. Riccartoni* *Hedysarum multijugum*, with racemes of rose-coloured flowers; *Forsythia intermedia* and *Jasminum nudiflorum*, yellow; *Spiræa arguta*, white; *S. salicifolia*, *S. bumalda* Anthony Waterer, *S. Margaritæ*, *S. japonica glabrata*, all with flowers varying

from pink to deep red, and *Prunus japonica*, which bears double white flowers. The above lists comprise shrubs of medium growth, or which can be easily kept to suitable dimensions by judicious pruning.

In planting a better effect is got if the groups are varied in size and shape, some of the stronger kinds being allowed to extend quite to the front. In this way billowy masses of flower and foliage are pleasingly presented to the eye, in marked preference to a formal slope from front to back.

To plant a border on a much larger scale it is obviously only necessary to increase the size of the groups cited and to include other shrubs of a naturally larger size. In this case choice varieties of holly, bush ivies, *Aucubas*, *Berberis Darwinii*, *Griselinia littoralis*, *Escallonia exoniensis*, *Cotoneaster Franchetii*, *C. frigida*, *C. pannosa*, *Eleagnus pungens* and varieties, to mention only a few evergreens; while of deciduous subjects there are the larger growing *Philadelphuses* as *P. coronarius*, *P. grandiflorus*, *Ribes sanguinea* and varieties, *Staphylea colchica*, *Nuttallia cerasiformis*, which bears racemes of white flowers very early in the year, and many others, of which mention will be made in subsequent notes, are useful. It will thus be seen that for the lover of shrubs there is abundant material for work either on a large or small scale, and no one with even a small garden need be without shrubs of suitable habit.

The Coming of Spring.

(From the Irish of Raftery.)

Now, coming on Spring the days will be growing,

And after Saint Bride's Day* my sail I will throw.
Since the thought has come to me I fain would be
going

Till I stand in the middle of the County Mayo.
The first of my days will be spent in Claremorris,

And in Balla down from it I'll have drinking and
sport;

To Kiltimagh then I will go on a visit,

And there I can tell you a month will be short.

I solemnly swear that the heart in me rises.

As the wind rises up and the mist breaks below,
When I think upon Carra and Balla down from it,

The Bush of the Mile and the plains of Mayo,
Killeadan's my village, and every good's in it,

There's raspberries, blackberries and all kinds of
fruit,

And if Raftery stood in the midst of his people

Old age would go from him and he'd be in his youth.

PADRAIC COLUM.

* The first day of February.

Notes.

THE IRISH REVIEW.—An important literary announcement has been made during the past month. The first number of a new monthly magazine of literature, science, and art is to be issued on the first of March, which promises to be for Ireland what the *Quarterly Review* and the *Edinburgh Review* have been for the sister kingdoms. It will be written by Irish authors, produced and published in Dublin, and will be indispensable to educated Irish people at home and abroad. It will take sides with no political party. It promises to deal with current politics with as little bias and as little partiality as it is good for earnest people to have. It will contain notes on affairs, poetry, articles on literary subjects, stories, book reviews, and studies in Gaelic literature. Art will be represented each month by an engraving of the work of some Irish artist. The promoters have secured an exceptionally strong list of contributors. Among the list of writers appear the names of such good story-tellers as George Moore and George A. Birmingham; of poets and dramatists, E., Padraic Colum, Lord Dunsany, Thomas MacDonagh, and James Stephens; Science is represented by Professors Grenville A. J. Cole, John A. McLelland, and James Wilson; Criticism by John Eglington; while the names of Seaghan MacCathmhaoil and Jack Yeats stand for Art. *The Review* will contain 48 crown quarto pages of literary matter, will be handsome in appearance, and sold at the popular price of sixpence. It is published by the *Irish Review* Publishing Co. at 53 Upper Sackville Street, Dublin.

It is about the end of this month that the winter moth finishes her work of egg-laying. She has been busy since about November. By the beginning of April the eggs will be hatched, and the hungry grubs will begin feeding on the young leaves. Apple trees in many gardens suffer dreadfully from this pest. If fruit-growers troubled by this insect have neglected to grease-band their trees in the autumn to intercept the wingless females in their journey up the stem, they should not neglect to spray the trees with arsenate of lead immediately on the appearance of the fresh foliage.

HANDSOME WINTER WALLS.—In the garden of Mr. Frank Dillon, at Clonsilla, is a twenty-foot length of wall densely covered with *Cotoneaster Franchet* at the present moment, mid-January; it is closely hung with its pretty scarlet fruit, which is produced in pendulous bunches of three to six. It is quite the prettiest of *cotoneasters* for this purpose. A similar length of the same wall is covered with *C. angustifolia* (*cratægus*, as they call it now), very freely fruited also, but only now beginning to take on its distinct orange colour. If this never fruited at all it is a first-class wall shrub. In the same garden is another wall, about one hundred feet in length, covered from end to end with dark-leaved ivy (*aropurea*) and *Jasminum nudiflorum*, a fair illustration of the possibility of having pretty garden features even in mid-winter. In this case practically an all-the-year-round effect is attained by using the golden-leaved form of the *jasmine*, the leaves in summer being as golden as the flowers in winter. —T. SMITH.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Broomstown, Cabinteely, Co. Dublin.



FEBRUARY is an important month as to the work that should be done in preparation for the summer months. It will be imperative that we take the plants for summer bedding in hands during this month if we are to have good strong material to work with. It is necessary to pot up cuttings struck last autumn into four, five, or six inch pots according to the size of the plants, and also to the amount of house room we have to grow them on in. Such subjects as fuchsias, Swainsonias, Streptosolen Jamesoni, Plumbago capensis, abutilon, &c., if grown on now, make a very fine show when planted out during the summer months. If there be house-room to winter old specimen plants from year to year they bloom much more freely than younger plants will do. If time or space will not permit to pot the bedding geraniums, then they should be "mossed," that is tying some moss around the roots and re-boxing them; plants treated in this way will move very well to their

summer quarters.

Propagate early-flowering chrys-anthemums, grow on in a cold frame, and give plenty of air on fine days, so that they may be strong, sturdy plants to place in the borders in April or May. Nothing gives a finer display than a border of early-flowering chrysanthemums during end of August and September.

Place old dahlia stools in heat to get cuttings from; the largest flowers are to be had off well-grown cuttings. Pentstemon, auricula, pansy, antirrhinum, and calcocaria cuttings put in frames last September or October should now be rooting, and may have the points removed to induce bushy growth; admit air on all favourable occasions, but still protect from frosts.

Sow seed of East Lothian stock for autumn blooming, also sweet pea in pots, three seeds in a four-inch pot, place in heat until they germinate, and then remove to a cold frame, giving plenty of air on fine days; they should be near the glass to induce sturdy growth. Towards the end of the month sow half-hardy annuals in heat.

Pot up gladioli corms and place in a gentle heat for early flowering.

Propagate verbascums and anchusas by root-cuttings, finish all alterations on herbaceous borders, and keep everything as neat as possible. Pruning should be completed and wall plants tied in after all dead or superfluous wood has been removed.

The rock-garden should be thoroughly gone over and the strong-growing plants restricted, so that they may not overrun their more delicate neighbours. Alpines wintered in frames should be thoroughly exposed on every occasion that the weather is at all suitable, and if the climatic conditions are favourable may be removed to their allotted space in the garden towards the end of the month. Topdress with loam, leaf mould, and a good sprinkling of lime rubble all the plants partial to lime; peat-loving plants should have a corner to themselves, and be topdressed with peat. Look out for snails and slugs. Little heaps of bran are excellent traps for them; they collect around the bran, and may be easily destroyed.

The Fruit Garden.

By G. DOOLAN.

GENERAL REMARKS.—The planting of fruit trees is often continued well into the month of March, and, where all the conditions are favourable, with every chance of success. It is not advisable, however, to delay this work later than the first of March, especially in the south of Ireland, where the season is fully two weeks earlier than in the northern counties. Intending purchasers of fruit trees should stipulate that the trees they order are free from disease, and any trees attacked by canker or American blight (woolly aphis) should be returned to the sender immediately. Nurserymen of repute will not send out bad trees, but when ordering late in the season it is always well to ensure having good trees to plant. Fruit trees already planted should be examined, and any found to be loose in the ground made quite firm by pressing the soil around the stem of the tree with the feet. When trees are carefully staked this will not be necessary. The labelling of young trees should not be neglected. If permanent labels are not used a list of the different kinds and varieties should be made in a notebook. Each row of trees should be numbered, and the number of each variety be given. It is useful and interesting to have the names when the trees are in bearing.

RENOVATING ORCHARD TREES.—This subject demands attention, for in the majority of cases it is left over till late in the season, if not entirely neglected. Where the branches of old trees are overcrowding, and moss and lichen thrive, profitable crops of fruit cannot be obtained. There is a temptation when observing neglected orchards to advise the uprooting of the lot and make a new plantation. This, of course, is only necessary where the trees are very old and decaying, but where the trees are sound they may be brought into a healthy and profitable condition by proper treatment. The pruning should first be attended to, and where the branches are thickly placed all the weakest should be cut away, leaving only the best placed. Every leading branch should have sufficient space to develop and perfect its fruit, and this cannot be attained if neighbouring shoots are allowed to encroach. In some trees the pruning necessary may be very little. The habit of certain old varieties is to make short annual growths, and in such cases a single branch too near the ground, or in the

shade of or interfering with other trees, should be cut away. In cutting off a branch cut close to the trunk from which it springs. Afterwards smear the wound with limewash or gas tar, the latter in preference. All prunings should be collected and burnt, as these harbour insect pests and their eggs. Bear in mind also when pruning old trees not to use the saw or knife too freely the first year, as such trees, not having been pruned for years, resent the too-free use of the knife, and suffer. It is best to allow the pruning of trees which require a great deal of cutting to extend over two or three years, doing a little each year, and then no harm will result.

SPRAYING is the next important operation, and should be done immediately the pruning is finished. The caustic-alkali spray is the best for winter use, and is prepared by dissolving 1 lb. caustic soda and 1 lb. crude potash separately in wooden vessels, and $\frac{3}{4}$ lb. soft soap in boiling water, which should be added to sufficient water to make ten gallons of spraying mixture. Spraying must be done on a calm day, and the ordinary potato sprayer should be used for the purpose. To reach tall branches a bamboo connection should be used, and this may be obtained from any seedsman. In mixing the above materials great care must be taken with the caustic soda, as it is liable to injure the hands if used carelessly. Lime is sometimes used for the purpose of killing any moss and lichen growths, and making the bark healthy. It is much cheaper than spraying, and where the grower has no objection to the white objects his trees will be for a while, it will be found, when properly applied, to be very effectual. The lime should be fresh from the kiln, and be slaked on the ground previous to applying; it is best applied when there is a dampness on the trees, so that it will stick. The lime that falls to the ground will also prove of benefit to the trees. Of the two remedies spraying is undoubtedly the more thorough, but where properly applied lime is none the less effectual.

The Vegetable Garden.

By J. G. TONER.

PREPARATORY WORK.—The constant rainfall during the last few months has seriously interfered with the performance of that most important part of the winter's work—namely, digging and trenching. The success of many crops will depend on how it has been done and whether it has been got through in good time. Therefore, let every suitable opportunity be availed of to bring it up to date. It will be of much advantage too if the plan of cropping is clearly defined, so that special treatment may be given where it is considered necessary. Where possible, trenching should be carried out, as such work will be of immense benefit to the immediate as well as the succeeding crops, besides permanently improving the depth and the quality of the soil.

SOWING PEAS.—In warm districts, and where gardens are very favourably placed, a sowing may be made in the open, but the weather of our springs for some years past has not seconded the efforts of the well-meaning and ambitious gardener; discerning birds will be

helped by hungry slugs in endeavouring to defeat him, but his discomfiture will not be complete if he also makes a sowing under glass—it matters not whether it be a frame, a cool or warm greenhouse. Pieces of board four or five inches wide can be made into handy troughs by tacking on light slips about three inches deep to either side; it will be found advantageous however to drive the nails only half way in, on one side at any rate. These may then be half filled with good soil, the peas evenly placed and covered level with the sides. In the event of their being raised where artificial heat is used, the hardening off must be well attended to before they are transferred to the open. When this is being done the slip on one side is removed by drawing the nails, and the plants are gently deposited in the trench already prepared for their reception, with roots and soil undisturbed. Such protection as dead branches of larch or spruce will afford will be very welcome, giving a most efficient shelter from cutting winds and likewise frosts.

CAULIFLOWERS.—The cause, very often, of autumn-sown plants, "buttoning," as it is termed, can be traced rather to mismanagement in the frames than to errors of judgment as to time of sowing. Therefore, let them not be coddled, they really only require protection from rather severe frosts. In the open they would do right well all winter if we only knew exactly when to cover them. Every possible occasion should be made use of to remove the lights altogether, to prevent damping and to render them as hardy as possible before being moved to the open ground. Plants that have been too tenderly cared rarely get to work outside without receiving a severe check, and it is this that causes the "buttoning" or the formation of premature and quite worthless little flowers. It will be good business from the successional point of view to make a sowing presently—under glass of course—of some good forcing kind. There are special varieties for this purpose that mature very early, and although the heads are small they are quite delicious in flavour—one cannot have everything.

CUCUMBERS.—Not in every garden can the culture of cucumbers be undertaken with a prospect of success at an early date. A few plants, however, will give a welcome supply if there is plenty of heat at command, something like 65 degrees, rising to 85 degrees by sun heat, will be required. In pots, boxes, or beds they can be easily managed under this condition. A proper mixture would be two parts good loam to one of thoroughly decomposed manure. Let three-inch pots, well drained, be lightly filled with this and a single seed placed in each, no water being applied until after germination has taken place. Planting can be done when they have made the second pair of proper leaves. They revel in a moist atmosphere, provided the heat is right, and in most cases they can be managed in a most economical manner in a plant or stove house where the required temperature is maintained.

PARSNIPS.—The orthodox time of committing seeds of these to the cold, cold ground is about the middle of this month. Those, however, who pin their faith to a certain date or limited period, who do not, as it were,

seen to know and to feel that in dealing with nature there must be always some give and take, might, with much advantage, possess themselves of more elastic notions. Should the soil be in nice condition, get the work done by all means, for not only do the seeds require a longer time than most to germinate, but the roots are slow too in coming to maturity. It may be still of use to point out that dung should not be added when the soil was being prepared.

If they follow a crop of onions, celery or peas, and providing what was necessary was done for these, a good return of large and fairly clean roots will result. The digging, the thorough and honest digging and fining down of such ground is all that is really required. To prevent caking of the covering, a little fairly fine coal ashes or turf mould mixed with the soil will prove a valuable detail in their culture.

Current Topics.

IN the last issue of the Journal of the Royal Horticultural Society an interesting report is given as to the effects of the frosts of the winter of 1908-1909 on vegetation. Queries were addressed to some sixty garden owners in England, as well as to some in Scotland and Ireland, as to the damage sustained by their plants and shrubs during that winter. Particulars such as the situation of the garden, nature of the soil, duration of the frost, minimum temperature recorded, and age of the plants were also enquired for. As a result the behaviour of some hundred species of doubtfully hardy shrubs under the stress of a severe winter became known, and the society was enabled to impart this information to its members. Information such as this is of great value to horticulturists, especially at the present time when so many are making trials of the beautiful new shrubs and plants which have come to us principally from inland China and Thibet. In many places the great masses of laurel with hollies and conifers which formed the main part of the shrubberies of twenty years ago are making room for the more dainty and delicate flowering shrubs; but the planter before purchasing the newer varieties of these naturally wishes to have some accurate information as to the degree of exposure which they will stand. We in Ireland have several celebrated gardens where tender species of trees and shrubs have been successfully acclimatised, and where new species are on trial; information from such sources as to the behaviour of the newer species under severe weather conditions would be doubtless appreciated by many Irish horticulturists.

A recent bulletin of the New Zealand Department of Agriculture (No. 20) describes the damage caused by eelworms, and mentions some methods of control which might be adopted.

The bulletin mentions the following plants as being attacked:—Potatoes, wheat, oats, hops, clover, and onions. As methods of control it suggests—

1. Rotation of crops extending to six or even eight years' interval between the same species.
2. Infested refuse should be destroyed.
3. Deep ploughing.

4. Kaimit and sulphate of potash have been found to check the increase of eelworms.

5. A trap crop of beet which can be destroyed before the pest has bred and escaped again into the soil.

In this country we have numerous species of eelworms living in the soil, but the majority feed on decayed vegetable matter, and their mouth parts are not adapted for piercing or sucking the living tissues of plants. Many, indeed, cannot assimilate organic matter unless it has previously undergone a process of decay. However, there are records of a few injurious species, one (*Heterodera radiculicola*) causing swellings on the roots of tomatoes, and another (*Tylenchus dezastutaria*) injuring the roots of oats. From England there are occasional records of these worms proving injurious to the leaves of carnations, the pseudo bulbs of orchids and the roots of cucumbers. Occasionally eelworms are blamed for damage for which they are not responsible. When found in the decaying parts of plants they are not necessarily themselves the cause of the decay, but are more often feeding on the tissues already disorganised by fungoid or bacterial disease. Eelworms usually feed together in large numbers; they may be recognised by their minute size, white colour, and eel-like shape. A dilute solution of permanganate of potash has been recommended as a spray for destroying them in the soil.

A correspondent in *Le Jardin* (vol. xxiii., No. 548) suggests the use of hot water as an insecticide. He states that all aphides and larvae are destroyed by immersion in water heated to 45° C., while 50° C. is fatal to beetles and insects with a hard cuticle. Plants, on the other hand, will survive immersion up to 54° C. Pot plants attacked by insects should be rolled in a cloth to prevent the soil falling out, and immersed in water at a temperature of 50° C. for half a minute. On trees he suggests that spraying or painting with hot water should be resorted to; the heat lost by the passage of the water through the air to be allowed for. Thus, if the jet is two yards off the tree the water should be at 55° C., if four to six yards off at 60° C. to 65° C., and so on. The principal difficulty in connection with this method of destroying pests is the exact regulation of the temperature.

G. O. SHERRARD.



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See

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A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

MARCH
1911

Flowering Shrubs.

By F. W. MOORE, M.A.,
Director, Royal Botanic Gardens, Glasnevin.

(Continued from page 19.)



FLOWERING June deserves its title as far as flowering shrubs are concerned; it is pre-eminently their month, and the wealth is really embarrassing. Counting at the utmost six species or varieties to even the largest genera, such as berberis, cytissus, pyrus, veronica, deutzia, cistus, philadelphus, well over 200 distinct and well marked species and varieties of hardy flowering shrubs can be had in flower in June. If even the ordinary distinct species and types of rose and rhododendron are counted the number could, of course, be largely increased. From May we have survivals in berberis, cytissus, genista, pyrus, rhododendron, spiraea, magnolia, and many others. Of characteristic June types we have, amongst others, the following genera strongly represented:—Azalea, ceanothus, cistus,

laburnum, deutzia, spiraea, veronica, diervilla (better known as weigela), escallonia, kalmia, vaccinium, philadelphus, rubus, and rhododendron. It must at once be apparent that all these cannot be dealt with in detail, and a few of the most distinct only will be specially mentioned. Deciduous azaleas cannot be omitted. In localities where they succeed they are about the most valuable of all flowering shrubs. During early June the plants are wreathed in masses of flower, distinct and brilliant, yellow, white, red, orange, bronze, pink, and almost to mauve; in September and early October the foliage is almost as effective in its colouring,

and is valuable for autumn effect. The bushes are neat, compact, and slow-growing, and live to a great age. As species we have *A. calendulacea* from North America, *A. ledifolium* from China, *A. pontica* from the Caucasus, *A. nudiflorum* from North America, *A. sinensis* or *A. mollis* from Japan and China. These, intercrossed, have given rise to the beautiful garden series of plants we have to-day. Like most of their family, they dislike lime.

Deutzias were not so well known in gardens as they deserved to be until Lemoine of Nancy commenced cross-fertilizing them, and gave us the beautiful dwarf free-flowering race we now have—a race which is quite hardy, and which certainly has come to stay. We are all familiar with *D. gracilis*, a favourite pot plant, but also good out of doors; we also know the stronger-growing *D. crenata*, perhaps more generally known as *D. scabra*, a fairly strong-growing Japanese species, of which there is a nice double variety. About 1888 *D. parviflora* and *D. discolor* were introduced from China. Lemoine crossed these with *gracilis*, and gave us such sterling novelties as *D. kalmiaeflora*, *D. Lemoinei*, &c. With the genus *philadelphus* he has done the same thing. The older species, *P. grandiflorus*, still one of our finest shrubs, *P. Gordonianus*, and *P. hirsutus* from North America, *P. Satsumi* from Japan, and *P. coronarius* from South Europe and Asia, were well known and esteemed. Then came, about 1885, *P. microphyllus* from Colorado, dwarf free flowering, sweet, which, in the hands of Lemoine, crossed with our older species, gave us *P. Lemoinei*, *Boule d'argent*, *Gerbe de Neige*, *avalanche*, &c., the value of which cannot be over-estimated.

I fear it will be a long time before we get accustomed to call our valued old friends the weigelas by their more correct title of diervilla, but here again our Continental friends have placed us under a debt of gratitude. We probably all were familiar with *Weigela amabilis* from Japan, now called *D. grandiflora*; *W. rosea* from China, now known as *D. florida*, of which there is a white flowered form; also *D. floribunda* from Japan. Some seedlings from these are of British origin, but the majority, such as *Eva Rathke Descartes*, *Conquete*, *Avantgarde*, *Fleur de Mai*, *Montesquieu*, are of Continental origin.

All who have possessed gardens near the sea know the value of *Escallonia macrantha* and the green *Euonymus japonicus* as shelter plants to break the wind. This, however, is not the only good quality of *escallonias*. *E. macrantha* is a very useful and ornamental shrub for general garden purposes. It is a nice evergreen with bright glossy foliage and abundance of flowers. It comes into flower towards end of June, and flowers continuously right into the autumn. It also stands cutting back well. It is one of the parents of two very useful hybrids, *E. exoniensis* and *E. Langleyensis*. *E. exoniensis* is a plant with nice upright habit, small shining foliage, and bearing numerous racemes of pinkish white flowers. It is, I believe, generally hardy. *E. Langleyensis* is a much more recent addition, and a very lovely and welcome addition. It is a hybrid between *E. macrantha* and *E. Philippiana*, but it differs greatly in habit from both of its parents. It has long slender pendulous branches covered with bright starry red flowers. I rather doubt whether it is hardy everywhere.

Some of the dwarf veronicas, those which are more suitable for rockworks, make their appearance in June. *V. Haasti*, *V. Hulkeana*, *V. canterburyensis*, and *V. decumbens*, the last named the hardiest of this set, and a striking and remarkable plant; it is well named, as its habit indicates. It would be difficult to say which is the most beautiful of all flowering shrubs, and if a vote were taken a great many would be named. I think that when well grown and well flowered *Viburnum tomentosum* would have my vote. If grown in a fairly moist position, this Japanese representative of the Guelder rose, which, perhaps, we know better as *V. plicatum*, is most beautiful. It dislikes lime in the soil, which is a drawback.

I have seen it in County Wicklow and in the south of Ireland with branches three to four feet long, weighed down with heads of pure white flowers. *V. macrocephalum* is a Chinese species, but it is much more tender, and cannot be recommended for general cultivation.

Mention must be made of a few individual shrubs which flower in June, but which cannot be considered quite hardy—*Fabiana imbricata*, Peru; *Ceanothus floribundus* and *C. Veitchianus*, *C. thyrsiflorus*, *Choisya ternata*, *Olearia stellulata*, Australia; *Kalmia latifolia*, North America; *Zenobia speciosa*, Florida and Carolina; *Rubus deliciosus*, Rocky Mountains. Several other important groups, such as *cistus*, *ledum*, and others, must be passed over.

The object of flowering in all plants is to enable an increase to take place by the production of seed. Seed requires time, sunshine, and warmth to mature; hence the vast majority of plants, shrubs, and trees flower early in the year. Were it otherwise, but little fertile seed would be produced; hence already with July there is a great waning in the number of flowering shrubs. Nearly all the May shrubs are over: a good many of the June series still survive, but many also are over—*deutzias*, *diervillas*, *philadelphus*, *escallonias* are still good, also *Carpentaria californica*, a lovely shrub where hardy; *Sophora tetraptera*, New Zealand *laburnum*; *Cornus capitata*, India, China; *Olearia macrodonta*, New Zealand; *Olearia insignis*.

Of the newcomers in July several fuchsias are quite hardy in Ireland, even inland, but near the sea in all parts they make beautiful hedges, and the bushes are not killed each year to the ground. The *spireas* become an important group, and take the place of shrubs which have passed. The most graceful of all is *Spiraea discolor* from North America, perhaps better known as *S. arifolia*. Then comes *Spiraea japonica* with its many varieties, with flat heads of pink to deep red flowers. Well known forms are *S. j. bumalda*, *S. j. Antony Waterer*, *S. j. ruberrima*, and *S. j. glabrata*. *Rhodotypos kerrioides*, from China, is a nice shrub with large white flowers, and *Phlomis fruticosa*, the Jerusalem sage, from Southern Europe, is remarkable with dense clusters of bright yellow flowers and grey-green foliage. It is questionably hardy. The hardiest and one of the nicest as well as one of the freest

flowering of the veronicas is *V. Traversi*, which flowers in July. The foliage is small, shining, and decussately arranged, and the bush is completely covered with white flowers. As this

interest to it. Amongst these the late-flowering species and varieties of *ceanothus* are valuable as decorative plants, and they are hardier than the earlier species. Their habit is also freer



Photo by]

[Franklin, Brentwood.

BUSH APPLE, COX'S ORANGE, PRUNED.

Specially photographed to illustrate Mr. Hammond's first article on Pruning (see page 8).

plant gets older it gets rather lean and straggly, and requires to be well cut back. *V. Lindsayi* is another pretty and distinct plant.

August shows further shrinkage, but several interesting shrubs peculiar to it and to September come into flower and give character and

and better and the trusses of flower larger. The principal species is *C. azureus*, from Mexico, and its many derivatives, such as *Gloire de Versailles*, *pallidus*, *Croix du Sud*, *Gloire des plantieres*, and *Leon Simon*. There is almost every shade of blue, from light lavender blue

to dark indigo blue, and also white and rose-coloured varieties.

Genista aethnensis is a broom of very different habit to the spring flowerers. It forms a tall slender bush with long whip-like weeping slender branches covered with small, bright yellow flowers, indescribably beautiful and graceful in the autumn sun. It comes from Sicily, but is quite hardy at Kew, where there are some striking beds of it near the refreshment pavilion. *Genista tinctoria*, Dyers Woad, is a very variable species scattered over Europe, including Britain. From the dwarf native form, with its double variety, there is every gradation to quite upright bushes of three to four feet. As would be expected, it rejoices in a multitude of synonyms, but this need not deter enthusiasts from growing it, as all forms are good and worthy of garden room, being especially valuable for their late flowering season.

Olearia Haastii, from New Zealand, would, I think, win in a competition for the freest flowering of all shrubs. It is no exaggeration to say that when at its best not a leaf can be seen, it is quite white. The flowers are small. It is very hardy. A number of spiræas remain in August and others open. *Spiræa Douglasii* is good. It has nice thyrse-shaped panicles of pink flowers. The hydrangeas also commence in August. *H. japonica* is good, and *H. hortensis* gives a few preliminary flowers, but it is not at its best until the late season and spring. *H. paniculata* hardly needs commendation. We all know and prize it, and only wish it were hardier. Lavenders, buddleias, and rhus are other good things.

In September many of the August plants continue—*ceanothus*, buddleias, &c., and notable additions are *Hibiscus syriacus*, in all colours; *Erica stricta*, the upright South European heath; *E. vagans*, the prostrate Cornish heath, and its white variety; and a number of nice hypericums, St. John's Wort, late flowering veronicas of the Autumn Glory and Gauntlet type, which unfortunately are tender, and generally get cut up in the winter if not killed outright. *Spartium junceum*, from South Europe, known as the Spanish broom, is the most striking of all, and a glorious plant for autumn work.

October adds little to our list and much is gone. Decreasing daylight, diminishing heat of the sun, occasional frost, all work to the

same end as far as plant life is concerned—rest. The arbutus commences its four or five months' flowering season, the myrtle struggles on, jasmines are good, *Coronilla emeroides* is worth a place, and can stand over twenty degrees of frost without injury; veronicas flower until cut by frost. The most striking shrub, where it will stand out, is the Chinese *Caryopteris mastacanthus*, with numerous heads of pale blue flowers, not a plant for cold or sunless places.

November and December only bring us old friends—arbutus, *chimonanthus*, *hamamelis*, *Jasminum nudiflorum*, and heaths. The year opened with them and fitly ends with them; but what wealth and glory we can have in our gardens during the course of a year from flowering shrubs I fear is only imperfectly and scantily revealed in this paper.

Pruning Small Fruit.

By FRED. W. HAMMOND.

IN many places where the pruning of the top fruit, apples and plums, is carried out in something like the proper manner, the poor gooseberry and currant trees often come in for very rough treatment, being frequently either hacked about in a merciless way or left to become overcrowded with wood, showing that the proper system of pruning them is not understood very well by those who perform the operation. And, indeed, it is not by any means the easiest thing in the world to prune a gooseberry bush, particularly if it happens to be one of the varieties which have a pendulous habit of growth.

In this, as we have seen in all the others, the pruner must use his head as well as his hands. No two varieties can be treated alike, and indeed the same variety in different soils and situations often needs different handling in pruning it. The first question to consider is—What is the best fruit-bearing wood in a gooseberry bush and how to secure as much of it in a tree as possible? and after that—how best to shape the tree in order that the fruit may come to perfection and also be easily gathered. Looking at a tree in fruit one finds that fruit is borne on almost all the wood from one year up to nine or ten years or even more, but that the finest berries are to be found on the

younger wood, one or two years old. The pruning should, therefore, be carried out with the idea of furnishing the tree with as much young wood as possible, sufficiently carefully spaced so as to admit sun and air to ripen the fruit and for the pickers to get their hands in without too much trouble.

Now, there is no doubt that we could get a certain amount of a very fine fruit by allowing the wood to remain in the tree, say, for about three years, continually cutting it out after that, but such a course effectually prevents us from getting a big tree.

As with apples and plums, so to a less extent with gooseberries—a certain number of boughs must be permitted to remain on the tree though bearing no fruit, since they form the foundation, as it were, on which the fruit-bearing wood is borne. It is, as I said, in a lesser degree, since after some years the vitality in the branch seems to get lower, the wood upon it becomes less vigorous, and in consequence the fruit borne is smaller, so that the branch is best removed to make way for other and better wood.

In cases like this it will almost always be found that vigorous young wood is shooting from the branch near towards the centre of the tree, so that it is possible to cut back to this young wood, shorten it, and so lay in a fresh young branch. However, this is by the way, and only to point out the need for different ideas and treatment of a gooseberry tree to an apple or plum.

While we are on this subject it may be as well to point out that another difference occurs in the shaping of the tree. In dealing with apples and plums the idea is to keep a more or less open centre to the tree. To a *small* extent this must be followed with gooseberries, since the young wood would otherwise overcrowd the centre, but if carried to excess it becomes very dangerous. The danger lies in the fact that the gooseberry blooms very early, when spring frosts are of frequent occurrence; further, the bloom is open when the leaf is but very little uncurled to protect it; so that if the open or cup-shaped system is adopted almost all the fruit is exposed to the frost; while, on the other hand, if the centre is rather more furnished with wood a greater proportion of the fruit has a chance of escaping, since the top ones protect the lower boughs. The trees,

which preferably should be two years old, when received from the nursery, will probably have a clean stem, nine to twelve inches long, with a head consisting of about four or five branches, anything from eighteen inches to two feet in length.

Considerable controversy rages concerning the clean stem, many experts insisting that all the buds except the top three or four should be removed from the cutting; for many years now we have not done so, and have never seen any ill-effects in our trees in consequence, no undue amount of suckers or anything of the kind. Indeed, we believe that we gain somewhat by not disbudding, for if we have any trees go off with collar rot at the top of the ground we have, following that, usually a vigorous shoot or two coming up to make a new tree. (Of course we only grow trees for our own use, and not for sale to the private trade.)

To return to the young trees, the four or five shoots should be shortened proportionately to their length and strength to about five to eight inches, cutting to a bud pointing in the direction in which it is desired the new shoot should grow. In most cases this would be an outside bud, since the first shoots are generally somewhat upright, but with pendulous-growing varieties it may be necessary to cut to a bud pointing upwards to endeavour to counteract this tendency. In a similar way it must be a bud pointing left or right, as occasion demands, to obtain more uniform spacing, that the shoot should grow in either direction. Considerable judgment must be used as to the length to shorten to; as a rough rule I have given about a third, but the pruner must be guided by results. It is necessary to cause the pruned shoot to break into two or three strong shoots, but if the pruning be too severe the resultant shoots are too gross, and frequently are broken right out by the winds in late summer and autumn. At the next pruning season the tree will probably consist of twelve to fifteen shoots of slightly shorter length than the first. These must again be shortened, though not quite so severely, cutting again to the necessary bud required.

Probably some of them will be rather badly placed, either too close to another or crossing another; these must be cut out, leaving a spur about an inch long. The next winter each of the shoots so shortened will have

probably produced two or three shoots, as well as some on the older wood, so that the tree will be getting pretty full of branches.

The shortening now, except in case of weakly

thick, so as to admit the picker's hands right into the centre of the tree from every direction.

This can only be accomplished by training the shoots in what I describe, for want of a better



Photo by

[Franklin, Brentwood.

BUSH APPLE, BISMARCK, UNPRUNED.

Specially photographed to illustrate Mr. Hammond's first article on Pruning (see page 8)

shoots or where it is manifest that a new bough is wanted, may consist of removing one third or less of the shoots, instead of shortening to one third as at the start. The treatment now consists of tipping in this way, and removing the crossing shoots or those which are too

term, as the radical system, wherein the branches radiate from the centre of the tree in every direction, independently and without crossing one another, so that if one takes some particular shoot one can follow the line down through bough and branch straight to the centre of the

tree without it being interrupted or broken by any other bough or branch.

It has always seemed to me that this ideal, difficult I know of attainment with many varie-

placed wood must be cut out every year, but I do not advocate the removal of any but the misplaced, though some pruners advise, or practice if they do not advise it, the almost



Photo by]

[Franklin, Brentwood.

BUSH APPLE, BISMARCK, THE SAME TREE AS THE ONE OPPOSITE, BUT PRUNED.

ties, gives the best hope of success in trying to unite a rational system of extension and growth of the tree with the positive essentials of proper ingress of light and air into the tree and of ease in picking.

Of course, some considerable amount of mis-

wholesale removal of the young wood on the branches with the exception of a leader or two.

This spurring-in system, no doubt, produces some amount of good fruit, but not nearly, I believe, the quantity which could be given under more natural conditions, while it causes

an immense amount of labour in pruning, since the spurred-in growths often produce wood instead of fruit.

There is only one variety to which it may be reasonably applied, that is the Golden Drop, the reason probably being that this berry would otherwise, under more natural conditions, produce a huge lot of fruit too small for practical purposes, and it is thereby induced to grow a less quantity of more sizeable fruit. At the other end of the scale is the Red Warrington, which produces so much wood under even the most careful use of the knife that none but quite the worst placed shoots ought to be removed if it can possibly be avoided.

The trouble which arises with this variety is that it is naturally of a very drooping habit, and the efforts of the pruner to correct this, by cutting well back along the shoots to an upward inclination and an upward pointing-bud, brings on the other trouble just mentioned.

With older trees it is often advisable to some extent to abandon the ideal of shape, and to cut out whole portions of shoots and boughs here and there over the tree, rather than to cut out a large amount of young wood in a vain endeavour to open the tree for picking purposes and to ripen the fruit.

Indeed, if anything it is essential that the Warrington should be thinner rather than thicker than the ordinary run of varieties, since the terrible three-thorns which it bears produce havoc in the picker's hands and clothes. Moreover, it is necessary to get the fruit highly coloured in order to realise the best possible prices for it.

In contradistinction to Warrington, the Lancashire Lad, probably the most popular market variety particularly for ripening purposes, will stand the knife to a much greater extent, and incidentally the manure cart, being much more prolific of wood. The wood, too, which is grown is often spindly weak stuff, and needs considerable shortening to make it stiff enough to carry the crop without being pulled in all directions by the weight. Between these two extremes lie all sorts of differing habits of growth and vigour which the pruner must investigate for himself, watching each year the effect of the previous year's treatment, and carrying it in the direction which such

examination proves advisable. During the last year or two the problem of pruning gooseberry trees has been further complicated for us here in England by the outbreak of the American gooseberry mildew.

Amongst the many uncertainties concerning this disease one fact remains absolutely clear—viz., that the strongest and most thrifty trees are the most liable to take the disease and to have it most virulently; and it is worthy of consideration whether it is not advisable so to modify both pruning and manuring, so that the period of growth is over and the new wood comparatively ripened before the disease becomes very active in the beginning of June.

Shrubs for Beds and Single Specimens.

By J. W. BESANT, Botanic Gardens, Glasnevin.

THERE are certain kinds of shrubs which, from their loose or spreading habit, are more suitable for planting in beds of a kind or as single specimens than for shrubbery work; others suitable for beds are also good for borders. Such beds or specimens can often be placed where they can be seen from the windows of the dwelling, and might with advantage occupy at least some of the space so often devoted to bedding plants, to produce which involves an immense amount of work and worry.

Although dealing with shrubs it may not be out of place to point out that it is quite possible to get very beautiful effects in spring by the use of suitable bulbous plants grown in beds of deciduous shrubs. In such positions *Scilla sibirica*, *Scilla bifolia*, *Chionodox Lucilia*, winter aconites, snowdrops, *Anemone blanda*, *Fritillaria meleagris*, &c., can be used with fine effect.

Prominent among shrubs suitable for beds or for single specimens are the buddleias, of which the varieties of *Buddleia variabilis* are the best. These are autumn flowering subjects, and should be pruned hard back in February to induce the formation of long, strong shoots, at the ends of which the handsome racemes of purplish lilac flowers are produced.

Ceanothuses form charming beds, but only the hardiest kinds are suitable for planting in this way. Those commonly met with in gardens are varieties or hybrids of *Ceanothus*

pale blue; *Gloire des Plantieres*, blue; *Ceres*, rose pink; *Americanus*, white; and *Azureus*, blue. Most of the other species of *ceanothus* in general cultivation

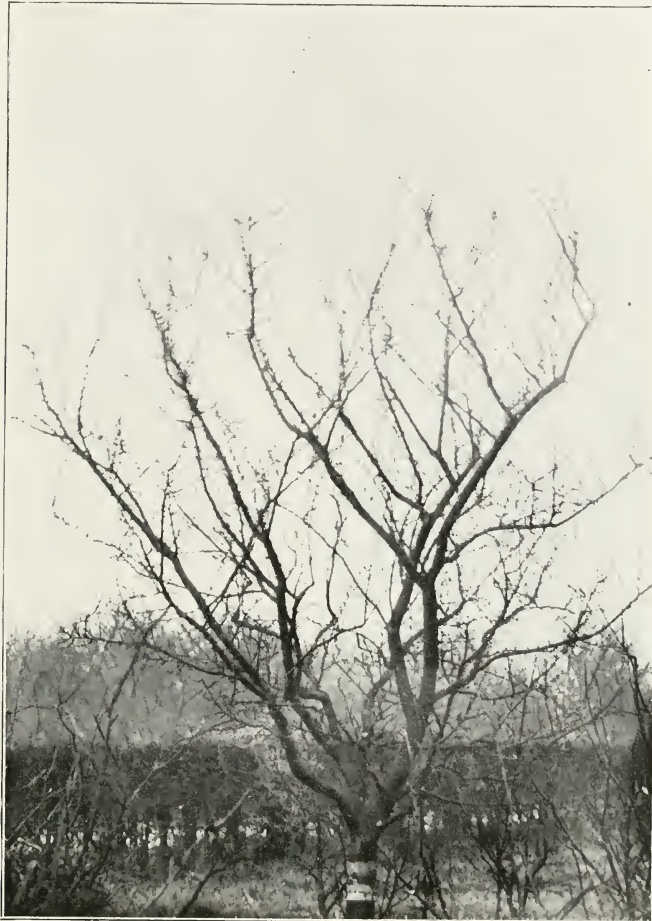


Photo by]

[Franklin, Brentwood.

A WELL-GROWN PLUM TREE, "CURLLEW."

(Note the open centre.)

Specially photographed to illustrate Mr. Hammond's second article on Pruning (see page 21.)

americanus and *C. azureus*—the former from the Eastern States of America and the latter from Mexico. The garden forms have mostly blue flowers, although there are some desirable pink kinds; good sorts grown at Glasnevin are *Leon Simon*,

make beautiful wall plants, and will be dealt with in that connection.

The diervillas are extremely showy and useful for beds and specimens. They are better known as *weigalias*. Here, again, the hybrids are more generally useful than the species.

D. florida and *D. grandiflora* have been responsible for most of the showy garden forms. The hybrids flower towards the end of May and in June, and thus keep up a succession. One of the best is *D. Eva Rathke*, which bears beautiful dark red flowers, *D. gigantea flora*, large pink flowers; *D. Pascal*, fine deep red, and *D. nivea*, white. When pruning *diervillas* no severe cutting back is required, a thinning out of dead or exhausted wood being all that is necessary.

Forsythia suspensa is perhaps the finest of all early flowering shrubs, blooming abundantly in March and April. It makes an admirable wall plant, and forms a striking and beautiful group on a lawn. When grouped in a bed the effect will be intensified if a darker background can be arranged for. The flowers are yellow, and produced on shoots of the previous summer's growth; pruning, therefore, should be done immediately the flowers have faded, cutting back each shoot to one or two buds. *Forsythia intermedia* is of more upright habit, and forms a handsome single specimen, often reaching a height of eight or ten feet, and as much through. Pruning, in this case, should take the form of thinning out only, after flowering.

One of the loveliest of late flowering shrubs is *Hydrangea paniculata*. The huge panicles of flowers are produced at the ends of the current season's growth; and, consequently, pruning should be done in spring, cutting the shoots back quite two-thirds of their length. Some prefer the variety *grandiflora*, which bears large, white inflorescences, and all the flowers being sterile it is, perhaps, more showy than the type; but being less upright in habit and the flower-heads heavier, they are apt to be beaten down by heavy rains, and thus lose much of their beauty. *Hydrangea arborescens*, from the Eastern States of America, has lately become more popular, and is very attractive when well grown. It produces roundish heads of white flowers, and makes a very beautiful specimen. In the milder parts of the country the greenhouse species *Hydrangea hortensis* make fine specimens, but it cannot be recommended for general cultivation outside.

As a change from deciduous flowering shrubs *Pernettya mucronata* may be highly recommended for a bed. Though of the heath family, peat is not essential to its cultivation, but a

moist, cool, and fairly rich soil is imperative. The leaves are quite small and deep-green, and the flowers, which are white, are often succeeded by beautiful berries, which vary in colour from white through pink to dark-red. Where it can be successfully grown the *pernettya* is sure to be greatly appreciated.

A very charming spring flowering shrub is *Rubus deliciosus*, which bears freely large, white flowers resembling a single rose. This species is eminently suitable for growing as a specimen, and will attain a height of six feet.

Some of the tamarisks are also beautiful in beds or as single specimens. They produce long, willow-like shoots, bearing very tiny leaves, and should be pruned hard back in spring. Perhaps the best variety is *Tamarix Pallasii rosea*, which bears numerous racemes of rose-pink flowers in early autumn.

All pruning of late summer and autumn flowering shrubs should be completed without delay, and any planting still contemplated should be finished this month if satisfactory results are to be expected. Any shrubs planted earlier in the season should be examined, as recent heavy winds may have loosened the soil about the stems; this should be remedied, and everything possible done to ensure satisfactory growth.

The Cyclamen and its Culture.

By A. CAMPBELL, The Gardens, St. Ann's, Clontarf.

THE cyclamen belongs to a large and varied genus of plants, belonging to the family of primroses. Its ten botanical species are mostly confined to the mountainous districts surrounding the Mediterranean, but all of them can be cultivated successfully at home if sufficient care be taken to give them a favourable position and a soil suitably prepared to meet their special requirements. The varieties below referred to, once established, will practically take care of themselves, and form a delightful feature in any garden. The flowers of the cyclamen are varied and beautiful, and appear at different seasons of the year, while their abundant and beautifully marked foliage enhance their value as a decorative garden or greenhouse plant.

The following are a few which have proved themselves at home in this country:—Cyclamen

Coum, found in the Greek Archipelago, with its variety *C. vernum*, or Coum Zonal; *C. ibericum Atkinsii*, a garden form, with large white flowers, with a purple spot at base of each perianth segment; *Cyclamen europæum*, found in Central and Southern Europe, and which requires deep planting. The Italian forms of this species are—*C. Clusii*, *C. litorale*, and *C. Peakianum*. Their flowers are varied in colour and beautifully scented. *Cyclamen hederæ-folium* is found in Switzerland, Italy, Greece, and north coast of Africa. It has luxuriant foliage, much like our ivy leaf in form (hence the specific name), and is a profuse bloomer.

Then we have the form *Persicum*, from which have sprung the many beautiful varieties now so largely grown in pots, and used so freely during winter and spring for conservatory, room, and house decoration; but for out-of-door cultivation of the cyclamen I would recommend the following culture:—Good drainage, and at least twelve inches of good compost, made up of good loam, grit, decayed leaves, and cow manure. A south-east aspect is best, and if screened from harsh winds by shrubs or rocks they should thrive well for years, and amply repay for all trouble taken with them at the start.

The cyclamen, now so largely used for pot culture, is almost entirely confined to the race of seedling varieties of *C. persicum* that in recent years have been so much improved in size, colour, and profusion of flower. So great is the improvement that the cyclamen of the present day is, without doubt, amongst the most beautiful and continuous bloomers of all our greenhouse plants. Their culture is being better understood by gardeners, and can moreover be brought to perfection now in less than half the time considered necessary 25 years ago. By abandoning any unnatural check and giving more warmth, so as to stimulate a quicker growth, this new race succeeds much better than under the old method, by which, after forming, the plants were subjected to a severe drying process, whereby they were much weakened in constitutional vigour. The treatment found to suit them best is that the plants should be grown from seed each year, and from the time of sowing the seeds until the plants are setting their flowers a tempera-

ture of from 50 to 55 degrees is necessary. I sow the seeds about the middle of September in clean pans with good drainage, and filled to within three-quarter-inch of the rim with a compost of good loam, leaf-mould, and sand, with some crushed brick or crocks added. This soil is made firm and smooth on the surface. The seeds, which had been steeped in tepid water for twelve hours previously, are then placed one inch apart on the surface of pans pressed in, and covered with a quarter-inch of fine compost. They are then watered with a fine



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Mackey

GIANT WHITE CYCLAMEN

rose-can, and the pans covered with glass or strong paper to prevent evaporation. They are then placed in a temperature of about 55 degrees. In four weeks the seed will begin to show signs of life; then the glass is tilted up a little, and in a few days it can be entirely removed, when the pans should be raised near the glass, so that the little plants do not become drawn.

About the middle of January they should be placed singly in small pots, using the same compost. The seedlings should be lifted from the pan with a wooden label so as to secure all roots and soil adhering to them. When potted the little bulb should not be buried. The same applies to subsequent pottings. They will require but little water further than spraying their foliage lightly twice daily until their roots have entered the new soil. When the plants

have filled the pots with roots transfer them to 4-inch pots, using the same soil. They will require but little water further than spraying until their roots are again active. Spray water freely amongst the pots and over the stage. This will tend to keep the red spider and thrips at bay. In May they will be ready for 5-inch or 6-inch pots. All those required for early winter decoration will flower well in the latter. The same compost can be used, with a little cow manure added. The plants can now be stood in frames, on a bed of ashes, close to the glass. Air must be given on the sheltered side so as to avoid draughts. Spray morning and evening, and shade during the bright part of the day. They will now make rapid progress, and more space must be given to them as their foliage develops. In June those which are in 5-inch pots should be moved into 7 or 8-inch pots, using the same compost, but much rougher, and treat as above recommended. In September give more air and less shade, which will aid the plants in setting their flowers. Overhead moisture must now be withheld, and care must be taken that the plants do not suffer for want of water at their roots. Early in October the plants can be placed where they are to flower. Those in 6-inch pots will require a little feeding once each week. A little Clay's fertilizer in the water, I find, suits them well.

They will require a temperature of 50 degrees with air, avoiding cold draughts. They will flower freely in November, and continue in great beauty for over three months. After flowering, if it is desirable to retain the plants for another year, they must be kept cooler, partly withholding water until their foliage dies back; then they should be shaken out and planted in a frame facing north. Cover the corms with an inch of sifted leaf-mould, which will cause them to start freely and send up foliage in abundance. Before their foliage develops they should be carefully lifted and potted, stood in frames, shaded, and receive the same attention as recommended for young plants. The result will be extra fine plants, with an abundance of bloom, but the individual blooms will not be nearly as fine as those produced by the one year old plants. I should mention that when the plants have been placed in their flowering quarters it is advisable to have the house fumigated two or three times before the flowers open.

The "Sweet Pea Annual."

THE National Sweet Pea Society has just issued its "Annual" for 1911, edited by Messrs. Horace J. Wright and Charles H. Curtis. This is the seventh year of issue, and each year has shown a marked improvement on the previous one, until we now have a volume of 132 pages, full of all that is most interesting to sweet pea growers. The "Annual" is sent free to all members of the society, and the subscription, which gives free admission to its shows, free entrance for exhibits, and many other advantages, is only five shillings per annum.

Amongst the many interesting articles to be found in "The Annual" the following may be mentioned: An account of the "Télemly" Sweet Peas, by the Rev. Joseph Jacob, of daffodil and tulip fame, who visited at his Algerian home the introducer of these winter flowering sweet peas—the Rev. Edwin Arkwright—he tells us that there are now eighteen varieties of these now on the market. They are a distinct acquisition, giving flowers of beautiful form and delicious fragrance, which bloom several months before the sweet peas with which we are familiar; they are all of the grandiflora type. Mr. Arkwright has also cross-fertilized with the waved varieties, and he will have five of this type to offer next summer, so that we may have sweet peas in bloom from February to November by sowing these and the summer varieties in rotation. Mr. S. B. Dicks writes on "Sweet Peas in British Columbia"; Mr. C. Harman Payne on "The Bibliography of the Sweet Pea"; Mr. Thomas Stevenson, of exhibiting fame, on "Lavender Sweet Peas"; Mr. William Lumsden, the raiser of those most beautiful and popular varieties, "Constance Oliver" and "Marjorie Willis," discourses on the prices of sweet pea seeds, and enlightens us as to the great expense of working up a stock of fixed seed before it can be placed on the market, especially since the advent of the waved sweet peas, which are not such good seeders. Then there is an account of the "Outings" of the society to the trial grounds, where all the new kinds are thoroughly tested before they can receive awards from the society.

These trials were conducted at the *Times* Experimental Station at Sutton, in Surrey, under the care and supervision of Mr. Charles Foster, whose death on the 16th ult., at the early age of 43, we deeply regret to record.

An exhaustive report is given of the "Investigation of Sweet Pea Diseases," and a full account of the Sweet Pea Conference, at which a paper was read on "Judging Sweet Peas," by Mr. Walter P. Wright, and one on "The Cultivation of Sweet Peas," by Mr. George Herbert; an animated discussion followed on each of these subjects, in which very many of those present took part. A catalogue is given of all the sweet peas now in commerce; a list of those varieties which are considered too much alike, and an audit of the blooms at the London show last year. Those who wish to join the society should communicate with the Hon. Sec., Mr. C. H. Curtis, Adelaide Road, Brentford, Middlesex, who will also supply copies of "The Annual" to non-subscribers for two shillings, post free.

Roses.

By O'DONEL BROWNE, M.D.



ONCE more we have that difficult but happy task in front of us, and the sooner it is over with us the happier we are. I refer, of course, to pruning. To the person, however, who has tended his plants carefully since they were young it does not become a bore to just put all things ship-shape, but to a man or woman (and here in pruning I find the ladies sadly err by petting their trees almost as much as their hair) who has in past years gone at his trees in a lazy happy-go-lucky style, there is plenty of work to put all things square. All, however, cannot be rectified by March and April pruning; though these operations tend to put matters on the right road to recovery, it needs still the careful use of knife and finger in May to put more finishing touches. Till the crack of doom comes I suppose we will meet with growers who want all and everything *et nunc et in perpetuo*. Only this week a lady remarked to me that she had ordered some trees—climbers—with grand long rods guaranteed, eight feet long. You should have seen her face when I said “so much the more to cut away next month.” Her ambition was to let these rods flower up this year, to supply enough for her vases. Poor, sad, deluded lady, you must, I fear, forswear your pleasure this year, and instead of cutting flowers, cut those rods as hard as your enemy, if you have one, would! Never will I forget a patient (in every sense of the word) showing me two plants of Lady Gay, newly planted, tied—aye, even the twiggiest growths—to a lovely lattice work on a verandah. How she had the patience to keep at them I do not know. When I got to work I left nothing but a few inches over ground and the rest to wither. “My poor trees!” was what I heard. “What have you done?” “Wait and see,” and sure enough in a year or two that verandah will be covered. And so it is smothered with hanging sprays of Lady Gay. No need to tell that person a second time what to do with newly-planted climbers. In future years that tree does not require such drastic operations—merely removing that which is not wanted is quite sufficient. Dwarf plants are just the same, with the great exception that if you contemplate having good flowers your first year you must cut heavily, for, as a general rule, good flowers come on good wood. Mellier, in his admirable book, lays down the maxim in a few words with the East Anglian expression “no man should hoe his own turnips,” when he speaks of rose pruning, meaning by this that over-crowding of shoots is a bad principle, and from what I have seen of some ardent rosarians, I should be sorry to let them at my trees. It is hard to cut some trees of certain varieties too hard, and even

varieties like La France are all the better every second or third year of a good going over to remove the old worn out wood and to encourage new growths.

Those of us who have stocks budded last year should attend to them now. Dwarfs, whether on cutting or seedling, require all the wild growth removed about one inch over the bud, cutting through the stock, but leaving this piece to tie our supporting stake to when the rose bud starts to push. Standards should have all wild growths removed, save and excepting the growths carrying the downward bud. These laterals should be shortened to a few wild eyes, and a stake should be securely tied to the brier to support the stock and the future rose when it pushes. Should any maiden have pushed into growth last year, it is a wise course to remove it almost back to where it sprang, and to encourage the buds at the base of the rod to plump up, swell and push. A good application of some chemical manure may advantageously be given to all rose beds where there are established rose trees growing—holding your hand to newly-planted varieties and to maidens until they have made some good growth. Surfaces of beds should be worked at to get the upper few inches into a light crumbly nature, and the hoe should be kept going from this date until the end of the season. I don't think it wise to dig or fork beds—a spade run along the surface of the bed and parallel with it can do no harm, but avoid sinking it deeply. A good deal of nonsense, in my humble opinion, has been written *re* the use of a good pair of secateurs or pruning shears; I never used anything else, and find no harm. Indeed I find a knife working its way through a tough old growth is more liable to do mischief than a sharp cut of a good shears.



In the current number (February) of the *Journal of the (English) Board of Agriculture* there is an important article on “Experiments in Potato Growing,” by Henry Henshaw, Superintendent of the Farm in connection with the Cambridge University. Amongst other matters it refers to the great benefit arising from change of seed, and gives clear experimental evidence of such benefit to the grower. We will again refer to this subject.

In a recent number of the *Kew Bulletin* Mr. Massee calls attention to the frequent occurrence of galls or tumours on the roots of various plants, and mentions cases of plum, rose, raspberry, loganberry and chrysanthemum as having come under his own observation. The disease is known as “crown-galls,” because they first appear near the crown of the root. The cause is believed to be due to the attack of a species of slime-fungus allied to that found in the club-root of turnips, cabbages, and other crucifers. Its life history has been worked out by Toumey, who has named it *Dendrophagus globosus*. It is a contagious disease, seedlings being especially prone to its attack. It is very destructive to nursery stock, as it rapidly kills off whole rows of seedlings. Although it may not kill older trees, yet it appears to be bad economy not to uproot and clear the ground of them. Heavy applications of quicklime worked into the soil seems to be the only known remedy.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Breenstown, Cabinteely, Co. Dublin.

THIS is generally a busy but by no means a genial month; the winds are generally so dry and harsh that all vegetation feel them, but they are especially severe on our half-hardy shrubs and trees; indeed, many which have withstood the frost and snows of the winter succumb to the biting blasts of March. Therefore be as careful to protect tender subjects now as in January. The precaution is all the more needful in seasons in which there has been little or no hard weather previous to March, as plants are generally softer and inclined to commence early growth. When protecting plants we must be careful not to induce them to make early growth, or the remedy will prove as bad as the disease. The longer tender plants can be kept in a dormant state the less likely they are to be injured by spring frosts. Where plants have been covered, care should be taken not to suddenly expose them by removing the covering at once. The garden and pleasure grounds will commence to look gay in this month, we shall have many bulbs and shrubs in flower, and the more beauty in the garden the better it must be kept, for untidiness is never so unbearable as when seen alongside flowering plants or shrubs. Therefore keep grass lawns and walks tidy, and it will greatly enhance the flowers. This is a good time to remove weeds from lawns; the best way to accomplish this is hand-picking and taking out the roots. Cut over the lawns and tennis courts before the grass gets too long for the machine.

Herbaceous borders should be stirred occasionally with the hoe or rake, and also beds wherein are bulbs and spring flowering plants.

Primroses and polyanthus will be very gay just now, and where plants are grown from seed they should be gone over and the best selected and labelled, and when done flowering those good ones may be divided and grown on and the inferior lot discarded.

Hyacinths will require careful staking or they will be broken by wind or hail showers.

Crocuses will be in full bloom; there is nowhere they look so well as on the verge of a wood or shrubbery.

Narcissus, cyclamen, crown imperials, ixias, scillas, &c., all hasten forward to prove the matchless supremacy of bulbs as the most beautiful of spring flowers.

In flowering shrubs we have a brave display in daphnes, jasmine, ribes, almonds, heaths, berberies, ceanothus, veitchii, Magnolia conspicua, &c.

Roses will now require pruning, but do not be in a hurry to get it done, they may be pushing their buds very much owing to the mild winter, but the fact that the top buds are growing will help to keep the bottom buds dormant, and it is on those we must rely for bloom during the coming season.

In pruning roses it must be borne in mind, as a general rule, that the weakest growers require the most severe pruning, our object being to lessen the number

of buds and give a weak root system a chance of growing a few strong shoots. Every bit of old wood, loose bark, &c., should be removed, as it is amongst those that caterpillars, aphides, &c., breed. Where bushes are badly infected with such pests they should be sprayed with a caustic wash.

Hybrid Perpetuals should be pruned about the middle of the month, while the Teas should be left until the end. When pruning, aim to have a symmetrical open bush; let no branches cross or rub each other; cut to an outside bud; do away with as much old wood as possible, and in case of strong growers to lessen the number of shoots rather than their length. Remove gross unripened shoots, they will not produce good flowers. A good knowledge of the different varieties is essential if the very best results are to be gained. Some will only show the perfect bloom on weak shoots, such as Le France; some will canker and die if pruned too hard. While others, and those are the strong growers, will make too much wood and have but poor blooms if pruned too hard. In fact there is no concrete rule we can go by; every grower must be largely guided by circumstances of soil, varieties, and the purposes he wishes his blooms for.

Gladioli should be planted this month if the soil is of a cold, retentive nature. Some silver sand around the corn will assist it.

HARDY ANNUALS.—In addition to those named last month, the following should be sown, either in hot or cold frames:—Stocks, asters, Phlox Drummondii, neillia poppy, lupin, larkspur, marigolds, begonia, &c.

Winter-sown annuals, weather permitting, should be transferred to their flowering quarters.

Proceed with the preparation of plants for summer bedding, where possible; pot plants singly and grow on in heat.

Make sowings of sweet pea outside and prepare stakes for them.

The Alpine garden will be quite gay now; finish any planting, and trap snails and slugs, they are especially fond of the asters, campanulas, and pinks.

The Fruit Garden.

By G. DOOLAN.

PRUNING.—The weather recently has been very favourable for all garden and orchard work, and up-to-date fruit growers will have finished the pruning of their trees ere this. Newly-planted apple trees are often left over till late in the season before pruning is attempted, but such work should not be further delayed. In pruning such trees it is well to use the knife boldly, and good foundation growth will be the result. Prune weak-growing varieties more severely than strong growers; for example, Lane's Prince Albert requires more severe pruning than Bramley Seedlings. Again, in pruning newly-planted trees it must be remembered that a large number of the fibrous roots are destroyed in the removal of the trees from the nursery, and there are not sufficient roots to support cells of all the branches; hence the need of restricting the shoots by pruning and thereby balance growth.

In pruning the leading or permanent branches make the cut above a bud which points in an outward direction so as to ensure the centre of the tree being open. Branches too closely placed should have the weaker ones cut away, and all lateral growths should be spurred back to within two inches of their base.

RASPBERRIES.—The pruning of these is often put off till early in March, the object being to prevent the premature starting of the buds as a result of early pruning, for should severe weather occur the young growths suffer. Strong growing canes should have about nine inches of the top cut off, and all the weakest canes cut close to the ground. Canes growing poorly should be pruned rather severely, cutting away about half their length. A mulch of good manure or liquid manure applied occasionally will be of great benefit to weak-growing raspberry plants. Suitable supports are also necessary, so that the fruiting shoots from each cane may develop properly. Wires running the length of the rows and fixed to strong stakes driven firmly in the ground provide excellent supports, as each cane can then be spaced and tied apart.

GOOSEBERRIES.—In districts where bullfinches abound gooseberry bushes are often left unpruned till late in the season, the branches and shoots are tied close together and in this way many of the buds are preserved. In pruning the bushes it should be remembered that fruit is borne on the young wood as well as on the old, but the best fruit is obtained from the young well-ripened shoots; therefore, such shoots should always be encouraged. Where the growths are very thick old

branches should be cut away from the base and young shoots shortened a little. This will permit air and sunlight to enter and ripen the wood. Any suckers or growths arising beneath the soil close to the stem should be dug out. Where caterpillars had attacked bushes by stripping them of their foliage in the previous year, the surface soil to the depth of two or three inches beneath the bushes should be removed and good soil substituted. This is a good old remedy for this pest.

RE-GRAFTING OLD APPLE OR PEAR TREES.—This operation is best done towards the end of the month or early in April. Many methods of grafting are practised, but for old trees one of the simplest and surest is "crown" grafting. The tree cut back to be grafted is the stock, and the scion or graft is a young shoot of last season's growth. The scions should be selected and cut sometime previously, and placed in the ground to a few inches of their length, thus they will be in a more dormant condition than the stock at the time of grafting, and so enhance the chances of a successful union.

The branches of old trees should be cut back to within a foot of the trunk a few weeks previous to the grafting. The rough surface should be made smooth with a sharp knife or chisel. Young trees which have become stunted in growth or are fruitful should have the entire head cut away to a portion of the stem where the bark is smooth, and two or more scions put on according to the size of the stock. The scion, which should be about six inches in length, is prepared as shown in Fig. 1, using a sharp knife to make the cut smooth and clean. A downward cut



A FINE STRAIN OF CARNATION—WEBBS' IMPERIAL.

The Carnation has a distinctive place of its own in the affections of the people. It will ever be a favourite as a decorative flower. In form and colour it is perfect. There are a very large number of garden forms included under the divisions. Bizarres, Flakes, and Selfs. Present taste is altogether inclined to Selfs—that is, one-colour forms.

about two and a half inches in length should be made in the bark of the stock; the bark must then be carefully raised, but only sufficiently to permit the scion to be placed underneath. Fig. 2 shows the scion inserted. This work should be done quickly so as not to allow the cut surfaces of the scion and stock to become too dry. The stock should then be bound with raffia string or cotton thread, and grafting wax or clay applied immediately. Clay for grafting is prepared by mixing two-thirds retentive clay with one-third cow manure. The clay should be obtained at a depth of two feet, and all small stones and grit removed before mixing. The mixture must be made to the consistency of putty and applied to the stock with the hands. It should be put on to at least an inch in thickness around the stock. If the hands are dipped in water occasionally this work can be finished off more effectually. Grafting wax prepared for use may be obtained cheaply from any seedsman.



of nice round even-sized fruit, about six to the pound—it is Sunrise. For greenhouse and frame culture, as well as treated in the open, it will seldom fail to please, and those who have not sown seeds yet might safely select it.

CALIFLOWER, AUTUMN GIANT.—To succeed the earlier variety that was mentioned last month seeds of the Autumn Giant might be sown soon in a box placed in a cold frame or greenhouse. They will turn in very usefully in late summer and early autumn.

LEERS. Early in the month a full sowing to be made. Plants resulting from this, with liberal culture, will be quite good enough for ordinary purposes; those who require "big bullies" for show will probably have plants a few inches high at this date. It would be a bright idea if the prize-winners were compelled to eat them for the edification of an admiring public.

PEAS.—Everybody's favourite vegetable, as they seem to be, must not be forgotten, and a pint or two may be safely committed to the earth during the month. If sown very early, or if the soil is of a sticky and retentive nature, one of the round-seeded sorts, such as Sangster's No. 1 Improved, which is very hardy and dwarf, might be wisely selected. The Pilot, too, is really good, and grows nearly twice as tall. Towards, or quite at, the end of the month Gradus is about the best; it carries a very weighty crop of fine big pods, and if it is decided to make only one sowing at this period it would be well to wait a little and depend on this. It will be ready about end of June or early July, according to soil and weather.

WHITE TURNIPS. Experienced growers of vegetables very often sow these between the drills of early peas because of the shelter afforded. If the ground is not in tip-top condition narrow openings might be made the depth of the spade, about fifteen inches apart, and a layer of good fat rotten manure put in, returning the soil or part of it again. Seeds of a small and quick sort, like Early Milan, can then be sown with every prospect of an early and welcome crop.

CELERY.—On a hotbed or in a warm greenhouse seeds of the pink and white varieties should be sown quite early in the month. Very often there is a temptation to sow small seeds like these too thickly; no greater mistake could be made, for when pricking-off time comes the delicate little plants must undergo much hardship in the process of singling, and such thread-like weaklings rarely fulfil expectations. Owing to the facility with which it can be blanched, a pinch of the variety known as White Plume might be put in too.

JERUSALEM ARTICHOKE.—In some way or other a supply of vegetables can be eked out during summer and autumn, even by the careless. It is usually in winter and spring that the famine takes place. This vegetable, if cultivated, will suffice to, in part anyhow, prevent this. There is a very fine white variety to be had, and it should always be given the preference, unless, indeed, it is found that pink suits one's complexion better. The white form is in every way much superior, and whole sets can be planted just now in drills, at least three feet apart, covering the tubers quite six inches, and given about one foot between each. It is an excellent vegetable, and comes into use at a scarce time.

The Vegetable Garden.

By J. G. TONER.

ROUND OR SUMMER SPINACH.—None of the other varieties can compare with this for quality, and where this is the first consideration strict attention must be given to successional sowings during the season so that a full supply may be had at all times. During a spell of hot, dry weather it needs no coaxing to show its flowers, and unless a later sown crop is just ready to take its place a most undesirable blank occurs. The first sowing can be properly made during this month, selecting a spot that is warm and rich. The drills are drawn about one foot apart and one inch deep. When the plants gain sufficient strength a severe thinning will serve materially in the production of big fleshy leaves, such as gardener, cook and consumer delight to see.

TOMATOES.—The most forward plants ought now be getting well established in three or four inch pots, and must not, above all things, be allowed to suffer for want of light. Hungry, thin and struggling excuses for tomato plants require more skill than the ordinary gardener possesses to enable them to give a first rate crop. In the matter of temperature it will be well to hasten slowly so that a strong and sturdy growth is maintained. With improving weather conditions they will come along quickly enough to please even the most impatient. There are, of course, an almost infinite number of varieties, and those who are conversant with them may be safely left to choose for themselves. It may, however, be of much benefit to others to name a choice and most dependable sort that produces bunches

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SWEET PEAS
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ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

APRIL
1911

A Holiday in the Alps.

By W. H. PAINE.



NEEDING some profitable holiday I set out to tour the Pyrenees Alps and to bag what was useful to our commercial horticulture at home. One beholds so much glorious beauty that the thoughts of profit fade from the mind.

As I arrived at Pau I saw the rugged outline of the snowy earth standing out in the setting sun. My thoughts wandered to the potent joy that awaited me amid the rilling waters of the lower Alpine streams to the arctic regions in the clouds above.

I first started my hunt for plants at Luz, and set out with a guide to lead my stony way to Cauterets. These mountains were pleasing to the lover of Alpine plants, and to make a journey in company with them over nature's rockeries is indeed a delight. Plants cringing beneath vast giants of stone or hanging for dear life from precipice above, sending forth garlands of jewel-like flowers in colours of deep tone and in careless ghost-like grace as if enjoying the pleasure of the present suns, without a thought of the dark days which would surely come, when the snow factors began their seasonable task!

Having spent the first day in surveying the prospects of various mountain tops I started out to the Lac de Gaube next day, to the mountains beyond.

Starting out at five o'clock I tramped with the guide, with my knapsack on my shoulder, my repast and wine within, to about 1,000 feet

below the Lac de Gaube, and from this spot we followed the stream which came from the pool above—which, by the way, is the largest highland lake in these parts; about 100 acres of water rests high up in the mountains within its rocky banks.

It was along the rushing stream which I have just mentioned that my quest began. About the most common plant to be seen was *Parnassia palustris*, which on every damp grass bank along the stream side gave a sheet of white that from a distance might be taken for snow. One of the first Alpine gems that cheered my way was *Soldanella alpina*, growing in the mossy cushions by the stream side, throwing forth its wee floral splendours and reflecting in the still pools which occur at intervals down the stream. It was curious to note that it never took up its abode near the splashing torrent, but reposed in the more peaceful corners. Another thing I noticed about this plant was that it grew most luxuriantly beside these pools, but did not seed; yet away above on the rocks which overhung the torrents, where the struggle for life was very keen, it was seeding in abundance. I suppose the water acted as the agent for distributing the seeds to the banks below.

In close association were *Pyrola rotundifolia*, *P. media*, *Primula glutinosa*, and *Ranunculus thora*. Of the latter two I brought home thousands. *Primula glutinosa* was a gem here, the colour being clear, and no suggestion of the chalky hues seen in the forms in commerce. It was growing in almost soilless grass which had overgrown the stream-side rocks.

Ranunculus thora was plentiful in roots, but flower was scarce. This plant sought deeper soils and slightly moraine formations. Further

up the stream were the *Gentianas*—*acaulis* was a carpet of colour, *verna* seemed to seek the longer grass at the shady side of the bushes, *rostani* was very small and was growing with *Trifolium alpinum*, and a purple-crimson form of *acaulis* was to be found at places in this small streamless valley which this family had made its home.

In fellowship with these was *Primula farinosa* in very wee shining dots, in the grassy green, which at first sight looked like a single crown

retusa, *S. oppositifolia pyrenaica*, and yet, higher on the overhanging rocks, *Saxifraga longifolia* and *S. Aizoon* in various forms were plentiful up this valley of snow towards Point Vignemale.

Close by we saw gems to cause other emotions, the Alpine rose, *Rhododendron hirsutum*, and *Saxifraga oppositifolia* now in endless forms and colours; *Primula viscosa* growing in healthy clumps, but in very wee form at this altitude. It was just coming into



"IN THAT CELESTIAL CALM."

of a silver saxifraga. The flowers of this plant were over, but by the seedpods one could see that another colour carpet had reigned in the earlier Alpine spring.

Just above this were the last of the pines, and under their sheltering influence were *Anemone alpina*, *Lilium pyrenaicum*, *Astrantia major*, *Anemone hepatica*, and various ferns. But we were too high for this class of herbage to continue, and we next came out at Lac de Gaube, and passing its barren shores we went up a long moraine valley beyond. *Campanula abietina*, *C. alpina* and *C. rotundifolia* were found below, and above, on the finer moraine was *Androsace pyrenaica*, *A. cylindrica*, *Saxifraga*

flower, and what a glorious colour up here! None of that washy tinge which so characterises it on the lower rocks.

Perhaps the most notable fact is that the succession of the different flowers were quite out of order to what we get dealt out to us by these same subjects under cultivation.

From this scene of study we returned homewards, and so finished that day's task with nine hilly miles to go, and with an overfull knapsack it was no easy outlook. So when I regained the beaten track I hired an ass to carry my person and portage.

Another day's work placed us up over 10,000 feet on Mont Perdu. The afternoon of this

day was spent in getting through the preliminary stages of our climb, and we rested in the mountain Serai for the night. We gathered dead pine branches to light our fire, but this was no light task, as at this height we were almost above tree life. However, we got the fire going, and soon laid down on some straw which other way-farers had used. Sleep came with pleasure in this keen air, and soon sealed our eyes with the aid of the glowing fire.

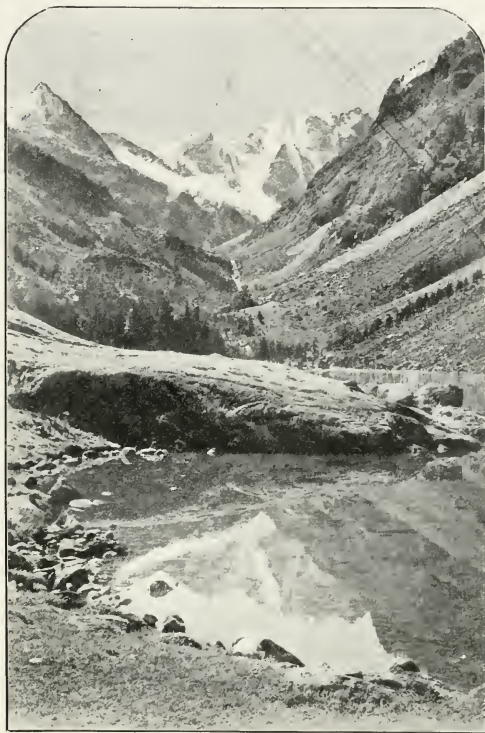
Early next morning we were awakened by another guide who had brought up our provisions for the day and to help in some of the more difficult climbs. So after breakfast we started in real earnest for Alpine plants.

We followed the mountain path for some distance, then suddenly made our way along a large ledge, which was a mass of *Lilium Martagon* and *Gentiana lutea*. Along this ledge the fight began. Before us was a large rock which barred our way, and after three-quarters of an hour scaling, all roped together, we came out on the top of this huge stone only to find a yet greater one before us, but beneath its overhanging walls were several things of real, live interest. *Primula viscosa* in all its refined splendour studded the sombre rocks, growing in long ribbons down the chinks in the rock; this was a sight which many an Alpine lover would go miles to see, and I stood in silent worship, for methinks that

nature does know how to plant for glorious effect.

Just a little further along the rock was a silky ribbon of water dashing down from the snows above. It dropped for 150 feet without interruption, and then dashed on a large projecting stone, and sprayed over the steep rocks

below. Being interested in what grew under the influence of this spray I descended by rope and found a mossy-like plant predominating, which might have been *Selaginella spinosa*. *Saxifraga aquatica* was flowering grand where the sunlight was excluded. *Parnassia* again was strong. *Pinguicula alpina* or *P. vulgaris* was there in thousands, but this meant a wet suit, which would have been a rather uncomfortable possession, so I left this to its peaceful repose, and returned on my upward tour. After some hard work passing from ledge to ledge, scaling backwards and forwards over the surface of the



LOOKING FROM LAC DE GAUBE TO POINT VIGNEMALE
(Note Moraines).

rock, I came upon *Saxifraga longifolia*, and very fine specimens they were, some of them being nearly a foot across, growing from the side of the rock in any place where the ages had injured the surface. Some of them were in flower, but I cannot say that these came up to many I have seen in cultivation; but then things are dwarfed up at this height.

Saxifraga was in evidence on any place which chanced to lodge any falling soil; also on the

various slopes was *Saxifraga Cotyledon*, sending forth garlands of dewy sprays.

There were many forms of this plant, some flowering with long conglomerated pyramids, others opening their flowers down in the crown, yet the flower itself was full sized. This latter form was particular to certain plants, and one wonders if cultivation will spoil its charm. They were growing in close association with their more pyramidal brethren.

Saxifraga aizoides was scarce, as was *S. aetioides*. Passing along a small stream I noted that *Silene acaulis* had there made its home. What fine cushions of green! what glorious patches of colour! It is a gem at home, and is master of the situation where it grows. Various saxifragas and dianthi were in possession along a sunny moraine, and the only plant of mossy saxifraga was seen on the opposite bank, which I think was *moschata*; and very unhappy it was, it probably came down from above with the falling rocks.

Away up the mountain side, amid the snowy slopes, was *Dryas octopetala*, and *Primula farinosa* and *P. glutinosa* were in abundance. Where it chanced to be more moist *P. integrifolia* or some form very similar was growing. *Ranunculus thora* was flowering here in very fine style. On the cliff above I found a solitary plant of *Primula minima*, with one of its fairy-like flowers hanging over as if watching my work of destruction at a fine plant of *P. viscosa alba*. But we were at the top of our climb, and around us was the ever persistent *Parnassia palustris*. *Dryas* again was plentiful, and while wandering around looking at the snowy giants before us *Saxifraga pygmaea* gave us the last signs of the weary struggle for life.

As I stood and surveyed in that celestial calm, where the din of commerce had no meaning and the human voice seldom defiled, I saw below the rugged pillars of rock the scene of inert life, the home of many a gem—and I listened! From below came the sound of rushing waters, subdued by distance but refined in their charm, still rolling on and on, making deeper dales and higher hills, carrying with them the memories of their rugged cradle of birth.

“To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language.” —*Flemwell*.

Flowering Shrubs.

By F. W. MOORE, M.A.

THE articles on flowering shrubs which appeared in the issues of IRISH GARDENING for January, February, and March represent a series of notes taken twice each month during the year 1909. They will serve as a guide to intending planters who require general information as to the best shrubs in flower at each season of the year. The present list was made in connection with these notes, and contains the names of all the shrubs noted in flower in the Royal Botanic Gardens, Glasnevin, in 1909. Such a list made in any one year must necessarily be more or less incomplete, as some shrubs may have been passed over and others may not have flowered. It is, however, sufficiently comprehensive and complete, and will, I trust, be found useful for the purpose for which it was prepared. Owing to the length of this list it was obviously undesirable to incorporate it with the general text of the article: hence it is now published separately.

Flowering Shrubs	Month
<i>Abelia floribunda</i>	July and August
„ <i>rupestris</i>	July, Aug., Sept. and Oct.
„ <i>triflora</i>	June and July
<i>Aethionema grandiflora</i>	June
<i>Anelanchier alnifolia</i>	May
„ <i>canadensis</i>	April and May
„ <i>vulgaris</i>	May
<i>Amygdalus communis</i>	March and April
„ „ <i>fl. pl.</i>	March and April
<i>Andromeda floribunda</i>	April
„ <i>formosa</i>	April and May
„ <i>laxiflora</i>	April and May
Apples	May
<i>Arbutus</i>	Oct. to Feb.
<i>Azalea ledifolia</i>	June
„ <i>mollis</i>	June
„ <i>viscosum</i>	June
„ <i>hybrids</i>	June
<i>Azara microphylla</i>	Feb. and March
<i>Berberis aquifolium</i>	Feb., March and April
„ „ <i>varieties</i>	April
„ <i>darwinii</i>	April and May
„ <i>diaphana</i>	June
„ <i>dulcis</i>	June
„ <i>empetrifolia</i>	May
„ <i>gracilis</i>	June
„ <i>reflexa</i>	April and May
„ <i>stenophylla</i>	April and May
„ <i>Thunbergii</i>	April and May
„ <i>vulgaris</i>	June
„ <i>Wallichiana</i>	May and June
Brooms, various	May and June
<i>Buddleia Veitchiana</i>	Aug. and Sept.
„ <i>others</i>	Aug. and Sept.
<i>Caragana arborescens</i>	May and June
„ <i>Chamlagu</i>	June
<i>Carpentaria californica</i>	June and July
<i>Caryopteris mastacanthus</i>	October
<i>Cassandra caliculata</i>	March and April
<i>Cassiope tetragona</i>	April
<i>Ceanothus Croix du Sud</i>	July to Sept.
„ <i>Gloire des Plantiers</i>	Aug. and Sept.

Flowering Shrubs	Month	Flowering Shrubs	Month
Ceanothus Indigo	Aug. and Sept.	Erica carnea alba	Jan., Feb., and March
" Leon Simon	Aug. and Sept.	" hybrida	Feb., March, and April
" Pallidus	Aug. and Sept.	" intermedia	Feb. and March
" rigidus	April and May	" lusitanica	April and May
" Veitchianus	May and June	" maweana	November
Cercis siliquastrum	June	" mediterranea	March, April, and May
Chestnuts, white and pink	May and June	" " alba	Feb., March and April
Chimonanthus fragrans	Dec., Jan., and Feb.	" ramulosa	Aug. and Sept.
Choisya ternata	June and July	" stricta	Sept. and Oct.
Cistus florentinus	June and July	" vagans	Aug., Sept., and Oct.
" other species	June and July	" vagans alba	Aug., Sept., and Oct.
Clematis aromatica	September	" Veitchii	March
" calycina	March, April, and May	Escallonia exoniensis	June and July
" campanulata nana	September	" Langleyensis	June and July
" montana	June	" macrantha	June and July
" " rubens	June	" montevidense	October
" viticella, section	Aug. and Sept.	Euonymus europæus	May
Clerodendron fetidum	October	Eupatorium Weinmannianum	Aug. and Sept.
Colutea arborescens	Aug., Sept., Oct., and Nov.	Eurybia Gunniana	June and July
" cruenta	Sept. and Oct.	" parviflora	Aug. and Sept.
Convolvulus cneorum	June and July	Exochorda grandiflora	April
Cornus officinalis	Feb. and March	Fabiana imbricata	June and July
" stolonifera	June	Forsythia Fortunei	April
Coronilla emeroides	Sept. and Oct.	" intermedia	March
" emerus	April, May, and June	" suspensa	March and April
" " glauca	June and July	Fuchsia	June, July, Aug., and Sept.
Corylus avelana	Feb. and March	Fuchsia conica	August
Cotoneaster horizontalis	June	" gracilis	Aug. to Oct.
" microphylla	June	" macrostemma	September
Crataegus Heldreichii	May	" Ricartoni	September
" Lalandi	June and July	" reflexa	Oct. to Dec.
" Oxyacantha varieties	June	Garrya elliptica	Jan. and Feb.
Cydonia japonica and varieties	Feb. to June	Genista atheniensis	Aug. and Sept.
Cytisus albus	May and June	" anglica	April and May
" andreas	May and June	" hispanica	March, April, and May
" Beani	May and June	" pilosa	June
" biflorus	May and June	" scariosa	November
" incarnatus	May and June	" tinctoria fl. pl.	Aug. and Sept.
" Kewensis	May and June	" triquetra	August
" Laburnum	June	" umbellata	March and April
" Monspensulanus	May to August	Hamamelis arborea	Feb. and March
" præcox	May and June	" mollis	Dec., Jan., and Feb.
" purgans	May and June	Hawthorn, white and red	June
" nigricans	Aug. and Sept.	Helianthemum "Brilliant"	June
" purpureus	June	" " in varieties	June
" " albus	June	Hibiscus syriacus	Sept. and Oct.
" scoparius	May and June	" " in varieties	Sept. and Oct.
Dabecia polifolia	September	Hydrangea japonica	Aug. and Sept.
" " alba	September	" stellata	Sept. and Oct.
Daphne blagayana	Feb. and March	" hortensis	October
" Cneorum	June	Hypericum androsaemum	September
" Laureola	April and May	" aureum	September
" mezereum	Feb. and March	" calycinum	August
" " album	Feb. and March	" elatum	September
" oleoides	June	" hircinum	September
Deutzia crenata	June and July	" oblongifolium	September
" gracilis campanulata	June and July	" patulum	September
" venusta	June and July	" " var. Henryi	September
" Lemoinei	June and July	" triflorum	September
" scabra and varieties	June and July	" uralum	September
Elaeagnus multiflora	June		
Elder	June		
Erica arborea	March, April and May		
" carnea	Feb., March, and April		

(To be concluded next month).

Shrubs for Shady Places and for Growing under Trees.

By J. W. BESANT, Botanic Gardens, Glasnevin.

TO the amateur it is often a difficulty to know what plants will grow well in shade or endure the shade and drip

from large trees. It is particularly important

in small gardens that no space should be wasted. Thus, if some portion of the garden is shaded by trees, high walls or buildings, an effort must be made to discover plants which will grow under such conditions. It has been repeatedly pointed out that before planting at all steps must be taken to render the ground in the best possible condition to receive the plants. Where the planting is to be done under trees some difficulty may be encountered, due to meeting with large roots. A few of these may be cut through without serious injury to the trees, but as a rule, in the case of large trees, the stronger roots will be out of reach of the

spade, particularly as it is much preferable to plant small, well-rooted specimens rather than large plants, the chances of ultimate success

being much greater. It is always advisable to add fresh soil when operating under trees, as a good start means half the battle. In the absence of trees the ground may be treated as advised in previous notes.

Taking first those shrubs which have been particularly noticed as doing well under trees, *Euonymus radicans* at once commends itself. This is a prostrate creeping species bearing

small, dark-green leaves, and requiring no great depth of soil to grow in, and will soon form a dense undergrowth. There are several varieties worthy of attention, notably *Silver Gem*, a wonderfully bright form, which makes a fine effect when associated with the green form. *Euonymus japonicus*, an upright growing species, is also a good shade plant, and eminently useful where a taller subject is required. Notice should also be made of *Euonymus radicans Carrieri*, a robust form with larger leaves than the type, and attaining a height of two feet or more. Equally useful is *Berberis aquifolium*, better known as "*Mahonia*." This, however,



"FORMING THE HEAD" OF AN APPLE TREE

From a photo specially taken to illustrate Mr. Hammond's article on Pruning, p. 8).

is rather more difficult to establish. Only small plants should be planted, as large plants are notoriously impatient of root disturbance,

usually taking a long time to recover, if they do so at all. Small plants, firm planting, and well watering afterwards are essentials to success.

Ruscus aculeatus, better known as Butcher's Broom, is well known and popular as a shade bearer. It is a useful plant for rough ground, spreading by root suckers, and will stand a great deal of abuse. For growing under trees

perhaps the most frequently met with shrubby plant is ivy. For large places where there are many trees ivy is useful, growing quickly in the poorest soil, but for small gardens there are better plants less apt to find their way where not wanted. In very smoky towns, however, where it is difficult to get anything to grow, ivy is often welcome.

One of the best shrubs for withstanding smoke, shade, and drip from trees is the well-known *acubia*, which will flourish in the most uncongenial surroundings. The variegated variety is most frequently met with, but the green-leaved form is a handsome evergreen, while there are varieties with long, narrow leaves, and others with broader leaves, all forming an extremely useful set of evergreen shrubs.

The common periwinkle, *Vinca minor*, and

the stronger-growing species, *V. major*, are useful low-growing subjects for undergrowth, producing pretty blue flowers in summer. *Gaultheria Shallon* is a beautiful dwarf evergreen, producing racemes of pinkish bell-shaped flowers. It flourishes in shady places in light soil, but languishes where there is much lime present. Of deciduous shrubs for undergrowth we have a useful plant in the com-

mon elder and its varieties. These grow vigorously in smoky districts, and are useful in large parks. Discrimination must be used in small gardens, however, as a good deal of hard cutting back in spring will be found necessary where space is limited. Privet, too, in several forms makes useful undergrowth, and will thrive in very indifferent soil. Very useful deciduous flowering shrubs for shady places are some of the stronger-growing hypericums. The species *H. elatum*, *H. hircinum*, *H. uralum*, and the dwarf-spreading *H. calycinum* will be found most suitable. The latter is an evergreen species and a useful plant for dry places.



"FORMING THE HEAD" OF A PLUM TREE

(From a photo specially taken to illustrate Mr. Hammond's article on Pruning, p. 21.)

The majority of the shrubs mentioned above may be planted early this month, treating according to directions given in previous notes.

The Sweet Violet.

By COLIN RESE, Lambay Island, Rush, Co. Dublin.

THE violet is popular with all classes of the community. Various methods of culture are adopted by growers. In some parts of the country the plants grow with a healthy luxuriance, in other districts a thorough and careful system of culture is necessary to produce anything like good returns. At this season many growers are making preparations for increasing their stock. The following method of the propagating and culture of the plants has proved successful with the writer:—The old plants are dug up and pulled to pieces, and the best of the outside crowns are selected for planting, the centre of the old plants being useless. A piece of land which has been well trenched during the winter should be selected for the purpose of growing the plants during the summer months. Now, as to the selection of the site, much diversity of opinion occurs, and this is a matter which is best determined on the spot. Much depends on climate, soil, and local conditions. The violet is naturally a shade-loving plant; therefore to plant on a gravel or chalk soil in full sunshine courts disaster. On the other hand, on wet clayey soil a south border will suit the plants. If a site can be secured where the plants receive partial shade, such as that afforded by tall trees, this forms an ideal quarter for the summer growth of the violet. Supposing that the surface of the land was left rough and uneven (as it should be) at the time of trenching it will now be necessary to break down the surface by means of the fork. A layer of leaf-soil lightly forked is beneficial, also a sprinkling of soot. Plant the selected crowns in rows fifteen inches apart, leaving twelve inches between the plants in the row. Make the soil quite firm about the roots. Should the weather be dry, afford a watering to the plants. During the season stir the soil frequently with the Dutch hoe. Should a spell of hot, dry weather be experienced during the summer the plants are greatly assisted by being sprayed overhead in the evening. All runners should be removed as soon as they appear.

The plants must never be allowed to suffer from drought. On dry soils a mulch of well-decayed manure or leaf-soil is beneficial. Should red-spider put in an appearance, dust the plants

with a mixture of soot and lime. Do this before the pest gains a stronghold.

For the production of flowers during the winter frame-culture is resorted to by the best growers. Shallow frames placed over the plants as they are is a plan adopted by some, while many lift the plants, replanting them in prepared beds under the frames. A good plan where quantities of leaves are available is to make a firm bed of these about three feet in height. Place the frames on the leaves and fill them with soil. Suitable soil consists of a sandy loam; heavy soil should not be used in the frames. I have frequently used old potting soil with excellent results. Make the soil quite firm. When the plants are in position their leaves should be near the glass of the lights. No set distance can be given for planting in the frames. In some districts the plants will be much larger than in others, and consequently require more room; then again some varieties make much stronger foliage than do others. As a guide, three clear inches should be left between the outside leaves of the plants. If too crowded, damping of both flowers and foliage is likely to ensue. Give a good watering through a fine-rosed watering pot to settle the soil about the roots of the plants. The lights, which should be thoroughly clean, should be placed in position, and remain on for several days until the plants are somewhat established. They should not, however, remain closed down, a chink of air must be admitted. After this give abundance of air on all favourable occasions. On all fine days, when there is no fear of danger from frost, the lights should be entirely removed. Remove all decaying foliage, and stir the soil frequently by the aid of a stick. A little soot stirred into the soil occasionally during the winter months acts both as a fertiliser and as a deterrent to slugs. Very little water will be required during the winter. When it is necessary to apply water do so in the morning or a fine day, so that the foliage has time to dry before evening. The violet can be grown as a pot plant, and when so treated forms a charming subject. The well known Marie Louise is perhaps the best variety for this purpose. The summer treatment is the same as advised above. In the month of September the plants are carefully lifted and placed in pots, which are just large enough to accommodate their roots with the addition of a little fresh soil. The added

soil may be taken from the border in which the plants have been growing. This is better than using new heavy loam, as is sometimes done. The roots require a compost in which they can ramify freely. Pot moderately firm, using clean, well-drained pots. Arrange the plants in a frame or a cool greenhouse near the glass. In no case place them in a heated structure. The violet is impatient of coddling. Water the plants with care, and give them abundance of air and light. As the pots become filled with roots, a pinch of some approved fertiliser will be found beneficial. Never attempt to propagate from an unhealthy stock. The violet disease is incurable, all plants attacked by it should be burnt, and the new plants grown on entirely fresh soil.

Varieties are numerous, a few of the best are doubles—Marie Louise, lavender blue; Mrs. J. J. Astor, rosy-heliotrope; Lady Hume Campbell, rich blue; Comte Brazza, pure white; Singles, California, violet-purple; La France, metallic-blue; Princess of Wales, blue, very large flowers, long foot-stalks; White Czar, snow-white, very large. The three best for general cultivation I have found to be Marie Louise, Princess of Wales, and Comte Brazza.

Pruning Small Fruit.

By FRED. W. HAMMOND.

THERE is so much difference in the method to be employed in pruning red and white currants on the one hand and black on the other that they must be dealt with entirely separately, and I shall consider in the first place the former.

Following the principle I enunciated in the preceding articles, the first thing to consider is—On what class of wood is the most and best fruit borne in the case of red and white currants? A careful study will reveal that it is on spurs on all the wood from two years old and upwards, but that the greatest quantity is to be found growing from the older spurs, five to ten years old, perhaps more. Another fact we shall notice is that clustered at the base of all the lateral shoots up the limbs of the tree are to be found several fruit buds.

The system which is universally adopted is to spur in all these laterals except where they are required for filling space in the natural exten-

sion of the tree. It is practically the same system that one adopts with the vine, except that one has a number of "rods" instead of a single one. There is much to be said for it—that a considerable amount of good-sized fruit can be grown, that the fruit has probably the best possible chance to get well coloured and ripened, and also that the shape of the tree is always under control and lends itself to extension almost indefinitely without becoming unmanageable. Such reasons are weighty enough to outweigh any consideration which may arise, that the system is absolutely unnatural and opposed to all the natural growth and habit of the tree. Before particularly describing the method it will be best to point out the aim—that is, to train the tree in a cup shape, so that all the branches are equally exposed to light and air, and to continually extend the branches and furnish new ones as the widening spaces between them permit.

Red currants are the easiest of the bush fruits to strike from cuttings, and generally make very good trees at one year old furnished with three or four shoots twelve to eighteen inches long. At the first pruning these should be shortened to about four to five inches, cutting always to a bud pointing outwards.

The following season these shoots will have probably made two or three shoots each stronger than those of the previous year, one from the terminal bud following the direction of the shoot called the leader, and one or two laterals.

Most of these laterals must be cut to within about half an inch of the base—that is, spurred in—except where any one will fill a blank space between the previous year's shoots. Such shoot, as well as the leaders, should be shortened, roughly, to about a third of the length.

The next year several more shoots will be produced, the leaders, two or three on laterals, the previous year's growth, and some from the spurs on the year older wood.

The leaders should again be shortened, and the laterals spurred in, unless required to make a new branch, in the same way, care being taken to spur in as close as possible without cutting away the fruit buds round the base of the shoot.

Beyond the necessity of cutting to an outward bud, and shortening them sufficiently, there is not much to consider with regard to the leaders; but whenever there is sufficient space, one of

the laterals should be laid in to form a fresh branch, cutting to a bud right or left, as the direction the shoot is desired may require.

The question as to the exact point to shorten the leaders to is a matter in which the pruner's experience must guide him.

The aim is to cause all the buds, if possible, to break into fruit or medium-strength wood, and not into very strong gross wood, since spurs produced on cutting these take several years to settle down into fruit, gross shoots being grown year after year.

If the latter result follows the pruning, then more length must be allowed on the leaders; but if the buds do not break sufficiently, the leaders must be shortened a little more severely.

For red currant pruning, a knife with a fairly small but keen blade is needed, and the pruner should have a quick, accurate eye and hand, that the spurring-in should be properly and expeditiously performed, since there is only about a quarter of an inch margin between a too short or too long spur on a properly pruned tree, and an error in the first named way may mean the loss of a lot of fruit if it is very frequent.

The best method is to take hold of the leader firmly with the left hand, in order to steady the branch, and start cutting from the middle of the tree, working outwards, spurring in everything on that branch on the way, and shortening the leader last.

Just at the base of the leader each year will be found a little snag, caused by the bud growing away a trifle below the point to which the leader was shortened the previous year.

For many years I have made it my practice to cut this off on shortening the leader, since there is frequently to be found there a dirty white maggot, the larva of the clear wing moth, which does such a lot of damage in red currants.

I have cut through hundreds of these maggots, and thus saved the trees from the danger of infestation by following this simple practice.

White currants are pruned in precisely the same manner as red, the only difference being that they are much less vigorous in growth.

Black currants, on the other hand, must be pruned in an entirely different manner. The fruit in this case is borne almost entirely on the young wood up to about three years old, to a very little extent on much older wood, while with regard to size of fruit that on the younger wood is pre-eminently the best.

If we examine a tree we shall notice that less and less quantity of young wood is produced the older the branch becomes, and that the vigorous young shoots are to be found springing either from the base of the tree or fairly close to it.

The system adopted is to grow the trees in the form of stools and to cut branches right out down to the ground as they become old and unfruitful.

The young trees, which should be two or three years old when received from the nursery, will consist of three or four shoots, eighteen to twenty-four inches long, on a very short stem. They should be planted deeply, so that the base of the shoots is covered by the soil.

The pruning the first year will consist in cutting the whole of the shoots right down to the ground, leaving just an inch or so above the surface. The next winter there will probably be found five shoots of equal strength or stronger than the first, and these should be reduced to two or three by again cutting the others to the ground, selecting the best in point of size and situation for survivors, but on no account must these be shortened at all.

After another year there will probably be another four or five shoots from the bottom in addition to those left to fruit, which will have extended.

Again, a couple of these must be cut away at the bottom in order to force the tree to continually throw up these strong shoots, again selecting for the purpose those least required.

So the process goes on until some of the original branches become old and black, when they should be cut down right to the bottom or to some vigorous growing shoot, preferably the former, for the reason just enunciated, to cause the growth of young shoots from the bottom.

Young wood should never be cut or shortened except under the circumstances described above, the old wood always being removed in favour of the young, particularly the outside straggling branches, which by reason of the fruit they have borne have been pulled outwards, and which should be removed to keep the tree in fair shape and within bounds. The practice with established trees therefore resolves itself into the cutting out of the older blacker wood, shortening to young growths, and in a few cases cutting right out to the bottom, to induce the tree to throw up young vigorous shoots to form new branches.

Beginner's Vegetable Garden.

THERE are certain things a beginner ought to know in order to attain success in vegetable growing.

1. **ABOUT THE SOIL.**—The character of the soil is of first importance. As the soil is the permanent home of the root it must be made suitable for a root to live in. The root must be given a free run, therefore the soil must be deeply tilled and well pulverised. The root must have air, therefore the soil must be well drained. The root must be fed, therefore the soil must contain readily available foods. A store of soil water is essential. But it must be remembered that loose water (that is, water that would run through if the soil is drained) is not only useless but actually harmful to roots of cultivated plants. The water taken up by the roots is the water that clings to the particles of soil, hence it follows that the finer the soil is worked the greater is its power to hold water. This is a further reason for good drainage and thorough tillage of a vegetable garden.

2. **HOW MUCH SEED TO PURCHASE.**—An ounce of good seed of beet will sow a 30-foot drill; of carrot, parsley, and spinach, 80 feet; of parsnip, radish, and cress, 100 feet; of turnip, 100 feet; and of onion, 200 feet. One quart of broad beans will sow about 80 feet; French beans and early peas, 100 feet; and marrowfat peas, 140 feet. It is calculated that one ounce of cabbage or other brassica seed will produce about 1,500 to 2,000 plants. Sow only the best seed and seed saved from the best strains of recognised good varieties. It is always safest to buy from established and responsible firms of seedsmen. The difference in price will be handsomely compensated by the greater value of the yield.

3. **WHEN TO SOW.**—Some plants are very hardy and can be sown quite early in the year. Parsnips, broad beans, early peas, Brussels sprouts, leek, spring onions, and spinach may be sown in March; beet, kale, broccoli, carrot, summer cabbage, savoy, French beans, and most herbs in April, and scarlet runner beans and late peas in May. These times give the earliest dates, but to secure succession in supply later sowings will be necessary—as, for example, spinach may be sown from March to August. Tender vegetables must not be sown until all danger of frost is over, but if they are wanted earlier a month or so may be gained by raising the seedling in a hot-bed, and then planting out at about the time out-of-door sowing of the same vegetable would be done.

4. **GROWING SPACE REQUIRED BY EACH PLANT.**—This is a most important particular, as unless

each plant is given sufficient room to develop, and with a chance of getting its fair share of sunlight, you will fail to get the best results. Peas are usually sown too thickly. If there are two or three inches (according to height) between the plants, and the distance between the rows equal to about the height of the plants good results ought to be obtained. Crops of lettuce, &c., may be grown between the rows. Broad beans may be planted six inches apart, and scarlet runners even a foot apart with advantage. Carrots, beetroot and turnips nine inches, and parsnips twelve inches apart, with a few inches wider space between the rows. Celery plants will require the same distance between each individual in the row, but of course a wider distance between (about four feet) to allow for trenching. Catch crops of quick-growing vegetables may be planted between. Cabbages should be given from one to two feet between, according to size, with about a third more distance between the rows. Broccoli, Brussels sprouts and cauliflowers will require slightly more space to develop. Leeks may be planted one foot apart, with two feet between the rows. An average for potatoes would be one foot by thirty inches. A vegetable marrow will require about fifteen square yards to sprawl over.

5. **ROTATION OF CROPS.**—Different kinds of crops draw their food supply not only from different levels of soil, but require the various kinds of food in different proportions. Moreover, the numerous soil pests confine their attacks to special groups of plants. Club-root, for example, will only attack crucifers. It is therefore the best garden practice to alter the crops. The following groups include crop plants of similar physiological characters. No crops belonging to the same group should immediately succeed one another. (i.) *Cruciferous Crops.*—Examples: Cabbage, cauliflower, and other brassica, turnip, radishes, seakale, &c. (ii.) *Leguminous.*—Deep-rooting and producing nitrogen-gathering nodules.—Examples: Peas, beans, scarlet runners, &c. (iii.) *Composite-flowered.*—Lettuce, Jerusalem artichoke, &c. (iv.) *Umbelliferous.*—Deep-rooted.—Examples: Carrot, parsnip, celery, parsley, &c. (v.) *Liliaceous.*—Onion, leek, shallot, asparagus, &c.

6. **GENERAL HINTS.**—Run your rows north and south, so that the sun can shine along both sides of the row. Plant the taller vegetables if possible on the north side of the plot so that their shadows will not be cast over their shorter neighbours. Use the driest and warmest part for early sown vegetables. Make constant use of the hoe. It will keep the soil healthy and prevent weeds.



The Development of British Forestry.

MANY of the readers of IRISH GARDENING know Mr. Forbes—the head of the Irish Forest Service—and will therefore read, with added interest, this his recent book.*

The name is, perhaps, a little misleading. One might be led to suppose that it was a description of the gradual inception and organisation and development and improvement and perfecting of our British forestry system out of the original chaos in which it cruelly weltered. Mr. Forbes describes, in a very interesting first chapter, the original chaos, but we look in vain for any account of the ultimate perfected development, and possibly the reason for this is that it has not occurred yet. Mr. Forbes describes how the first dawnings of history discover all countries in the temperate zones covered with far-reaching forests in which the savage inhabitants hunted to secure themselves food, and to which they fled *en bloc* in time of tribal danger. In those far off times the forests were regarded with a friendly eye, but as by degrees life and property became more secure, people acquired fixed residences in groups and villages, and began to depend on their flocks and herds for sustenance and support instead of on their bow and spear. Then, naturally, the forest began to be looked upon as occupying land that would be more profitable as pasture, and, further, it harboured rogues and outlaws. The respectable people now had houses of their own, so that it was meritorious to clear it. Not only so, but it is well known that excessive grazing of cattle will ultimately obliterate whole forest tracts. The seedling trees are eaten as fast as they grow. The woods become more and more open through the decay and fall of mature trees; great gaps are opened by wind, and turn into grass, and in time the forest is one only in name.

Then comes another swing of the pendulum. A rapidly growing rural population, with increasing needs for timber for fuel and building, begin to realise the value of the woods they have so ruthlessly destroyed. Timber becomes a merchantable article and tracts of timber sources of possible profit to be safeguarded and utilised to the advantage of the owner. This would bring us down to about the thirteenth century, and from this date we find the first laws restricting grazing and indiscriminate cutting. Still things, at any rate in the British Isles, hardly mended until the sixteenth and seventeenth centuries, when it began to be recognised that the necessary supply of timber could only be secured by fencing wooded areas against cattle and trespass, and putting them under some system of management. Hence our first sylvicultural efforts. At this time there were large forest areas in the hands of the Crown, but with the want of forethought so strikingly indigenous in England, these were almost all distributed among private owners from the time of Henry VIII. to Charles II. The great church and monastic lands and woods went too until a mere fragment was left in other

than private hands. And to quote the author's own words—"While this destructive process was going on here the more advanced nationalities abroad, such as France, Switzerland, the German States, &c., were inaugurating a system of scientific forestry which gradually extended from the state, church, and communal forests to the private woods, and resulted in a definite recognition of the fact that forests were the heritage of the nation, producers of one of the chief necessities of industrial development, and could not be neglected or destroyed at the whim or pleasure of the individuals who happened to possess them for the time being."

So far Mr. Forbes brings us historically, and to our disappointment stops. We should have liked to hear from him of the great planting movement which took place from 1750 to 1850, and during which, practically, all our Irish demesnes were laid out and planted, and some of our hill sides—for instance, the slopes of the Galtees in Tipperary were practically afforested. Most of us know how again the pendulum swung with the Land Acts, and agitation and — we are where we are.

Mr. Forbes then goes into the problem of the world's timber supply, and displays great knowledge of the subject, and research, in his handling of it. His conclusions are more sanguine than those of most writers on the subject, but still he admits that a heavy rise in prices is probably inevitable, and he is emphatic that it is of the utmost importance that Great Britain and Ireland should produce as much as possible of the immense quantities of timber they use. His difficulty, however, is to secure lands upon which timber can be profitably grown, as he makes the rather sweeping assertion that it is only upon agricultural land that first or second class timber can be grown in Britain. This is surely untenable, and he contradicts it himself later on (page 125). He is certainly right in eliminating from possible planting grounds the deep red bogs, and everything above the 1,000 feet line, except, perhaps, occasional favoured spots, but there is a considerable margin between the two.

A. E. MOERAN.

(To be concluded.)

BEEES IN RELATION TO POLLINATION.

THAT bees are really essential to the formation of fruit is generally recognised, but at the same time there are few recorded experiments that actually demonstrate the fact. Mr. W. B. Little, the Horticultural Instructor at the Armstrong College, Newcastle-on-Tyne, places on record, in the March number of the "Journal of the (English) Board of Agriculture," a series of interesting and conclusive experiments on this important subject. He experimented upon apples, black and red currants, and gooseberries. The method adopted was to enclose either the whole plant in the case of bush fruit or particular branches in the case of trees in a protecting covering of wire netting and muslin during the whole natural period of pollination. The result in each case was that no fruit was produced, but instead a luxuriant growth of shoots. Control plants to which insects had free access abundance of fruit was produced.

* "The Development of British Forestry." London: Arnold. Price 10s. 6d. net.

Gladiolus as a Border Plant.

A GROUP of gladiolus in flower is one of the most striking objects in the herbaceous border.

Their sword-like leaves and gorgeous one-sided spikes of brilliantly coloured flowers give quite

semi-tropical appearance to the garden. As they are natives of a much warmer country than our own the corms are lifted in the autumn and replanted in spring, the present month being a fairly suitable time for the operation. It is a general rule that plants with bulbs or corms prefer a well-drained soil, stagnant water being particularly distasteful to them. It has been observed that any soil suitable for roses or strawberries will also be suitable for gladioli. Although they thrive best in a fairly rich soil, yet care must be taken not to let the corms come into direct contact with manure. If manure is needed it must be buried several inches below the level of the planted corm.

There are about ninety species of gladiolus known to botanists, and the majority of these are found in a wild state in South Africa. But these natural species are hardly ever now grown in gardens, as they have been displaced by hybrids. These hybrid gladioli not only produce larger, more numerous, and more brighter coloured flowers, but they are hardier in constitution and the flowering period more extended than in the wild races from which they evolved under the controlling influence of the hybridiser.

The most popular hybrid type is that known as *Grandavensis* or Ghent Gladiolus, of which an enormous number of varieties have been produced by nurserymen. I cannot give the exact number, but there have been quite as many as three hundred named varieties offered from time to time. The flowers are of various shades and admixtures of white, cream, rose, crimson, yellow, orange, salmon-red, pink, purple, lilac, maroon, &c. Another well-known type is *Brenchleyensis*. It is closely allied to *Grandavensis*, but its flowers are earlier and not so heavy on the rachis, therefore it is not so necessary to stake. A stately spike of this type of flower photographed from a

specimen grown by a successful exhibitor at Irish horticultural shows is here represented.

The hybrid *Childsii* is very free flowering, the spike often breaking into three or four branches. For colour they are matchless.

Another beautiful hybrid is that of the *Colvillei* type. It is useful for massing in borders, good for cut flowers and excellent for indoor pot culture. The well-known gladiolus *The Bride* is a variety of this class.

We notice that a writer in *Country Life* recommends for borders the planting of the large-flowered, pure white phlox, Mrs. Jenkins, with large-sized corms of the scarlet-flowered gladiolus *Brenchleyensis* inserted between the phloxes. The exact spacing suggested being phlox three feet apart with gladiolus between, keeping the latter nine inches away from one another. This will secure a very striking effect from about the middle of August until well on into September. A top-dressing of manure will help the plants considerably, while frequent applications of liquid manure (with a little soot added) so soon as flower the buds appear will contribute to an effective display of bloom.

Some growers plant the corms entire, while others treat them as gardeners frequently treat potato sets. They cut them, taking care of course to have at least one "eye" or bud to each set. To secure against rotting or other mischance the cut surface is covered with powdered charcoal before planting.

When the plants are lifted in October each corm will show a number of tiny corms, the whole being known as "the spawn." These should be removed and stored until next April, when they may be planted in drills. They must not be allowed to flower the first year, the object being to induce them to form well-stored corms. The corms are, of course, lifted in the autumn and planted out in the following spring. They will flower well the second year. In planting gladioli, especially in heavy soils, it will be necessary to put a layer of sand about an inch in depth along the bottom of the trench. The corms are then pressed into the sand and covered with more sand. This will be of great benefit to the plants.



GLADIOLUS "HOLLANDIA."

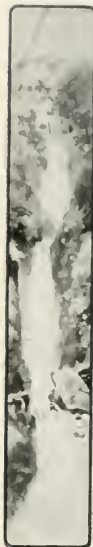
Handsome spike of the Summer-flowering Gladiolus "Hollandia" of the *Brenchleyensis* type. Colour a most delicate pink, inclined to pale primrose.

(Photographed from a specimen grown by Mr. Jones in his Kilkenny Nursery.)

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Breenstown, Cabinteely, Co. Dublin.



THE variations of temperature during April are still very great. A summer temperature during the day is very often followed by a severe frost at night. April fairly lands us amidst the glories of spring with wreaths of the rainbow and carpets of green. It is a very busy month for gardeners; in every department work awaits us on every hand and taxes our abilities to attend to all our subjects.

SEED SOWING.—All seeds intended to flower during the summer and autumn should now be sown. Where hardy annuals are extensively grown another sowing should now be made where they are intended to bloom. Half hardy annuals may be sown out doors on warm borders. Mignonette, poppies (of which I think the Sherley the most lovely and can now be had in separate colours), stocks, asters, *Linum rubrum*, *godetia*, nasturtiums, candytuft, *clarkia*, larkspurs, *malope*, *nigella*, &c., may all be sown where intended to bloom.

Perennials and biennials may still be transplanted, especially the most fibrous-rooted plants, which generally lift with

plenty of soil attached to the roots, those subjects may still be increased by divisions or off-shoots, taking care to water well after moving.

Carnations should be gone over and firmed in the ground, any failures made good; a top-dressing of soot will help them very much. Carnation seed may be sown in pans, and placed in heat until they germinate, when they should be removed to a cold frame, giving them plenty of air and light.

Hollyhocks grown in pots during the winter should now be planted out in clumps or singly in deeply dug rich soil. Cuttings of choice sorts are more tender than seedlings, and will require more attention as to watering and shading for some time until they become established. Seeds sown now will flower late in the autumn.

Auriculas will now be in bloom, and heavy trusses will require neat stakes. Seeds should now be sown in pans or boxes in gentle heat.

Dahlia roots may now be planted out in deeply dug soil, with plenty of well-rotted manure beneath them. This will retain the moisture during the warm months, and prevent the plants getting a check through drought. Bear in mind the best flowers are to be had off plants from cuttings.

Sweet peas should be sown for late flowering; if some be sown in pots they can be dotted about the border where required.

Roses—All pruning should be finished early this

month. A continuous watch must be kept for mildew, and as prevention is better than cure they should be sprayed twice a week with some mildew specific. Sulphide of potassium is very good but for the ugly marks it leaves on the foliage. Look out for caterpillars; where a leaf is curled there is sure to be a caterpillar inside. The beds should be lightly forked after some good fertilizer has been applied and generally tidied up and made to look as fresh as possible. This is a good time to move most of the bamboos; they do not suffer so much now as if moved during the drying winds of March. *Bambusa nobilis* and *Arundinaria falcata* are two very graceful plants.

Box edgings should now be cut tidy, walks hoed and freshened up, and every place in the garden made to look its best.

Lawns will require to be mown and rolled at least once a week.

Rhododendrons move very well in April; to get the best results they must be grown in peat, or peat and good fibrous loam mixed, taking care to firm the soil well around the plants, and watch that they do not become "wind-shaken" or loosened around the base of plant.

The Alpine gardens will be most interesting during April; we shall have such a variety of those little gems to admire that we shall be unable to decide which is the most lovely. The saxifrages are a numerous family and contain very many lovely and interesting members, and where there are so many beautiful varieties it is difficult to single out any for special note. *Sax. Grisbachii* is one of the earliest Alpines to flower, and a most charming little plant whose bright crimson spikes are produced in March. *Sax. burseriana grandiflora*, *Boydii*, *Paulina*, and *Colyledon pyramidalis* are some of the encrusted section which are well worth growing. Amongst the mossy section we have *Sax. Rhei*, *Wallacei*, *oppositifolia coccinea*, *Guildford* seedling, &c. Amongst the *Androsaces*, *A. carnea*, *pyrenaica*, *Laggeri*, *sarmentosa*, and *A. lanuginosa Leichtlini* are all lovely although somewhat difficult to grow, except that we have a dry sunny corner for them. We have a host of campanulas, two lovely varieties being *G. F. Wilson* and *Puloides*, but space does not permit mention being made of many which are just as beautiful and interesting. I will finish by recommending two *dianthus*—viz., *Dianthus neglectus* and *D. sylvestris*.

The Fruit Garden.

By G. DOOLAN.

CROPPING BETWEEN FRUIT TREES.—Young plantations may, with advantage, be cropped with garden or farm vegetables, such as potatoes, cabbage, turnips, carrots, or mangolds. The cropping keeps the ground in good tilth, and the necessary manuring indirectly benefits the trees. When the plough is used between the rows great care must be taken not to allow it too close to the trees or injury to the roots will result. The age of the trees and the length of time planted must be taken into account before determining the distance from the trees at which

the plough may be safely used. A better plan, perhaps, is to examine a few of the trees and see to what extent the roots have spread. Surface-roots indicate fruitful trees, therefore every care should be taken when working among the trees that these roots are not injured in any way. They should rather be encouraged by mulchings of manure. A spade should never be used in digging about the roots of fruit trees, and a fork should only be used when necessary. The Dutch hoe is the best implement to keep down weeds, which it effectually does if used frequently. Not only does it keep the ground clean but the stirring of the surface conserves moisture and aerates the soil.

STRAWBERRIES.—Towards the end of the month a mulch of strawy manure should be placed around established plants. The fruit of the strawberry is very easily injured by coming in contact with the soil, whereas a mulch of litter, bleached and clean by exposure to the weather, makes a good resting medium for the fruit during the ripening period. *Spring plantations.*—Young plants from runners are often left over the winter in nursery beds. The ground for these should be well prepared, adding a liberal amount of farmyard manure. The young plants should be planted in rows twenty-eight inches apart, and about twenty inches may be allowed between the plants in the rows, but these distances may be restricted a few inches where the garden is small and the ground valuable. Care must be taken not to plant too deeply; the heart of the plant should be on a level with the surface. Firm planting is advisable. Use the feet to make the soil as compact as possible around each plant. This will ensure slow growth, which is conducive to fertility. No fruit should be allowed the first season on spring-planted strawberries. As soon as the flower trusses appear they should be cut off. The succeeding crop will well repay such treatment. To prevent waste of ground a line of onions or lettuce may be sown between the rows without injury to the strawberry plants. The ground should be frequently hoed during the growing period.

SPRAYING MIXTURES.—Swift's arsenate of lead is an American preparation of recent introduction. It is a very safe remedy to use against all leaf-eating grubs. It does not injure the most tender foliage if applied according to directions which are given with packages or kegs of this material. Fruit trees liable to attack by caterpillars should be sprayed before the pests are noticeable.

Paris green is used by many large fruit-growers. It makes a most effective spraying mixture, but it is of a very poisonous nature, and should only be used in careful hands. Three ounces of Paris green is sufficient for forty gallons of water, and where the leaves are only opened two ounces to the forty gallons will be sufficient. For large plantations Paris green will be found much more economical than other spraying mixtures, and where it has been applied no caterpillars will exist. This material, which is in a powder, should be carefully mixed to a paste and then put into the required amount of water and thoroughly stirred for some time. It should also be stirred frequently during the spraying. Paris green may be mixed with the Bordeaux mixture, in which state it

will be effective against apple scab and other fungous diseases, as well as caterpillars. It will also make a better mixture when used with the copper sulphate solution than if used alone, and does not require stirring during application. The Bordeaux mixture should be half strength only—i.e., 4 lbs. copper sulphate, 5 lbs. washing soda to 40 gallons of water. It is prepared by dissolving the copper sulphate in a wooden vessel and mixing it with one-third of the water in a forty-gallon barrel. The soda should then be dissolved and added with water sufficient to make two-thirds of the mixture, and well stirred. The Paris green, mixed to a paste, is then added and well stirred, filling the barrel with water to the required amount—viz., forty gallons. This is an excellent spraying mixture to apply before the buds open, when the bloom is over and the fruit set, and again in three or four weeks' time.

The Vegetable Garden.

By J. G. TONER.

LETTUCE.—A perfect succession can be kept up by sowing seeds every six weeks of any of the cabbage lettuces from this date until the end of July, or perhaps a little later. Crispy, tender heads are produced by a system of very liberal culture, liberal in all respects except in the number of seeds sown on a given space. Very rich ground will be appreciated by them, and transplanting is not to be thought sane in the case of plants intended to stand the winter. Standard varieties, like All the Year Round, require quite twelve inches apart to do them well. Vegetable gardeners who are courageous enough to practice this will be quite surprised at the size, quality and excellence of a crop so treated.

VEGETABLE MARROWS.—About the middle of the month seeds may be sown in pots, one to each four inch pot. Rather early plants these will be, and some contrivances must be at hand, such as small frames or handlights for the purpose of protecting them after it becomes necessary to plant them out. Be it known, that vegetable marrows are tremendous gluttons, but by a curious irony of fate none are starved so much, and in a general way endure such hardships from the time they fill small pots with their roots until their very often belated transference to their final positions as these. If there is no means of giving protection during the merry time of May defer sowing until that time.

KIDNEY BEANS.—Adventurous persons are to be found in the gardening community as elsewhere, and such may chance the sowing of a few lines of kidney beans. If the weather proves propitious afterwards a right early crop will result, and in the case of a choice and delicate vegetable such as this it is worth while to take a few risks. The very end of the month, however, will be the earliest period at which the work should be undertaken. There is a better way, to be sure, than sowing in the open. Pots or boxes may be used; the former are much to be preferred, as the plants will sustain no check by being removed. Ne Plus Ultra and Canadian Wonder are two very reliable kinds. Should the seeds be sown in the open they may be placed two and a half inches deep and two inches apart, with

eighteen or twenty inches between the drills. Usually, the germination under these conditions of sowing is not particularly high; therefore, for once in a way let the seeds be sown rather thickly; eventually the plants will require a foot apart, but it is a much more pleasant undertaking to thin out the superfluous than to endeavour, perhaps unsuccessfully, to fill up the gaps.

BROCCOLI.—One of the hardest as well as one of the best vegetables this undoubtedly is, but unfortunately many do not think of it until the season for use is nigh. This, however, is the time for seed sowing, and there are sufficient kinds and to spare to give a constant supply from November to June. Veitch's Self-protecting will come to hand during the last two months of the year, and following close on its heels, or rather heads, there is Snow's Winter White; Knight's Protecting is in use just at present, and will be succeeded in due season by Latest of All. There are quite a number of other good kinds that would serve to fill a dish at the same periods perhaps, but these are named as four well-tried varieties, that those inexperienced and very wishful might try with much satisfaction and profit. Seeds may be sown at once rather thinly in well-worked but not too rich ground.

ASPARAGUS.—When once the plants become well established the asparagus bed is perhaps the most paying plot in the garden. It is ready for cutting just when other choice vegetables are rather scarce. Seeing that it lives its useful life in that place to which it has been finally transplanted, and is expected to produce a large amount of growth each year, extra good culture is required. Although well made farmyard manure possesses much that agrees with the constitution of this subject it would be well occasionally to vary the form of the food. Once, at any rate, every three years artificials might with great benefit be applied. A capital mixture is the following:—3 lbs. common salt, 1½ lbs. superphosphate, 1½ lbs. nitrate of soda, and 1 lb. kainit, given at the rate of 2 ozs. per yard in this month, and repeating the dose in July.

ONIONS.—If plants were raised in heat early in the season they should be sufficiently hardened before the end of the month to allow of their being planted out for good. Nine inches square will be quite enough to allow between them when intended for domestic use; the exhibitors, of course, will double this, but on the space mentioned there will be no wonderful difficulty in growing half-pounders, and these surely will meet all the cooks' and, let us hope, everybody else's requirements.

The weather has been so favourable during mid-March for seed sowing that there is no excuse except indeed a sudden and unexpected attack of workphobia, a malady that few can afford to suffer from nowadays, for those who have deferred the sowing of onion seeds in the open until this date. Let it be done now anyhow. James's Keeping and Blood Red are two smallish but very reliable sorts.

ALAS, that Spring should vanish with the Rose!
That Youth's sweet-scented Manuscript should close!
The Nightingale that in the branches sang.

Ah, whence, and whither flown again, who knows!

Some Early Irises.

By R. M. POLLOCK.

AMONG some of the very earliest flowers to open we have several beautiful forms of bulbous irises that are worthy of note and more general planting.

Iris Vartani, coming from Palastine, and belonging to the same section as the well-known Iris reticulata, has been described more than once in the pages of IRISH GARDENING. However, as there are always novices, another reference to it may not be out of place. At Glasnevin the plant seems perfectly hardy at the foot of a south west wall, where it has remained undisturbed for several years, and has now formed a strong clump. It gets no special attention except from the greedy slug.

The flowers are smaller than those of Iris reticulata, delicate lavender blue with yellow and dark lilac markings on the falls about six inches in height, and having grey green four-angled leaves armed with a sharp point which appear at the same time as the flowers, but taller than the latter.

Iris reticulata, var. sophenensis, although a distinct variety as a garden plant, it is inferior to many of the other varieties of Iris reticulata. The flowers are of a purple blue, with yellow and dark purple markings. Height from three to four inches. In this variety the leaves are also angular, but are scarcely above the soil at flowering time. It was introduced from Asia Minor in 1885.

Iris reticulata, var. histrioides. This is unquestionably the beauty of the group. The plant is from four to six inches high, strong and hardy, at Glasnevin; the flowers are a beautiful blue, with a yellow line on the falls and lilac dots, the standards are a paler blue. Altogether the flowers are larger and of more substance than either reticulata, vartani, or sophenensis. It seems of a strong constitution, and flowers in January or February, usually later than vartani and sophenensis, but before reticulata, and it also comes into flower before the leaves are fully developed.

Iris reticulata is probably better known and more grown than any of the foregoing. Its free flowering habit and the delicate appearance of the plant appeal to all. The flowers are a beautiful deep purple, with a yellow line on the fall which continues down into the centre of the flower. The leaves are angled dark green and appear at flowering time, but not attaining their full height until the flowers have faded. It is not fastidious as to position, but if planted in a warm spot it will naturally flower earlier. It is a native of Asia Minor, and gets its name from the netted coats of the bulbs.



CHICORY.—This handsome perennial plant is too seldom seen in herbaceous borders. It is robust and hardy, and will thrive and flower on the poorest soil. Its root is long and tapering, and will penetrate to a depth of three or four feet, even in a dense clay. It loves lime. The flowers are of the most beautiful blue. It belongs to the Cornflower family.

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No. 63

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ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

MAY
1911

Black Stalk-Rot.

By PAUL A. MURPHY.

A DISEASE of potatoes recently investigated in Ireland is likely to prove of considerable interest to gardeners and agriculturists generally. It is not confined

to any particular part of the country, but it is at present, perhaps, rather more prevalent in the West than elsewhere, where it has existed probably for many years, although its identity has been hidden in the comprehensive names of "Haughing" and "Yellow Blight." Diseases, which for all practical purposes may be considered identical with ours, have been described in Germany, France, Holland, Canada, the U. S. A., and possibly in other places; so that the pest is widespread, and is not, as might be supposed, peculiar to Ireland. In Germany it is estimated that 10 to 15 per cent. on the average, and at times even 75 per cent., of the potato crop is destroyed by this or a very similar disease. So far as I am aware no such

severe attack as the latter has yet been experienced in Ireland, but the possibility of such a calamity should be sufficient to put growers on the alert.

Black stalk-rot is usually the earliest of the potato diseases to manifest itself, infected plants being found as early as the middle of June. During the following month or six weeks the attack is at its height, but once August sets in it declines very rapidly. This fact is of importance, because at digging time the plants which have died of the disease leave no trace behind them but their entirely rotted, or even more dangerous slightly infected, tubers. As will be shown later, one of the ways, at least, in which the disease lives over the winter is in these slightly attacked tubers. Attacked plants may readily be distinguished in the field by their light-green or yellowish-brown foliage, by their stunted appearance, and by the fact that

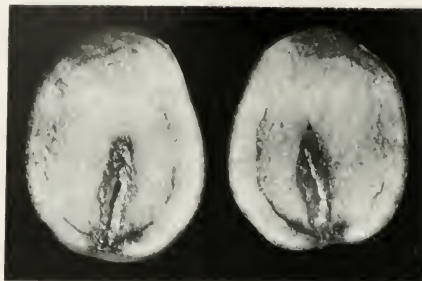


A SINGLE AFFECTED STALK OF POTATO
Showing the abnormal foliage and decay at its base

their branches instead of spreading outwards in a more or less horizontal direction tilt upwards somewhat acutely. A closer examination shows that the leaves are frequently spotted, and that the smaller leaves curl upwards and inwards along the middle vein or midrib. If the stalk of such a plant be cut across it will be found to be quite tough to the knife, contrasting markedly with a similar healthy stalk, which at this season cuts very easily. On the cut surface there will usually be found three brown spots at the three corners, particularly if the cut be made a few inches above the ground level; whereas, a healthy stalk, if cut across, shows no brown marks. These symptoms, however, either separately or all together do not necessarily mean that the plant is suffering from Black Stalk-rot. The crucial test is that on pulling the plant

soil level; and on pulling such a plant up the roots may remain in the ground, the stalk having been connected with them only by a few strands of fibre which break away on pulling. When the attacked stalk is slit lengthwise it

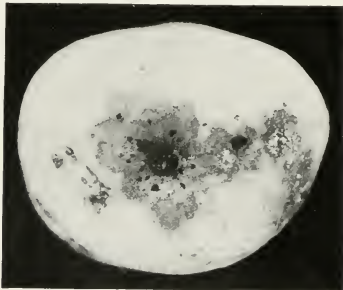
will be found that the tissues in the centre are soft and pulpy for a distance of several inches below, and often a little above the ground level. In the further course of the disease the centre of the stalk in this region becomes completely hollowed.



A TUBER WHICH WAS ARTIFICIALLY INOCULATED WITH THE GERM OF BLACK STALK-ROT DISEASE SPLIT LONGITUDINALLY.

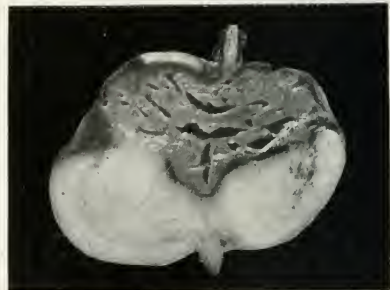
Showing the progress of decay from the needle stab and along the "vascular ring."

Besides attacking the stalks, the new tubers also are invaded by the disease. In the earliest attacked plants no tubers are formed, because the plant is killed long before it reaches maturity. When, however, a plant is not attacked till tubers have been produced, or when the attack, though early, has not been so virulent as to prevent



THE STALK END OF AN AFFECTED TUBER OF POTATO.

Showing the discoloured, diseased area.



AN ATTACKED TUBER CUT LENGTHWISE.

Showing the blackened, diseased tissues, with cavities in them spreading from the heel end. A sprout is shown at "eye" end.

up by the roots the portion of the stem below ground, and perhaps for some distance above the ground level, should be black and rotting. If the attack is an advanced one the stalk may be rotted quite through at about

NOTE.—"A Bacterial Disease of the Potato Plant in Ireland." By Geo. H. Pethybridge and Paul A. Murphy. Proceedings of the Royal Irish Academy.

their formation, such tubers are generally found to be diseased. Infection invariably takes place through the rhizome or underground stalk which connects tuber and parent plant; and the progress of the rot in the tuber may usually be gauged by the circle, greater or smaller, according to circumstances, of discoloured skin which covers the "heel."

If the tuber be of a red variety, the colour is destroyed in this area. The diseased portion is much less firm to the touch than the healthy, and when squeezed a liquid is exuded. This greater wateriness makes the clay stick to affected tubers, even in dry soil. In advanced stages the whole substance may be reduced to a pulpy mass. If a diseased tuber be cut, the rotted part is usually, but not always, of a dirty

experiments are still in progress which, it is hoped, will clear up the practical problems which the subjects present, it is, nevertheless, possible to lay down some rules of the greatest importance to practical men. And it should be borne in mind that if these cannot always be adhered to in the field, they can always be followed in the garden and in small plots, where the greatest danger of infection exists on



A LARGE POTATO PLANT WITH SEVERAL STALKS ATTACKED WITH BLACK-STALK ROT, WITH A BACKGROUND OF HEALTHY PLANTS. VARIETY "BRITISH QUEEN."

Photographed in July.

[The photographs illustrating this paper are reproduced through the courtesy of the Royal Irish Academy.]

grey colour, which quickly takes on a pinkish tinge, and finally becomes deep brown or almost black. Badly affected tubers are quite useless for any purpose.

The cause of all these changes in the substance of the potato plant and its tubers is one of those excessively minute organisms called bacteria. The organism with which we are immediately concerned is so small that it would take about 15,000 of them placed end to end to stretch an inch.

With such a disease it is evident the aim must be prevention rather than cure. Though

account of the difficulty in the way of proper rotation of crops.

The first and most important rule is, that diseased plants and *all* their tubers should be dug up and destroyed as soon as ever the disease appears. There are two very good reasons for doing this. In the first place the rot is not confined to the growing season, but may and does continue in the pits, particularly if the latter are hot and damp. It has been proved that these bacteria can penetrate the skin of a healthy potato when kept in a damp place, so that contact with rotting potatoes

during storing is almost sure to infect the healthy ones. The best way to prevent this is to dig up the attacked plants while they still show signs of the disease, for, as will be pointed out immediately, it is by no means easy to separate the infected and the non-infected tubers of a diseased crop at digging time.

The second reason is that by doing this all infected tubers are excluded from possible use as "seed" for next year. It is probable, though the question is not entirely settled, that the disease is perpetuated through the planting of affected tubers rather than through direct attack every year from the soil. An experiment quoted from the paper referred to above proves at all events that infection can be carried over to the next crop in the "seed." Twenty-five per cent. of a crop of "British Premiers" suffered from Black Stalk-rot in 1909. "Seed" from this crop, which was apparently perfectly sound, produced in 1910 on clean land a crop 94 per cent. of which was diseased.

Digging up affected plants and tubers early in the season minimises also contamination of the ground with the disease-producing bacteria, and prevents the possible spreading of the disease to healthy neighbouring plants. How much this spreading, if it occurs at all, takes place is not yet determined; but the disease is not at all liable to spread in the way the common potato blight does. If the diseased tubers are left in the ground till the whole crop is being dug it happens too often, unfortunately, that those that are entirely rotten are left behind as not worth the trouble of lifting, thus going a long way towards perpetuating the disease in the soil. Where a proper rotation of crops is followed this perhaps is not of much importance; but it assumes a greater significance where potatoes are grown year after year in the same plot. For this and for other reasons potatoes should not be grown on the same land oftener than once in four years, where that is at all possible.

Allusion has been made to the necessity of excluding all diseased or suspected tubers from the pits. Every possible care should also be taken to pit the potatoes in good dry condition, to ventilate the heap efficiently, and to protect it so thoroughly during the winter that all moisture is excluded. The common practice of sinking the bottom of the pit six inches or a foot below ground level cannot be condemned

too strongly. But all these precautions may not be enough unless growers insist on having perfectly sound "seed." Above all, no "seed" from even a slightly infected crop should be planted, for it is almost impossible to say from an external examination whether or not a tuber is affected. The safest way is to procure seed from a district in which the disease has not yet appeared.



Flowering Shrubs.

By F. W. MOORE, M.A.

SUPPLEMENTARY LIST.—(Continued from page 53.)

Flowering Shrubs	Month
Iberis Gebraltarica	May and June
„ sempervirens	April and May
Indigofera gerardiana	Aug. and Sept.
Jamesia americana	June
Jasminum grandiflorum	October
„ floridum	October
„ nudiflorum	Nov. to Feb.
Kalmias	May and June
Kerria japonica	April and May
Laburnum	June
Laurestinus	March and April
Lavender, blue and white	Aug. and Sept.
Ledum latifolium	June
„ Lyoni	June
Leycesteria formosa	Aug. and Sept.
Ligustrum japonicum	Aug. and Sept.
„ „ macrophyllum	August
„ Stauntoni	August
Lilacs	May and June
Lithospermum rosmarinifolium	Feb., Mar., and April
Lonicera fragrantissima	Feb. and Mar.
„ japonica	September
„ piliata	June
„ Standishii	Jan. and Feb.
„ syringantha	June
„ tatarica grandiflora	April to June
Magnolia Alexandra	April and May
„ conspicua	April, May, and June
„ „ amabilis	April, May, and June
„ parviflora	June
„ soulangeana	April, May, and June

Flowering Shrubs	Month	Flowering Shrubs	Month
<i>Magnolia stellata</i>	April, May, and June	<i>Ribes menziesii</i>	May
<i>Medicago arborea</i>	June to Sept.	„ <i>sanguineum</i>	Mar., April, and May
<i>Mespilus grandiflora</i>	June	„ „ in varieties	April
<i>Microglossa albescens</i>	August	„ <i>speciosum</i>	March to June
<i>Myrica gale</i>	April and May	<i>Rosa californica nana</i>	June
<i>Myrtus communis</i> (Myrtle)	Sept. and Oct.	„ <i>grandiflora</i>	June
„ <i>Luma</i>	Aug. and Sept.	„ <i>rugosa</i>	June
<i>Nandina domestica</i>	September	„ <i>spinosissima</i>	June and July
<i>Neillia malvacea</i>	June	<i>Rosmarinus officinalis</i>	April to June
<i>Nuttallia cerasiformis</i>	Feb., Mar., and April	<i>Rubus deliciosus</i>	May and June
<i>Olearia Haastii</i>	September	„ <i>fruticosus plenus</i>	Aug. and Sept.
„ <i>stellulata</i>	June and July	„ <i>nobilis</i>	August
<i>Ononis rotundifolia</i>	June	„ <i>phœnicolasius</i>	August
<i>Ozothamnus rosmarinifolius</i>	June, July, and August	<i>Salix</i> , in varieties	Mar., April, and May
<i>Pæonia Moutan</i>	May and June	<i>Salvia Grahami</i>	June to October
<i>Pavia macrostachya</i>	September	„ <i>officinalis</i>	August
<i>Perowskia atriplicifolia</i>	Sept. and Oct.	<i>Sambucus pubens maxima</i>	September
<i>Persica vulgaris</i> , fl. pl.	April and May	<i>Senecio Grayi</i>	June and July
<i>Philadelphus Lemoinii</i>	June and July	<i>Skimmia japonica</i>	April and May
„ <i>rosaceæ</i>	June and July	„ <i>rubella</i>	April and May
„ <i>varieties</i>	June and July	<i>Solanum crispum</i>	June to Sept.
<i>Phillyrea angustifolia</i>	April and May	„ <i>jasminoides</i>	Aug., Sept., and October
„ <i>decora</i>	April	<i>Spartium junceum</i>	August to Oct.
„ <i>media</i>	April and May	<i>Spiræa arguta</i>	April and May
<i>Phlomis fruticosa</i>	June to August	„ <i>cratægifolia</i>	May
<i>Piptanthus nepalensis</i>	May and June	„ <i>dasyantha</i>	August
<i>Pittosporum buchanani</i>	June	„ <i>douglasii</i>	August
„ <i>crassifolium</i>	April to June	„ <i>Fortunei</i>	August
<i>Polygala chamaebuxus</i>	Feb. and Mar.	„ <i>Japonica bumaldæ</i>	June to Sept.
Portugal Laurel	June	„ „ <i>glabrata</i>	Aug. and Sept.
<i>Portentilla fruticosa</i>	June and July	„ <i>varieties</i>	Aug. and Sept.
<i>Prunus angustifolia</i>	March and April	„ <i>nobleana</i>	August
„ <i>var. pendula</i>	March and April	<i>Staphylea coulombieri</i>	June
„ <i>avium</i> (gean)	April and May	„ <i>pinnata</i>	May and June
„ <i>var. multiplex</i>	May	„ <i>colchica</i>	—
„ <i>cerasifera</i>	March and April	<i>St. John's Wort</i>	Aug. and Sept.
„ <i>cerasus Rhexii</i> , fl. pl.	May	<i>Syringa</i> , in varieties (Lilacs)	May and June
„ <i>dasycarpa</i>	March and April	<i>Teucrium fruticans</i>	October
„ <i>incana</i>	April and May	<i>Thyme</i> (as bush)	June and July
„ <i>Padus</i> , var. <i>Alberti</i>	May	<i>Tricuspidaria lanceolata</i>	June and July
„ <i>pissardi</i>	March and April	<i>Ulex Europæus</i>	Feb. to June
„ <i>pseudo cerasus</i>	April and May	„ <i>nanus</i>	May and June
„ <i>reflexa</i>	May	<i>Vaccinium ovatum</i>	June and July
„ <i>serrulata</i>	April and May	<i>Veronica Autumn Glory</i>	August
„ <i>subhirtella</i>	April and May	„ <i>Canterburyensis</i>	June
„ <i>tomentosa</i>	April and May	„ <i>decumbens</i>	June
„ <i>triloba</i>	April and May	„ <i>Gauntletii</i>	August to Oct.
<i>Psoralea glandulosa</i>	October	„ <i>Haastii</i>	June
<i>Pyrus communis</i>	April and May	„ <i>Hulkeana</i>	June
„ <i>floribunda</i>	April and May	„ <i>Lewesii</i>	August
„ <i>nigra</i>	June	„ <i>ligustrifolia</i>	June and July
„ <i>prunifolia</i>	April and May	„ <i>parviflora</i>	August
„ <i>Ringo</i>	May	„ <i>Traversii</i>	August
„ <i>salicifolia</i>	April and May	<i>Viburnum lantana</i>	June
„ <i>spectabilis</i>	April and May	„ <i>macrocephalum</i>	June and July
„ <i>toringo</i>	May and June	„ <i>opulus</i>	June and July
<i>Rhododendron ferrugineum</i>	July	„ <i>plicatum</i>	June and July
„ <i>mirabile</i>	June	„ <i>Tinus</i>	March and April
„ <i>præcox</i>	Feb. and Mar.	„ <i>tomentosum</i>	June and July
„ „ <i>superbum</i>	Feb. and Mar.	<i>Weigela</i> (<i>Diervilla</i>) <i>floribunda</i> ,	
„ „ <i>Yunnanense</i>	June	<i>variety Lavellei</i>	June and July
„ <i>in varieties</i>	May and June	„ <i>Pascal</i>	June and July
<i>Rhus cotinoides</i>	Sept. and Oct.	„ <i>Saturne</i> and varieties	June and July
„ <i>cotinus</i>	Aug. and Sept.	<i>Xanthoceras sorsifolia</i>	June
<i>Ribes aureum</i>	April and May		
„ <i>cereum</i>	April and May		
„ <i>gracile</i>	May		

Treatment of Collected Alpines.

By W. H. PAISE, F.R.H.S.



FOLLOWING up my article on a tour in quest for Alpines through the Pyrenees in which several plants were named, and many left unnamed, because in that treatise I did not propose to deal in detail. But in this treatise I propose to deal with each plant and its particular needs after it has been ruthlessly torn from its mother earth and conveyed in various manners to its new commercial home.

It would be well to first recant a few of the incidents of collection. When one starts out on a climb the first thing that an experienced collector watches is that he is lightly loaded. Thus a knapsack is about the best mode of carrying one's plants over the rugged earth, and yet I suppose there are a few of we Alpine lovers that really like to treat our cherished gems in such a manner, for, speaking figuratively, when collecting there is only time to grab a handful of these cherished gems by the throat and cram them into the far-most corner of the knapsack, which is heated on one side by the sun and on the other by one's back. Each fresh find is pressed on its former companion until the bag is full, when another effort is made to find still more room in the already crowded receptacle.

When you reach your hotel one feels the tiring strain of the day, so that the plants have to remain in that condition till morning when, in haste again to gain the unbeaten tract, they are tilted first foremost in the corner of the hotel bedchamber, much to the disgust of the chamber maid, unless your frames are free enough to close her wordy member; even then she regards you as fit only for some other charge than hers.

After some five or six days of such sundry collections the plants are despatched home in a basket in which the air has a free access. Now, it must be remembered that at the time of the year which I write the plants are well ripened in the lower Alpine ranges, as a result I gave no water in any form until they were

packed for Ireland, when a judicious sprinkle was given because a more copious would have caused heating and the plants would have arrived home only fit for the rubbish heap.

Of the plants collected in the higher Alpine ranges and in damp places a different rule was made. I left all my collections of the damp lovers such as *Parnassia*, *Pinguicula*, *Gentiana*, and high range plants such as *Dryas*, *Androsace pyrenaica*, &c., until the last three days of my stay, and so managed to return home with my dry lovers and bog subjects in very much one condition.

I returned *via* Pau, Paris and London, and in this journey of fifteen hundred miles or more my plants were without any attention beyond a good shaking by the railway men, which stopped perspiration by the plants, and for once a rough handling of one's baggage served for a useful purpose.

However, to the more needy remarks of this treatise. When the day of sorting came it was a task needing great patience and care. The plants were scattered over the floor of a dark shed and heavily watered, and in the cool air soon recovered enough to give sufficient character to place them in their specific order. Having accomplished assorting I set to work to reconcile these new prisoners of fate to their alien surroundings, which in some cases is no easy task.

Primula viscosa was one of the plants which I made a raid on, and it is wonderful the varying beautiful forms that have flowered with me this season, but this plant is best on Point Vignemale, for nowhere over the whole of the European Alps I have never seen anything to approach the form that grows there.

In the treatment of this plant I divided up into single crowns, trimmed off the dead leaves from their long stems, which, by the way, remain for several years as a protector against excessive frost and moisture, then I cut off the root which had become somewhat dry and inserted each crown as cuttings, with about two inches of stem singly into three inch pots, using a mixture of two parts sandy rubble, one part leaf and one part rich loam, potted them firmly, gave a good soaking of water and placed them into a shady cold frame, with about six inches of ashes underneath the pots to afford very good drainage, as these plants grow on the overhanging rocks where the

drainage conditions are more perfect than in any other Alpine primula.

After a few weeks the stems were rooting freely, and in two months from potting they were placed in permanent quarters in the nursery plunging beds. Several of the plants have been planted with their old roots, but the result has been most disappointing.

Of the several other primulas that I collected, the dry-loving species were treated in a like manner; they consisted of *P. alpina*, *P. owenensis*, *P. arctotis*, and a few plants of *P. commutata*. Of the species which grow in close association with *Dryas* and *Parnassia* on the damp swamps, a few different remarks will, I think, be in order. In this case the species were—*P. farinosa*, *P. integrifolia*, *P. latifolia*, *P. Clusiana*, *P. assimilis*. Of this section there are several points worthy of our notice. That the damp-loving primulas come from the higher Alpine peaks in the Pyrenees Alps, whilst in the Alps of Switzerland many of the same species are found in the lower valleys; so it is evident that different climatic conditions prevail in the valleys of the two great arctic gardens of Europe.

I have seen several species in Switzerland which can be collected at quite low altitudes, while these same species exist in the Pyrenees. It is always at a very high range. This is very noticeable in the case of *P. integrifolia* and *P. minima*.

The home treatment of these semi-bog species was very much the same as in the previous section, with the exception that one part peat was substituted for one of the parts of sand rubble, and that they were stood on bog soil in the frames instead of ashes, and a good supply of water was given for the first month.

Leaving the primulas, even though their grace and charm still holds us in tender admiration, and talking of their heavenly-coloured companions, the gentians, wonderful as are these bells of blue under cultivation, yet more deliciously beautiful are they when seen growing amid the varie-coloured grasses, with *Silene acaulis*, *Anemone alpina* to relieve the carpet of blue; and as great as their beauty, just so is the difficulty of establishing them after collecting. With the exception of *G. Kochiana* I find that they all do best as bog plants. These plants must be collected in little tufts of grass and potted up in them, and the grass slowly weeded

out as opportunity occurs. I suppose there is no plant more difficult to establish than the *Gentian* from the collected state. I have had a very hard fight with *G. Kochiana* and *G. Rostani*, as both plants were collected before the growing season was properly ended; but in the case of *G. Bavarica*, *G. imbricata*, *G. verna*, *G. Favratii*, I have succeeded well; they were pressed into pots and plunged into sand, in a very damp place beside a stream, and are now pushing forth a good display of colour. The one thing to watch is that the little root-like stems do not get bared by the air, and to prevent this it is well to top-dress with some fairly stiff soil at such times as required.

One of the most difficult plants to import is the *Androsace*, though fairly easily to manage when one gets it home; but in the rough and tumble of collecting they suffer badly. It is best to pack them separately in boxes with dry moss, and keep them very close, and even then they run considerable risk. *Androsace carnea* is said to grow fairly plentiful on the Pyrenees, but in my several trips on these mountains only on one occasion have I seen the true plant, for it is known only to few Alpinists as *A. Laggeri*, and its forms are generally sent out by the nurseries as *A. carnea*; and even botanical works speak wrongly of this plant, and *Laggeri* is very far from even resembling it; as a matter of fact, *A. lactea* is nearer *A. carnea* than the form that is usually taken for it. It is true, *A. lactea* is a larger plant, but the whole structural appearance is very similar.

To describe *A. carnea* in a simple way, it has lanceolate leaves of about 1 inch long; they are borne in formal round rosettes, which grow very close and flat to the soil, and gives off side-shoots very sparingly. It sends up flower spikes of about three inches high, upon which is a whorl of very slightly pink flowers and deep rose-coloured buds. Of the well-known *A. Laggeri* and its forms, which has long been regarded as *A. carnea*, the highest peaks of the Pyrenees abound in this wee floral gem; not so with *A. imbricata*, which is very rarely seen with its slender flowers; yet I managed to collect some five or six plants of this rarity.

A. obtusifolia is more common, but by no means plentiful, while in *A. pyrenaica*, which takes its name from these mountains, is only to be found on the large boulders, and is in most cases very hard to reach. The best treat-

ment at home is to use pans instead of pots, placing a plant in the centre, and pulling each growth carefully away from the main plant and layering each growth down firmly without severing it from its main connection. Thus you will be able to get quite a number of small plants, which root freely. Yet it is curious that you invariably lose the old tuft, which has become too hide-bound for propagation.

The best soil to use for this is greater proportion of sand, with sufficient leaf soil to afford root action. Plenty of air must be admitted at all times in order to keep these plants in a dry and fresh state, when quite a creditable result can be obtained from these collected plants.

Now, there are the *Campanulas Soldanella*, *Dianthus*, *Saxifraga*, *Ranunculus*, &c., but space bids me to hold them over until the next issue of this journal.

The Enemies of Trees.

By A. C. FORBES.

WHILE the planting of trees is everywhere advocated at the present time, the fact is frequently forgotten that planting often ends in failure through the lack of simple methods of protection against the risks and dangers to which all trees are liable. From the time the seed is sown or the seedling planted until the tree reaches its full development the careful forester is always on the look out for enemies, and invariably finds them. Under natural conditions the greatest enemy to forests is man, who cuts down and destroys by fire more than he can use in the first place, and more than the forests of the country can reproduce in the second. In Northern Europe and America this destruction is going on to-day, and on a more limited scale the woods of Ireland are passing through a similar crisis. Over the greater part of Europe, however, methods of protection and conservation have succeeded these wasteful processes, and the forest areas over three-fourths of Europe are either stationary or slightly increasing in size. This desirable improvement, however, was not accomplished without considerable trouble, labour and expense. First and foremost communities had to be controlled by forest laws and local regulations, for in early times forests were always regarded as free to all comers, and as open to theft or pilfering as the pebbles on the

sea-shore. While this view continued the forests disappeared as rapidly as the population increased. With the disappearance of local forests and commons forest laws gradually fell into abeyance, and forest protection assumed a more technical character, assisted, as occasion required, by the common or civil law of the country.

The principal forms taken by forest protection to-day are measures against wind, fire and grazing or browsing of domestic or wild animals, all of which may destroy existing forests if preventive measures are neglected. These measures are chiefly regulated by commonsense, as it is seldom necessary to put them into operation indiscriminately. Other protective measures of a more technical character are those relating to insect pests and fungoid diseases, and with these the forester is often compelled to call in the assistance of the scientist. On the Continent, calamities due to caterpillars of several moths are kept in check by the introduction of disease-producing bacteria, while parasitic fungi are fought with fungicidal sprays.

Forest protection in Ireland is chiefly concerned with domestic economy (amongst which the goat is the most troublesome), rabbits and squirrels amongst the larger animals and beetles, weevils, and sawflies amongst the insects. The most conspicuous fungoid disease is the larch canker or blister, which is gradually spreading throughout the country, but is capable of being successfully dealt with on most soils.

The choice of suitable trees for various soils and situations, careful planting, judicious thinning, and attention to such details as drainage and pruning are most likely to lessen, if they do not prevent, the attacks of most parasitic enemies.



A GARDEN SONG.

Here in this sequestered close
Bloom the hyacinth and rose.
Here beside the modest stock
Flaunts the flaring hollyhock.
Here, without a pang one sees
Ranks, conditions, and degrees.

Here be shadows large and long,
Here be spaces meet for song.
Grant, O Garden-god, that I,
Now that none profane is nigh—
Now that mood and moment please -
Find the fair Pierides!

Austin Dobson.

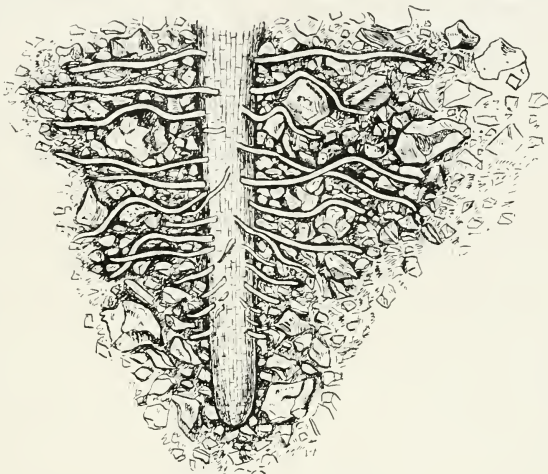
Roots and their Functions.

By G. O. SHERRARD.

IN dealing with plant life it is very necessary to have a clear conception of the structure and function of the plant body as a whole, and of its members in particular, if the principles governing good cultivation are to be rightly understood. It is proposed in the course of this article to briefly discuss the functions of roots and the structural adaptations which enable them to perform those functions efficiently, also the soil conditions most suitable for healthy root action.

The two most obvious uses of the root are to fix the plant in the soil and to supply it with nourishment therefrom, although the exact kind of nourishment supplied by the root is by no means so obvious, and was the subject of a prolonged controversy between two very celebrated agricultural chemists—the nitrogen controversy. A third and very common root function is that of food storage. We see it well exhibited in the case of the thick roots of the dock or dandelion or the swollen tap-root of the parsnip; in reality, the great majority of perennial plants store reserve food in their roots. Anchorage of the plant is secured either by a deeply-penetrating tap-root (as in the oak) or a widely-spreading network of surface roots (as in the beech or Scots pine). In most trees the root system extends over an area at least equal to the spread of the branches, giving the tree a wide and firm purchase in the soil. In the case of trees, the older portions of the root become woody, while the roots of herbs are either fibrous (like those of grasses) or fleshy (like the parsnip or carrot.)

It is necessary, both for purposes of anchorage and food absorption, that the root should be able to readily penetrate the soil and travel through it without injury. The elongation of the root takes place at a region close behind the extreme tip. At the tip itself the cells composing the root divide and multiply. Immediately behind the tip the newly-formed cells elongate, so that the root tip itself is pushed forward into the soil. In order that the root should penetrate the soil without injury, the tip is covered by a protecting cap of cells, which, as



THE END OF A LIVING ROOT.

Showing growing tip and water-absorbing region covered with delicate tubular "hairs."

as fast as they are rubbed off through friction with the soil, are reinforced from behind by cells formed at the outside of the growing region, or growing point, as it is called.

This growing point of the root is sensitive to certain influences and behaves like the nervous centre of an animal, transmitting impulses to the cells behind it. Thus the growing point of a

main root is sensitive to the action of gravity, and always tends to grow vertically downwards. It does not matter if a seed lies in the soil in such a position that the root on emergence points upwards—it will at once begin to bend round and grow downwards, while the shoot will turn in the opposite direction and grow upwards. If a germinating seed were caused to rotate in a vertical circle so that the force of gravity would act on all sides of the growing root in turn, and thus neutralise itself, it would be found that the main root would grow out horizontally. Side roots are not affected by gravity in the same way, but tend to grow out in a horizontal or oblique direction. Other stimuli which have an action on roots are light, contact, and moisture. All roots tend to turn away from light, as may readily be seen by

exposing a seedling with its root in water to light coming from only one direction; the root will be noticed to bend away from the light and the shoot towards it. When the growing tip of a root, covered with its protective cap, comes in contact with a stone or other obstacle through which it cannot grow, the root tip sends back a message to the cells behind, and the root curves round the obstacle and continues its onward growth in the same direction on the other side. Roots in dry soil are diverted to more favourable positions by the presence of greater quantities of moisture. The stimulus of moisture is so great as to sometimes overcome that of gravity and to cause the main root itself to be deflected towards the moist area.

This fact of the presence of moisture acting as a powerful stimulus to roots brings us to the main purpose for which roots ramify through the soil—the search for water holding in solution the mineral salts on which the plant is nourished. The roots are very thorough in their search, branching repeatedly until they occupy and exhaust every square inch of soil in the neighbourhood of the plant. Thus at the end of the season the total length of the branches of the root system is very great—in an annual cereal it has been estimated at a quarter of a mile, and in a well-developed cucumber at over a mile. The roots of some plants search particularly the upper layers of soil, as in the case of many annuals and grasses; others, like the thistle, the elm, and the oak, go deeper in their quest, and principally draw upon the lower layers for their nourishment.

(To be continued.)

Double Primroses.

By W. F. WYNNE.

THE old-fashioned double primroses have become of late years once more such general favourites that perhaps some remarks upon the different varieties and their culture may be of interest to the readers of IRISH GARDENING.

I may begin by stating that most of the double primroses are inclined to be "faddy," and some of them have a capacity of sulking for years without either doing heartily or yet definitely dying, if their particular fancies are not understood!

The old Double White and Double Lilac are quite the most amiable in disposition, and with any fair play will flourish and increase and blossom magnificently.

The first consideration with all these primroses is a fairly moist, sheltered position where they will not get parched in summer. Gardening books speak of shade or half shade as desirable; my own impression is that the plants have no objection to plenty of sun so long as the soil round their roots remains fairly moist all through the summer.

As to the best soil, a mixture of loam, well-decayed leaf-mould, coarse sand, peat, if available, and a little old cow manure will suit most primroses, but may have to be modified for special plants, as experience shows what suits them best. It is a great help to small or delicate plants to place stones closely round them, as these keep the roots from being dried up in summer, and in winter when so protected they are less liable to be loosened out of the ground by frost.

As to the different varieties, their names and colours, there is some amount of confusion, but there are a certain number of distinct kinds with generally recognised names. Of the double yellows, Cloth of Gold is by far the best, with beautiful large blossoms of a good clear yellow. Early Sulphur is a good-tempered little plant, early and very free-flowering, but the blossoms are small and pale. Late Sulphur comes out when all the others are over, but with me is not very satisfactory, as the blossoms are of the small-petalled type and generally more or less mis-shapen; perhaps that is not the fault of Late Sulphur, but that I have not yet realised all its requirements.

Of the reds, the old Madame de Pompadour is one of the most beautiful, a deep true velvety crimson; she is somewhat delicate and will not thrive in all places; in fact, she needs a little pampering, but to such a beauty who would grudge it? She is much encouraged by surrounding stones, as already recommended.

Burgundy is deep red purple, sometimes with tiny white rims to each petal. It does not do specially well here (Co. Wicklow, Ireland); the blossoms are rather small, with a great many very small petals, and therefore not as handsome as flowers with large, loose petals.

Crimson King or Sanguinea plena is neither crimson nor sanguine, but a very rich red ma-

jenta, most floriferous, amiable, and altogether charming.

Red Paddy is very pretty, a somewhat brighter shade and uncommon.

Double Rose is a beautiful large bright lilac-pink.

Arthur Desmoulins (who spells his name in many different ways) is very free-flowering, hardy and satisfactory; the blossoms (which often grow in the manner of a polyanthus) are of a rich purple-lilac, several shades deeper than the old Double Lilac. Marie Crousse is much the same colour, perhaps a little rosier and larger.

French Grey is a very pale soft grey-lilac, pretty but not very effective.

Of Double Salmon I cannot speak, having, alas, no personal acquaintance with it, nor yet with Double Black.

There are, doubtless, some other varieties, but these are the most important ones, as I do not now speak of double polyanthuses. I have heard a rumour of "new doubles" produced by a happy and talented amateur, but have not as yet had the privilege of ocular demonstration. There are four chief enemies to be contended with in the Primrose Garden.

1. The Leaf-spot Disease, a sort of fungus which of recent years has greatly increased, attacking both garden and wild primroses. It appears on the leaves in brown and yellow patches or spots; it does not kill the plant, but weakens it and greatly spoils its appearance. The best means of combating it is to pick off and burn all the dead and badly affected leaves, and to spray the plants at short intervals with a weak solution of Bordeaux mixture.

2. A fat, curled-up white grub (the larva of a small grey-brown beetle of the weevil description), which likes to live under primroses and to eat the roots. When moving the plants it is well to shake off the clay so as to make sure that none of these grubs are moved with them.

3. Red Spider, the tiny spinning mite which infests the under side of the leaves, and is therefore very difficult to get at with any insecticide; its presence may be known by the speckly yellow appearance of the leaves, and if they are badly infested eventually all the leaves die off. To get rid of red spider, the plants should be taken up in autumn and dipped in paraffin emulsion—*i.e.*, a small wine-glass of paraffin, well stirred into a gallon of water

(which should be stirred again from time to time); a little soft soap also stirred in will add to its effectiveness. Miss Ormerod, who made a special study of injurious insects and how to deal with them, recommended the following mixture as the best remedy for red spider:—
4 oz. sulphuret of lime and 2 oz. soft soap to a gallon of hot water; the sulphuret and soap to be well mixed together before the water is added, gradually stirring all the time; it may be applied while still warm by syringing under the leaves or dipping the plants. If the sulphuret cannot be procured, boil 1 lb. of sulphur with 2 lbs. of fresh lime in 4 gallons of water.

4. The worst enemy, in my experience, is the Primrose Borer, which attacks the plants in spring and continues its work till autumn. When you see one of your best plants suddenly drooping and withering you may be pretty sure that one of these thrice detestable borers is working into its heart; then if you search very carefully at the base of the central shoot you may see a little "saw-dust" marking the entrance of the tunnel, and perhaps the flattened tail of the grub sticking out. It often looks very like the remainder of a stalk that has been picked. For these most destructive creatures I know of no certain remedy beyond hunting them down and killing remorselessly wherever their tracks appear, and moving the plants every year into fresh ground. Aporite or vaporite dug into the soil when replanting is also a help.

Spring and autumn are the recognised times for lifting and dividing primroses; personally, I rather prefer the spring, or when they are just out of blossom, if the weather is not very dry. They should never be left more than two or at most three years without division; many of them are the better of it every year.

When dividing (which should be done with a knife, if the plants do not break asunder easily) the old woody root-stocks should be removed as much as possible, and if these are planted they will very often throw up shoots and develop into nice healthy plants.



MIXING MANURES.—Amateur gardeners must be careful when using artificial manures not to mix together nitrate of soda with superphosphate or basic slag with either sulphate of ammonia or superphosphate, as chemical action will be set up between them and either harm to plants or loss of fertilising material will result.

Shrubs for Sunny Slopes and Dry Banks.

By J. W. BESANT, Royal Botanic Gardens, Glasnevin.

THE modern plan of building at a fairly high level is excellent from a sanitary point of view, but gardening in the circumstances is often somewhat difficult. As a rule in such positions the soil is shallow and often stony, but in nature how often do we find such places furnished with vigorous bushes of gorse, flowering profusely the summer through? Thus we may learn how to deal with different soils and situations, especially when extensive preparations in the way of providing additional good soil are somewhat difficult as well as expensive.

It is not advisable to attempt to establish large plants where the soil is scanty, as there is seldom sufficient moisture to support them until their roots become active. It is far better to begin with quite small plants, as they more readily adapt themselves to the situation, and if given a soaking when planted will generally succeed.

In places where it is desired to clothe a rocky slope with vegetation it is not an uncommon practice to sow seeds of gorse, which soon grow into good bushes.

Many shrubs of the pea family are suitable for our purpose, notably the dwarf gorse *Ulex nanus*, which flowers in late summer; also the common broom *Cytisus scoparius*, while the variety *Andreanus* and the beautiful named forms, *Mayfly*, *Dragonfly*, and *Butterfly*, with charming yellow, red, or bronzy-red flowers, make a brilliant display in May. Other *Cytisus*es as *C. purgans*, *C. albus*, and *C. præcox* will also be found useful, while the quite dwarf or prostrate kinds, *C. arduini* and *C. Kewensis*, often succeed far better in a sunny situation in a sandy soil than in a richer medium. The *genistas*, too, afford variety. *G. hispanica* flowers freely most seasons, and forms a compact spiny bush, bearing yellow flowers; *G. germanica*, *G. horrida*, and *G. radiata*, all growing about three feet high, more or less spiny, and bearing yellow flowers, are equally suitable, while quite prostrate forms, such as *G. pillosa* and *G. tinctoria*, fl. pl., are admirable

for positions near to walks or borders about the house.

A great deal can be done in the way of effective planting by the use of masses of helianthemums, better known as rock roses. They present great variety in flower and foliage, and flourish in sunny, dry places. Some of the best are *Rose Queen* and *Lemon Queen*, brilliant with "grey" leaves and terra-cotta flowers, *Snowdrift*, *Vulgare coccineum*, fl. pl., double scarlet flowers, and many others in various shades.

Other dwarf plants are the shrubby thymes, such as *Thymus vulgaris*, quite effective when covered with flowers; also *T. strictus*, an erect growing species, and the lemon scented thyme, *T. atriodorus*.

An old-fashioned shrub suitable for sunny, dry places is the Jerusalem sage, *Phlomis fruticosa*, with grey leaves and whorls of yellow flowers, while the cotton lavender, *Santolina chamæcyparissus*, with tiny silvery leaves, will flourish in the poorest soil. Several of the barberries will succeed wonderfully in soil of very indifferent quality, *B. Darwinii* often succeeding wonderfully in a poor, stony medium, while in a like position *B. thunbergi* will colour brilliantly in autumn.

Spartium junceum, the yellow Spanish broom, also flourishes in poor soil, and bears abundance of clear yellow flowers. This species attains a height of six or seven feet, but should be cut down for a year or two after planting to keep it bushy, otherwise it is liable to get broken by wind.

When purchasing brooms, *genistas* and other shrubs of the pea family they should be obtained in pots if possible, as they all resent root disturbance and seldom succeed when lifted from the ground.

The Development of British Forestry.*

(Continued from page 60.)

ONE of the most striking features of this book, and one that is most heartily to be commended, is that the author, though palpably at home in the most intricate parts of his many-sided subject, avoids the error, almost universally made by British forestry writers, of advertising their erudition by clothing what they want to say in language of such a particularly

* "The Development of British Forestry." London: Arnold. Price 13s. 6d. net.

technical character as to greatly impair the value of their book to any one who is not acquainted with the scientific names of things arboricultural and their familiar every-day translations. This means to probably 95 per cent. of the general public. Mr. Forbes all through strives to express himself in the simplest and plainest and least technical language, thus adding greatly to the value of his book, and, incidentally, to his own reputation.

Thus in the chapter on "Climate and Tree Growth" the climatic requirements of our different well-known trees are described minutely, yet with perfect simplicity, taking them month by month through their growing seasons. And it is explained how these requirements are met, or are not met, by the average conditions in the British Isles generally and in different localities. The effects of elevation are described, and the fact pointed out that while with us 1,500 feet is the extreme height in favoured spots at which anything like commercial timber can be produced, and 2,000 feet the probable limit of even the most dwarfed grown, though in Central Europe the greatly higher elevation of the mountain ranges and the effects of a more Continental climate permit of useful timber being grown at 4,000 and even 6,000 feet.

Mr. Forbes gives a very interesting table on page 98 showing the maximum recorded heights of trees in the British Isles. The Irish records are as follows:—

	Height	Locality
Ash	112 feet	Dundrum
"	127 "	Woodstock
Beech	110 "	Carton
"	120 "	Woodstock
Oak	100 "	Carton
"	118 "	Coolattin
Larch	130 "	Kilworth
"	120 "	Glasslough
Spruces	110 "	Kilworth
Silver Firs	130 "	Cookstown
"	125 "	Avondale
"	133 "	Woodstock
Scott's Pine	120 "	Curraghmore
"	120 "	Kilworth
"	95 "	Doneraile
Douglas Fir	110 "	Powerscourt

It is probable that there are unrecorded trees in Ireland that would equal or rival these heights, and it would be of great interest if any of the readers of IRISH GARDENING can give information on this subject. Of course the measurements should be accurate, and not mere estimates.

Further on we find chapters on "Soil and Surface Conditions," "Methods and Practice," and the "Economic Value of Forest Flora," in every page of which there is information that will be of use to the practical man as well as to the rural economist. We can forgive Mr. Forbes if he jeers a little unkindly at the enthusiast who presses that the State should wave its magic wand and clothe the bare hillsides from base to summit with flourishing forests irrespective of soil or exposure, or

any other condition. Mr. Forbes is evidently afraid that the magic wand would boil down in Mr. Forbes himself as head of the Forestry Service, and he does not want to be "waved" into attempting what he believes impossible.

As showing it to be impossible he illustrates the attempt to plant Knocklong in Connemara some fifteen years ago by the Congested Districts Board, but he does not make it clear that the failure in this case was due, as every practical man admits, not to the ground being absolutely unplantable, but to an unfortunate effort to accomplish the object in too great a hurry, and without taking the necessary precautions to establish shelter, and to reclaim to some extent the soil before planting. The site is as difficult as could well be selected, water-logged peat sloping gently down to the wide Atlantic. As a commercial speculation no one would suggest planting such an area, but there were other reasons for making the venture, and its failure has too often been unfairly quoted as an insuperable argument against "waste land" afforestation.

The last chapter is on "The State and Private Owners," and again the author breaks away from the tradition of former writers, and not only recognises the instance of the small owner or occupier who plants or cares for his few trees, but actually asserts that he is a good man not only improving his own land and his home, but that he is adding his steady service for the well-being of the whole district in which he lives. This is urged most strongly, and it is delightful to find that it is so thoroughly understood and appreciated. The necessity of State aid to private planting is strongly insisted on, but no less strongly the importance of private aid to State planting. That is to say, that the individual must do his share and not leave everything to the State.

To show the admirably broad-minded view taken by Mr. Forbes one quotation—one of many that suggest themselves—must be given:—

"The economic importance of shelter and ornamental trees has usually been ignored or disparaged. The timber they produce is often small, knotty and defective in many ways. In field and hedgerows they may interfere with the operations of agriculture or the ripening of crops. By roadsides they may be a sort of danger in stormy weather, and the cause of slow evaporation from the surface in wet periods. All these objections may be made by persons of scrupulous economy, who believe the world was made to make money in. With all due respect to these authorities, however, it may be pointed out that the civilised world is made up of many features which are not strictly economic, while others are positively wasteful. Yet both classes are considered the accompaniments of civilisation and refinement. . . . A moderate number of ornamental trees in any country is a necessity if its landscape is to be made attractive and the land a pleasant place to live in, for only the very poor or the very ignorant live amid ugly surroundings."

There are over seventy excellent illustrations from photographs, a number of useful tables, and an index.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Broomstown, Cabinteely, Co. Dublin.



DURING the previous months a lot of the gardeners' time was occupied in fighting the frosts. We may hope to escape that task for some time, and turn our attention to keeping down weeds, they grow apace now, and except we keep them in check they very soon crowd our weaker-flowering plants out of existence. Lawns and walks should now be kept in high order.

It will be to the advantage of our herbageous beds and borders if we frequently hoe and rake the surfaces; stake plants likely to get broken during high wind or heavy rain. I have found a convenient way to keep large herbageous plants, such as lupins, gallegia, &c., in good order is to surround them with a circle of large square mesh fencing, known as American fencing, about two or two and a half feet high; the leaves grow through this very soon and hides the wire, while the plants retain their naturally graceful outline. Large plants of some genera, such as phloxes, asters, helianthemums, &c., generally throw up too many flowering shoots; where such is the case, thin them out to as many as the plant is likely to fully develop; they grow stronger, and less staking is required.

Hollyhocks for late blooming may still be planted; by planting at different periods we get a succession of bloom.

Several perennials may now be increased by cuttings inserted in a cool, shady frame, kept close, and damped over a few times each day. Phloxes do especially well from cuttings, and throw large heads of flowers. The following year seedling perennials should be pricked off into a clean, well-dug piece of ground, and carefully labelled, to grow on for next year's flowering.

Violets should have immediate attention. Select a shady border, give plenty of well-rotted manure well dug in, and plant with strong, sturdy runners during dull or showery weather. To keep a sturdy lot of plants it will be necessary to import runners occasionally. Continually propagating the same stock causes them to deteriorate.

DAHLIAS.—Rooted cuttings potted off last month and hardened by exposure may be planted out about the middle of the month. It is a good plan to keep flower pots sufficiently large to cover them near by, so that should frost threaten they may be easily placed over the young plants.

Wallflower seeds should now be sown in lines, and pricked out as soon as fit to handle.

Campanulas and Canterbury bells should be sown in

boxes, and pricked out into a nicely prepared piece of ground as soon as the young plants are fit to handle. Those plants will repay careful treatment, and they require to be strong and well grown before the winter sets in. Where summer bedding-out is practised this is a busy month. Let everything be carefully thought out, and a plan followed, in which the height and distance, as well as the colour, of every plant and every bed are previously determined. The plants should be all carefully hardened off by a gradual exposure to air and sunshine. Every effort should be made to get the spring-flowering plants which are past their best cleared off and replaced with summer-flowering plants with all possible despatch. The most telling effect is to be had from beds planted with one colour. A mixed bed does not leave a pleasing or lasting impression, therefore plant your beds with decided colours, and place the colours so that they do not clash with each other. Bulbs which have been lifted to make room for summer-flowering plants should not be suddenly exposed or dried off too quickly; they should be placed in a trench and covered with soil and allowed to ripen off slowly. If so treated they will make good, strong flowering stuff for next year.

The Fruit Garden.

By G. DOOLAN.

FRUIT PROSPECTS.—Writing at the present time, mid-April, it is, perhaps, too early to predict what the crop for this year is likely to be. Judging from the fruit buds, which appear fairly numerous on the trees, there is evidence of a good show of bloom, so with favourable weather prevailing a good set of fruit may be anticipated. The most critical period, however, has yet to be passed, as spring frosts, which cause so much anxiety to fruit-growers in this country, usually appear when the trees are in full bloom. The harsh weather of the past few weeks has retarded the buds, and this may have an advantageous bearing on the coming fruit crop.

PREVENTIVE MEASURES AGAINST FROST.—In other countries means have been tried to prevent or mitigate the effects of frost on fruit trees during the blossoming period. Heaters have been used between the trees, and lamps have been hung amongst the branches, the object being to raise the surrounding temperature during the frosty period, and thus ensure the safety of the crop. The great drawback to such methods is the cost, for unless the crop was likely to prove very valuable such expenditure would hardly be justifiable. Smudge fires made of sods and rubbish have been used as a means of warding off frost. The cost would not be very great, and if the crop as a result be saved it should well repay the extra expense. Experienced fruit-growers know that the damage done by frost often happens in one night, and the dividing line between safety and injury may only be a very few degrees of frost.

INSECT PESTS.—Where an attack by the apple blossom weevil, apple sucker, or grubs of the codlin moth is feared the trees should be sprayed with Paris green or arsenate of lead as advised last month (page 63.)

Gooseberry bushes subject to attack from sawfly caterpillars should be similarly sprayed, but not later than when the berries are about the size of peas.

APHIDES.—Most fruit trees are subject to attack by aphides, of which the common green fly is an example. Cherries, plums, and black currants are most frequently attacked. Apples and gooseberries suffer to a lesser extent. The attack is noticeable on the tips of the young growths; the curling of the leaves indicate the presence of the fly. The aphid appears usually after a spell of cold weather, and spreads with extraordinary rapidity, so that unless it is checked in the commencement much injury will be done to the growth and fruit. A good remedy is to spray with soft soap and quassia extract, which is prepared by steeping 3 lbs. quassia chips in 3 gallons of boiling water, and allowing it to remain overnight; then the water should be strained into another vessel, and 1 lb. soft soap dissolved in boiling water added. This is sufficient to make ten gallons of spraying mixture, and water should be added to make up this amount. If the mixture is slightly hot it will be more effectual. Where the shoots are severely attacked it may be necessary to dip the affected parts in a portion of the mixture.

MULCHING FRUIT TREES.—All trees and bushes, especially those in a state of bearing, benefit as a result of being mulched, and the best time to do this work is in late spring or early summer. Certain varieties of apples like Bramley Seedling and Newton Wonder make vigorous growth, and do not readily come into bearing, therefore it is not advisable to mulch such trees at this stage. In the natural course they will come into fruit-bearing, or this period can be hastened by root-pruning, then mulching will be advisable. The surface mulch keeps the roots near the top soil and makes the rooting medium, cool and moist, thereby promoting the increase of fruitful roots. It also improves the quality of the fruit. In a dry summer the value of mulch is most apparent, as the ground is then liable to become parched, and trees not mulched suffer as a consequence and carry light crops of fruit.

GENERAL REMARKS.—Strawberries coming into bearing should be watered during dry weather, and if liquid manure is available a few applications to the plants, when the fruit is swelling, will be of great assistance. It should not be continued after the fruit ripens. All runners, except those required for producing plants, should be cut off. Use the Dutch hoe constantly among the fruit trees. There is no better implement for keeping down weeds, and is so easily worked that a child may use it.

The Vegetable Garden.

By J. G. TONER.

BEET.—Seeds of this sweet and much appreciated vegetable require to be sown at a comparatively late date, otherwise there is generally more or less tendency to coarseness. The mangel-like roots that are seen time and again are by no means appetising or nourishing, and are the result of cultural errors more often than a bad strain of seeds. Medium sized, deeply coloured roots are what experienced growers aim at producing, and these are always to be had from

deep and thoroughly worked ground to which dung has not been recently added. The finer the soil can be made by good honest digging and breaking the better the crop will be. Drills at eighteen inches apart are suitable, and the seeds may be sown one inch deep. At a distance of from one to six inches apart the young plants are thinned, so that there may be little likelihood of specimens growing beyond that size considered perfect for the table. In shallow soils the turnip-rooted kinds are easy to manage.

FRENCH BEANS.—Where space is in any way limited it will be found a most economical plan to make use of the climbing variety, for a fairly long supply can be depended on from a small piece of ground. This kind crops earlier than the scarlet runner, is exceedingly productive and considered by many epicures as quite equal to the pods of the dwarf section in flavour. A rare good character indeed!

RUNNER BEANS.—A most prolific and also ornamental variety of the somewhat coarser runner bean is Painted Lady, and on this account it may be used to please the artistic sense as well as to fill the dish. Uncommonly well does it look when trained over arches or climbing high rods placed so as to screen ugly corners. Rampant growers such as these require liberal treatment, but the manure should be placed as deeply as possible in the soil.

TOMATOES.—During this month plants intended for outdoor culture must be well hardened off by transferring them to cold frames where abundance of air can be given on all suitable occasions. If possible, they should before reaching the open quarters have one truss of fruit set. Comparatively few follow this method during recent years owing to the quality of our summer weather; at the same time, there are about many gardens well-favoured spots where these could be grown most seasons with a fair prospect of a paying crop. And, moreover, it does not follow that because a proportion, often a large one, of the fruit does not ripen on the plants that they are worthless or anything like it. This is by no means the case, for the produce of the outdoor plants can be made good use of very late in the season by artificial ripening, thereby prolonging the supply to a very considerable extent.

In all cases it is most desirable to keep them trained to a single stem, not indeed, as is a common practice, by letting them grow into practically a hedge and then coming along with the knife, cutting the superfluous branches off in merciless fashion. Rather should they be looked over at regular periods and the little shoots as they show at the axils of the leaves be rubbed out or pinched off at that stage.

SPINACH BEET.—He was a wise man who said that we like best what we have least of, and this feeling may account for the contempt that some show for this excellent vegetable. The round or, as it is called, the summer variety, with its prickly companion in winter, seem to be the favourites for the tables of many. Quite a number of sowings must be made to keep up the supplies, and in hot weather, notwithstanding careful management, breaks will occur, and then what we have least of we want most, or think we do, which comes to much the same. No such erratic conduct as giving us flowers when leaves are in demand can be

charged to the variety of spinach known as Perpetual or spinach beet. It is not, of course, perpetual in the full sense of the term, but compared with the others it is so. One sowing during this month will at least assure the grower of being able to provide a first-rate green vegetable from July to June. Rich, strong ground is best for it, and the seeds may be put in one inch deep in lines on the flat or raised drills two and a half feet apart. Eventually the plants may be left one foot apart, but only thinned to six inches at first. As the demand increases every second plant may be pulled up bodily and the leaves used; those remaining will soon occupy all the space and prove a most dependable source of supply almost through the whole year.

CUCUMBERS AND MELONS.—The first half of this month is certainly the best period to get these plants into their fruiting frames. The hotbeds should be at least three and a half feet in height and eighteen inches wider all round than the frames. One plant will suffice for a six by four feet structure, and care must be taken not to plant until the heat has subsided somewhat, usually about a week after the bed has been made up.



Notes

HONEY-PRODUCING FLOWERS.—The following is a list of flowers useful to bees. They are all easily grown, and most of them are worth growing if only for their beauty:—*Althæa rosea*, *Achusa gigantea*, *Artemisia vulgaris*, *Borago officinalis*, *Campanula* sp. *Centaurea Cyanus*, *Echium vulgare*, *Hyssopus officianus*, *Lathyrus odoratus*, *Lavendula vera*, *Melilotus alba*, *Mirabilis jalapa*, *Reseda odorata*, *Ruta graveolens*, *Salvia officinalis*, *Trifolium incarnatum*, *Thymus vulgaris*, *Verbena officinalis*.

PYRETHRUM or Persian insect powder is obtained from the dried flower heads of two species of chrysanthemum. It contains an oil poisonous to insects. It may be used in the form of a powder or a spray or by fumigation. Sometimes it is used mixed with flour and then sprinkled over the foliage.

BY THE MARGIN OF STREAMS.—The margin of a stream running through one's ground may often present opportunities for effective embellishment by planting grounds of easily grown semi-aquatics. Mr. K. L. Davidson, writing in *Country Life*, suggests for spring flowering little colonies of the early white primrose *Harbinger*, and, where there is slight shade, *P. japonica*; that best of forget-me-nots *M. dissitiflora*; the double lilac cuckoo flower (*Cardamine purpurea*); and the leafless pink heads of *Saxifraga peltata* which sends up its fine umbrella-like leaves later on—a delightful foliage plant for positions too cramped for the giant *Gumeras*. For summer and autumn the yellow *Mimulus* in the water, and on the banks *Touch-me-not* (*Impatiens*), one

or two of the irises, notably the Japan iris (*I. levigata* and *I. sibirica*); the beautiful blue Virginian cowslip (*Martensia virginica*), Scarlet cardinal-flower (*Lobelia cardinalis*) and autumn coleheiums. But all such planting must be done with discrimination. To be beautiful it must be light, artistic and non-conventional.

Progressive Ireland.

In a special article on "Fruit Culture in Ireland" that appeared in a recent issue of the London *Daily Telegraph*, the following quotation will be interesting to many of our readers:—

"With commendable and characteristic energy fruit-growers in the North of Ireland have set themselves to the task of putting their house in order. Until recently even the best and most advanced orchardists placed their fruit on the market in second-hand barrels, which frequently presented a dirty and uninviting appearance, and were of all sizes and shapes, while the apples contained therein lacked uniformity of size and quality. Buyers could never be sure of the weight of fruit offered for sale, and very often the top layers consisted of beautiful specimens, which served but to conceal the rubbish which lay underneath. Needless to say, such methods were fore-doomed to failure, and even those who conducted their business on honest principles suffered by reason of the bad character which Irish packers had richly deserved. Eventually growers realised the seriousness of the situation, and, greatly to their credit, in the early part of last year was formed the Ulster Fruit Growers' Association to assist cultivators in the disposal of their fruit to best advantage. It was decided to abolish antiquated methods, for it was obvious that if the fruit was to be sold to advantage on its merits in the markets of Great Britain and Ireland it was necessary to cast away the old order of things and adopt modern ways of business.

"Now, the members of the association are working on lines similar to those adopted in Canada. The apples are classed into three grades indicative of the quality and size of the fruit, which is packed in new, clean barrels, or boxes, used only once for the conveyance of merchandise. That is an excellent feature of the industry, as clean, new packages are altogether desirable as vehicles for the carrying of fruit. Generous measure is put into the barrels, which contain about 140 lb. net, whilst boxes hold over 40 lb. Very stringent are the conditions laid down for grading, both in regard to quality and size, and the regulations must be strictly observed by members of the association. By means of careful packing with the aid of pressure, the fruit may be sent over long distances without suffering the slightest damage, the lids of the barrels being very tightly fastened."

The article concludes by saying—"There is great need of a stimulus to fruit-growing in parts of England, especially in the West country, where the methods of culture are very old-fashioned, and some of the varieties of apples fit only for electioneering purposes. Much benefit would be derived if some English growers would take a trip to Ireland, and, despite a little mortification to their pride, learn a lesson from that country in regard to apple culture."

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TO THE READERS OF "IRISH GARDENING"

The January number commenced the Sixth Volume of "Irish Gardening." A Title-page and Index for Volume Five has been issued, and will be sent free to any Subscriber applying for same.

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A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

JUNE
1911

Treatment of Collected Alpines.

By W. H. PAINE, F.R.H.S.

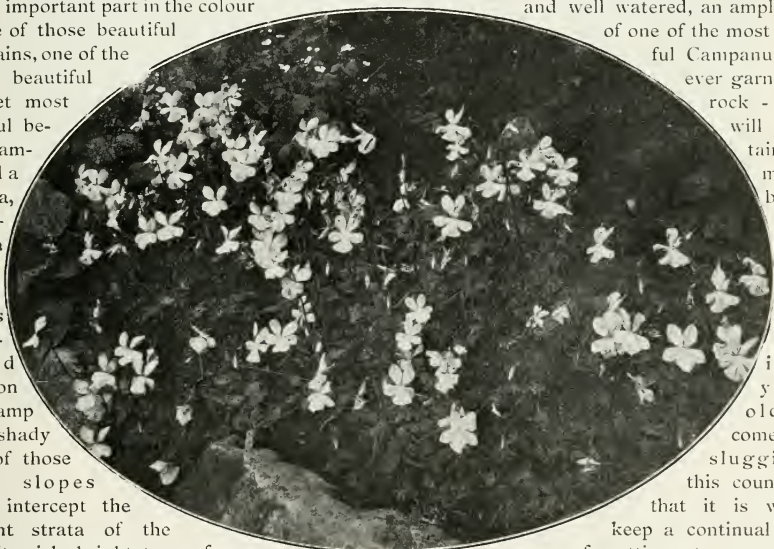
TO complete this series of articles on Nature's great garden in the Pyrenees, I propose to take a review of several of the more important genera not yet treated, the first of these being *Campanula*, for they play an important part in the colour scheme of those beautiful

mountains, one of the most beautiful and yet most plentiful being *Campanula abietina*, growing in almost every case as an isolated plant on the damp semi-shady sides of those small slopes which intercept the different strata of the rock, its rich, bright tone of blue giving the most telling effect when growing in association with a *Silene*, a species which I was unable to locate. The roots of the former take an absolute horizontal direction until it finds a crevice in the rock, when it at once sets about to make a tuberous-like appendage for storing up food in dry periods, and for this reason the plant is not altogether easy to re-establish in this country. The best treat-

ment to give it is to place it in a shady, damp frame, and immediately a little growth is observed cuttings should be taken and inserted in a mixture of sand and leaf-mould of equal proportions. It will be found that, if kept close and well watered, an ample stock

of one of the most beautiful *Campanulas* that ever garnished a rock-garden will be obtained. It may not be out of place to state that this plant, after it is two years' old, becomes very sluggish in this country, so that it is wise to keep a continual supply of cuttings to ensure floriferousness.

Campanula Allioni belongs to that section of plants which bear the same specific name, and also require careful treatment. It is essentially a moraine plant, its roots being sometimes three or four feet long, and the difficulty is that it does not like water, yet some is required to start it in life. Between the two extremes the difficulty is almost sure to arise. Perhaps the best method of treating it after



VIOLA CORNUTA.

collecting it is to wind its roots round a six-inch pot, filling up with a very well-drained compost, getting the growth to start, and afterwards treating it the same as in *C. abietina*.

Campanula barbata, one of the most beautiful of the family, should never be collected as plants. The seed should be collected and sown at home, when it is an easy matter to obtain a good stock.

C. cæspitosa, with its small graceful bells,

method is to put it into a pan, and as soon as growth has been assured, to lay a fairly heavy stone over the joints of the runners, when it will root easily. To any one cultivating this plant, the position in which it grows on the Pyrenees should be noted to assure success.

The common *Campanula glomerata* and its forms may be found in abundance round the edge of some of the wood copse, but it is



CAMPANULA SPECIES (NAME UNKNOWN).

yields to a very similar treatment to the previous species, but is rather easier.

C. alpina and *Alpina tomentosa* require rather different treatment. *C. alpina* has a comparatively smooth leaf, and is generally found on a shady or semi-shady side of the mountain; while *tomentosum*, which has numerous little white hairs on the surface of the leaf, is found on the sunny slopes, the theory being that the little hairs protect the fleshy tissues from the direct rays of the sun. Both the species and its variety do not strike well as cuttings, having a tendency to damp off, so the best

grown so easily from seed that it is not worthy of note here.

Campanula linifolia is a plant seldom found in the Pyrenees, and its variety never. The latter takes its name from the noted valley in Switzerland, the indigenous home of *Saxifraga valdensis*.

Campanula pulla occurs very scantily on the Spanish side of Mount Perdu, and even when found presents a poor contrast to its growth in this country. Judging from the formation on which it does grow, it is a granite lover, although it is yielding to limestone treatment with me at Kildare.

Of our common Harebell *Campanula rotundifolia*, it is growing in the meadows with *Viola cornuta* and *calcarata*, presenting a most marvellous harmony in blues with the fresh green of Alpine meadows.

Campanula Zoysii, a most charming, diminutive alpine growing on the moraine slopes of the Spanish territory of the Pyrenees, and it is almost impossible to re-establish it in this country. It grows on a slaty formation, among

mixture I have found for its cultivation in Ireland.

Then we have the *Soldanellas*, which play a very important part in the flora of the stream sides and damp slopes of these mountains. The most common is *montana*, its fringed cyclamen-like flowers, sitting like jewels in the surrounding spaghnum moss, giving a beautiful contrast in its blue flowers appearing in association with the various *Pyrolas*.



SAXIFRAGA MUSCOIDES.

a kind of shale which, when exposed to the air, crumbles to dust, and it sends its roots into the half-decomposed rock, and is most difficult to extricate. However, I succeeded in saving about half of what I brought home. I think this *Campanula* is about the choicest sweetmeat for slugs I know, for they are not content to devour the tops only but proceed to the roots, so diminishing the chance of re-establishment. So any one trying this little plant must keep very close watch for this arch enemy. It should be planted in a mixture of stone-rubble and leaf-soil, this being the most suitable

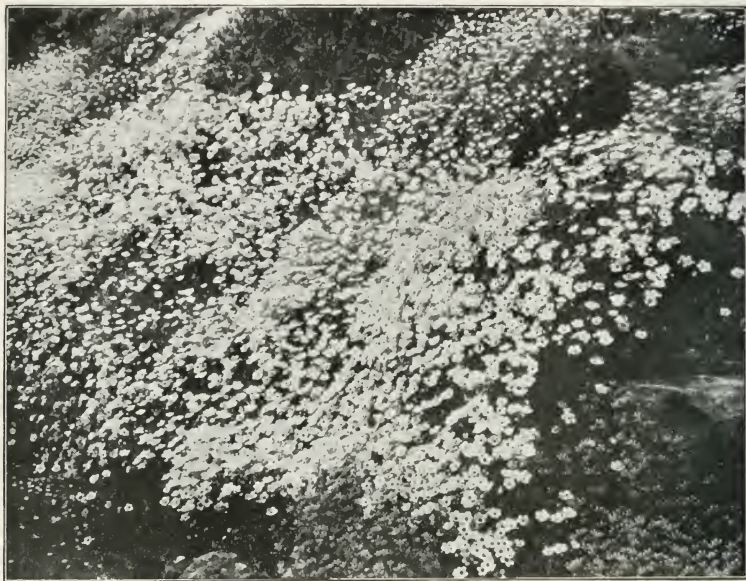
Soldanella minima is of a beautiful refined delicate pink, of such minute size that one almost needs a microscope to collect its roots, although the flower is comparatively large to the size of the plant, and it is found growing among very short moss along the banks of the stream-sides which have a stream washed moraine foundation, and it is common to see patches one yard across. I find in nature that these plants vary considerably, and there is field for study for those who have time for the more minute details.

The *Dianthi*, which I promised to speak of

last month in this issue, are so far beyond me, as they are not yet in flower and I am not able to determine the species. Suffice it to say that the best method to deal with these is to get them to spring into growth and then take cuttings, using a very sandy compost for their propagation.

Now, to deal with the last genera which will come under observation in this series of articles. First, the most important is the "Queen of

festivity and joy after the long weary months of snow, then hastening to seed in order to reproduce itself before the fall of the year; and one may safely say that it is a fleeting glory of a glorious reign, for no other plant trespasses upon its domain. The treatment of this plant is to pot it up in a compost of granite rubble and sand and light soil, of equal proportions, and to lay the plants on their sides facing the sun, where they quite easily form new



SAXIFRAGA DECIPIENS.

Saxifragas." *Saxifraga longifolia*, a plant which grows, as M. Correvon describes, as "from nothing at all," projecting from the surface of the bare rock, throwing its roots away in the crevices that occur in those giant rocks of ages, seeming only to take its moisture from the stone. Yet methinks this plant feeds more through the leaves than any other plant of the Alps, as under the microscope it shows a predominance of organs for that purpose. To see it growing there is a sight worthy of many miles of travel, throwing forth its garlands of waxy flowers as if to decorate the season of

roots and become at home in their new country.

Saxifraga aizoon and its varieties, *balcana*, *glacialis*, *incrustedata*, *minor*, *recta* and *robusta*, form a veritable maze of difficulty when sorting them out for our commercial and botanical correctness. but their cultivation is an easy matter. When planted in a fairly dry situation or potted up they at once make great strides in what is, to them, a superabundance of food.

Saxifraga aquatica I saw beneath a large waterfall, but in such a difficult position that it was impossible to collect. Its rare beauty

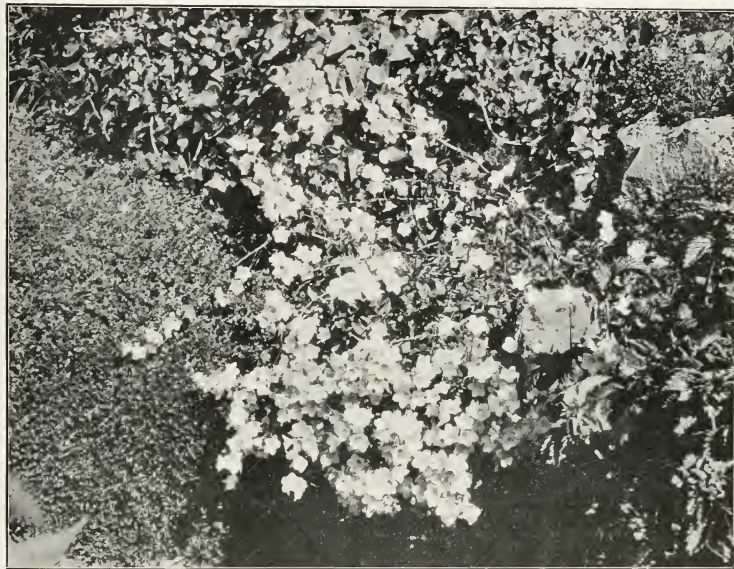
in emerald foliage and purity of flower surpasses anything I have seen in Saxifragas. It is a plant that requires a damp treatment, and yields well to cultivation in Irish bogs.

Saxifraga aretioides is a very slow grower, and presents no difficulty at all in re-establishing, and the few plants I brought home were a mass of yellow flowers this spring. The chief thing to note is that it requires dry treatment.

I hope to deal with one of the most interesting pieces of Alpine flora that it has been my pleasure to survey. The article will be illustrated, and will deal with the district of our Highlands which is only fair to compare with Alpine Switzerland.



SELF STERILITY IN FRUIT TREES.—It is now well known and recognised that quite a large number of fruit trees are sterile to their own pollen. This is true with re-



CAMPANULA SCHEUCHZERI.

Of the mossy Saxifragas I am at present unable to speak, as there is so much confusion among experts that one does not desire to add to it. Other species of note were cotyledon, Clusii, cuneifolia, crustata, geranioides, iratiana, hypnoides and decipiens (various).

The accompanying illustration shows a species of Campanula which I have been unable to determine, but whose rare beauty and floriferousness can easily be seen.

Since writing last month's article I have traversed the mountains of Galway and surveyed the coast of Clare, and in the next issue

spect to certain varieties of pears, apples, plums, and cherries. Among strawberries many individual plants bear pistillate flowers only, and others staminate flowers only. In such cases the pistillate flowers must, of course, be cross-fertilised. It has been observed that in such varieties the largest blooms are male-flowered only, hence runners from such plants should not be selected for propagation, as they can never bear fruit. Self sterile flowers are, as a rule, principally fertilised by bees, hence their importance in orchards. Owing to the spread of a fatal disease among bees in the Isle of Wight the pollenation of fruit blossoms there is seriously interfered with, and artificial pollination is being tried in order to secure something like the usual crop.

Some Ideals in Horticulture.

By J. H. CUMMING.

IT is refreshing to turn away, if for a few moments only, from the conquest and worship of money to the contemplation of nature and her many children. Horticulture is generally looked upon as an ideal occupation, and the same ideals that have inspired our artists and idealists also stand for better and happier homes and contented people. If you seek wealth for wealth's sake turn your face from horticulture. Try instead politics, banking, rubber, "bucket shops," or some confidence game. Horticulture will give you the blessings of an outdoor life, health and long life; besides these, an honest living, a decent burial, and a sweet memory to your remaining friends. That horticulture is an ideal occupation for man as well as woman is attested by the fact that it was the first work given the race by the Creator, and horticulturists to-day are as eager as ever to eat of the tree of knowledge. May this fact not indicate that horticulture and thinking are closely associated? There are such things as combining business with pleasure, and when this is legitimately done we have the ideal as well as the profitable side satisfied. The signs of the times seem to indicate that horticulture in its broadest sense is becoming more and more an occupation for all classes of people.

The artistic or ornamental side of horticulture in past years has suffered for that of commercialism, and perhaps we are just beginning to awaken to the value of decorative horticulture. For the past few years Ireland has been pre-occupied in the establishment of peasant proprietorship, which means new homes and farms, and have had little time to think or to act upon any feeling or aspiration to make a home more attractive and hospitable.

In large populous centres the acquisition of land is becoming more difficult and expensive, but in our smaller towns, where land is cheaper, the authorities should not delay in acquiring sufficient areas for parks and playgrounds to serve for generations to come. Such recreation grounds are good assets in the health and prosperity of the people.

There are thousands of children and grown people in the crowded tenement houses in our large cities who have never tasted the real

pleasures of out-of-door life. Crimes of all kinds and degrees flourish in the crowded cities; and what else could we expect? There is nothing for the mind to do but to brood over their own conditions. Give them a chance to get acquainted with nature, with trees and flowers, and a new vista of life will suddenly be open to them.

With regard to planting in parks and open spaces, I would call attention to one thing that is often overlooked. "The eye is not satisfied with seeing nor the ear with hearing," but an exquisite pleasure may come to the soul through the sense of smell. To a person living in some cities the loss of this sense might be a positive blessing, but to those who live simple and sane lives the development of all our faculties seems desirable. When darkness veils the beauty of the flower from the eye, then the flower asserts its loveliness by its sweet fragrance. Some beautiful trees and shrubs have this desirable quality in a marked degree.

It is not to be inferred that it is the city dwellers alone who neglect planting fruits and flowers. As a rule the farmer is one of the last to provide his family with a liberal supply of fruit and flowers. It is not an uncommon sight to see farmers' wives purchasing vegetables and fruits in the city market.

There is a great deal in the saying that we live to eat. Eating, indeed, should constitute one of the pleasures of life, and the farmer of all persons is the one who has the right to enjoy the fruits of his fields and gardens. It is true that in a large proportion of our farms have fruit trees been planted on them, but this planting is often due to no special desire on the part of the farmer himself, but rather to the persistent effort of his county horticultural instructor.

The horticultural work on the farm is generally delegated to the women of the family, as if it did not require any hard work. It is true that gardening ordinarily requires less physical labour than general farming, but it is also true that it requires more brains. If the same amount of work were expended on an acre of orchard as is expended on an acre of corn the profit from the orchard would far exceed that of the corn.

There is need of an awakening among our farmers and peasantry to the proper appreciation of things beautiful. Fewer young people

would leave the farm if its surroundings were what they ought to be. The early impressions are the most lasting, and if the children be taught to appreciate and love flowers and trees and their nature it would furnish a source of inspiration and knowledge which is now so often lacking. The young man can hardly be blamed for leaving the old home after years of hard work without any prospect for enjoyment or home attractions. The farm must offer something else than drudgery if it is going to attract and hold the future generation to the soil.

Shrubs for Walls

By J. W. BESANT

THE question of how to clothe the walls constantly arises in the house occupied by people with a taste for gardening but with a limited knowledge of plants. Roses, ivy, and "Virginia creeper," each and all good as wall plants, are yet so frequently met with that many other beautiful shrubs are not so often used in this way as they might be.

There is quite a large number of shrubs eminently suitable for covering walls, so many in fact that it will be well to divide them into two classes—those for sunny walls and those for shady walls. Dealing first with those suitable for sunny it will be found that the number of self-clinging shrubs is comparatively small, and where such only are desired the choice is limited. By far the greater number require to be maintained in position by artificial support. The method of fixing the shoots by means of nails and shreds is not a good one. The labour involved is considerable and the shreds are decidedly unsightly, not to speak of the harbour they provide for insects.

Most wall shrubs can be easily and effectively held in position by lengths of galvanised wire attached to strong staples or light holdfasts. In this way the shoots can be disposed naturally, and the method of support is scarcely noticeable.

Many early flowering deciduous shrubs make first-rate wall shrubs, and grown thus flower much better in cold districts than when grown in beds or borders. As, however, walls furnished solely with deciduous subjects are not to some minds satisfactory it will be well to include a proportion of evergreens, preferably those

which in their season bear showy flowers. Many of the shrubs mentioned below are really twiners, raising themselves to the light and air by twisting their stems round branches of trees, &c., while others pull themselves up by tendrils. They may be used as wall plants by attaching to the wall widths of wide-meshed wire-netting, to which the branches or tendrils will attach themselves.

DECIDUOUS SHRUBS FOR WALLS.—*Actinidia arguta*, a Japanese shrub bearing corymbs of white flowers in summer after the plants have become well established; *Actinidia chinensis*, a recently introduced Chinese species, producing very large orbicular leaves, the young shoots and leaves being densely furnished with dark crimson hairs.

The two species of *Akebia*—viz., *ternata* from Japan and *quinata* from China and Japan, make good wall shrubs. The flowers are not exactly showy, being of a reddish purple colour, followed by rather pretty blue or violet fruits. *Aristolochia siphon*, often called the Dutchman's pipe from the curious shape of the flowers, is useful as a wall plant as well as for covering arches, &c. The leaves are large and handsome. *Cercis siliquastrum*, the Judas tree, is not everywhere quite hardy in the open, but makes a good wall shrub. The leaves are somewhat kidney-shaped, and the pea-shaped flowers are bright purple; there is also a white-flowered variety. *Chimonanthus fragrans* comes from China and Japan, and flourishes against a sunny wall. It is often called the "winter-sweet" from the fragrance of the yellow flowers produced in January and February. *Cydonia japonica* in one or other of its many varieties is much favoured as a wall shrub nearly everywhere. Good varieties are—*C. japonica atropurpurea*, a fine dark purplish-red; *C. japonica Knaphill*, scarlet, a most attractive shade; *C. japonica nivalis*, with large, pure white flowers, and a host of others of various beautiful shades. *Exochorda Alberti macrantha* makes a beautiful specimen against a wall. The flowers are pure white, of good size, and produced chiefly on young wood of the previous year's growth.

Forsythia suspensa, although quite hardy, lends itself admirably to cultivation as a wall plant, flowering profusely in early spring, and generally earlier than plants in the open.

Fuchsia riccartoni, an old favourite, makes

a beautiful specimen, flowering freely, the bright red flowers produced on shoots of the current season being quite attractive. *Jasminum nudiflorum* cannot be omitted from any list of wall shrubs. The charming golden-yellow blossoms are welcome in November, and continue to delight us till well into the following year.

Some of the honeysuckles make admirable shrubs for sunny walls, notably the early flowering *Lonicera fragrantissima*. This species flowers on shoots of the previous year, the flowers being white and very fragrant. *Lonicera japonica halliana* is a charming sweet-scented summer flowering species. *Tecoma radicans*, a North American climber, is useful for walls; the flowers are produced in autumn, are tubular in shape, and of a fine orange-red colour.

Many of the vines make beautiful wall plants, chiefly for their beautiful leaves, which often colour brilliantly in autumn. The following species will be found useful:—*Vitis armata*, *V. flexuosa* and *V. flexuosa major*, *V. Thomsoni*, *V. inconstans* (*Ampelopsis veitchii*), and *V. heterophylla*; of larger leaved kinds there are *V. Cogneticæ*, *V. riparia*, *V. Romaneti*, *V. vinifera purpurea*, &c.

The *Wistarias* are beautiful shrubs for walls, the one usually met with being *Wistaria chinensis*. This has mauve flowers in pendulous racemes, while there is also a charming white-flowered variety. *Wistaria multijuga*, like the first named, is also from China, but has much longer racemes of similarly coloured blossoms. There is a white variety of this species also.

Evergreen flowering shrubs for sunny walls and shrubs for shady walls must be left for a subsequent issue.



SWEET SMELLING ROSES.—When, in addition to its beauty of form and colouring, the flower of the rose is sweetly fragrant, no other flower in the garden can rival it in our whole-hearted appreciations. Those of us who grow *Hugh Dixon* or *Lady Helen Stewart* (Hybrid Perpetuals), *Souvenir d'un Ami* and *Souvenir de S. A. Prince*, or *La France*, *Caroline Testout*, and *Viscountess Folkestone* (Teas), know how satisfactory these are among roses, and largely because of their delicious fragrance when in bloom. In other groups we have *Mrs. Paul Bourbon*, *Niphetos* and *Maréchal Niel* (Noisette), while the Austrian and Penzance briar roses are not only beautiful in their simplicity of form but delightfully fragrant as well.

The Food of Plants and Manuring.

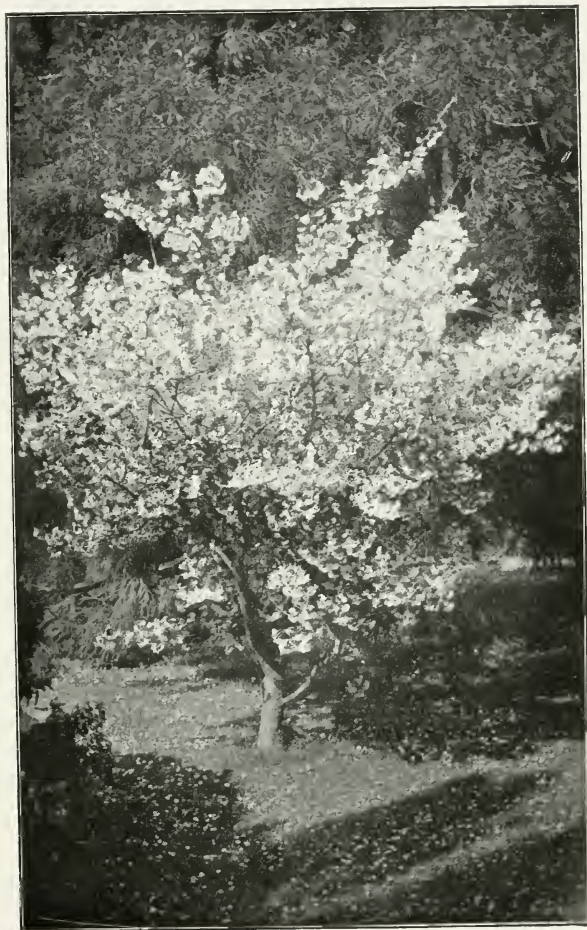
IT is well known that plants can only take in food substances in solution. Anything that will not dissolve in water or in a weakly acid water must remain outside the roots of a plant. A manure like nitrate of soda dissolves in water like common salt, therefore it can be taken in at once by growing crops. Ground mineral phosphate is insoluble in water, therefore it cannot be used immediately as a food, but after a time it gradually changes and becomes slowly soluble. This is due to certain chemical actions that takes place in the soil. One is a quick-acting, while the other is a slow-acting, manure. Great care must be observed in the application of soluble fertilisers, it is so easy to overdo it. The reason is fairly obvious. The root is an extremely delicate organ, and can be easily thrown out of action by giving it a too highly concentrated solution. Beyond a certain strength a food solution will injure, if not actually kill, the roots.

Of the different kinds of food required by crops there are three of special importance—namely, these supplying (1) nitrogen, (2) phosphorus, and (3) potash. All three are present in farmyard manure, and that is why it is such an all-round manure. But in a fresh state it is unavailable to crops. To be of real use it must be fermented. The fermentation is due to vast numbers of bacteria of different races that attack it and break down its complex substances into simpler and soluble compounds. This process takes time, therefore dung is a slow-acting manure. The presence of lime in the soil hastens the fermentation and also corrects undue acidity, especially if the application has been a heavy one. The lime, in point of fact, keeps the soil healthy not only for the hard-working bacteria but also for the living roots of the crop. If gardeners would only but realise the amount of all-round useful work done by lime in the soil they would certainly use it more than they do at present.

Soils, of course, differ very much in composition. Some have plenty of this but a poor supply of that, and in such cases an all-round manure such as farmyard manure may be fully supplemented by the application of a fertiliser containing a large percentage of the

Prunus Pseudo-Cerasus (syn. Cerasus Sieboldii rubra).

PRUNUS Pseudo-Cerasus (syn. Cerasus Sieboldii rubra) is one of the best of the April-flowering small trees. In the type the flowers are white, but varieties with pale rose blossoms are often seen, two of the best being Waterer's variety and J. H. Veitch. The tree is perfectly hardy, and flourishes in a well drained, loamy



From a photograph by

[W. Winstanley

PRUNUS PSEUDO-CERASUS (SYN. CERASUS SIEBOLDII RUBRA.)

soil. Attention to pruning should be given while the trees are young, regulating the branches so that each may enjoy plenty of air and light. The result in later years will be evident in such handsome specimens as the one portrayed above.

lacking food substance. Suppose the soil to be poor in phosphates, to add an all-round manure in sufficient quantity to supply enough of this ingredient would mean giving to the soil a great deal more of the other two than is necessary. Therefore, to avoid such obvious waste the required excess of phosphate can be supplied by the application of a purely phosphatic fertiliser in addition to an ordinary application of farmyard manure. This is the fundamental principle of rational manuring. Let us take a concrete example. We are growing, say, tomatoes in a rather clayey soil. We mix with the soil about one part to eight of decayed farmyard manure. But the clay is lacking in phosphoric acid and perhaps in lime; we therefore mix in with the manure a certain quantity of basic slag. This will provide the two substances that are lacking, and hence make a more balanced food supply in the soil. When the plants enter upon the exhausting process of fruit production it will aid the plant in its work to supply it, say, fortnightly with an easily absorbed all-round ration made up of two parts of sulphate of ammonia, four parts double superphosphate, and one part sulphate of potash, well mixed together, and which may be applied as a top-dressing in solid form at the rate of 2 ozs. per square yard. But it should be understood that no hard and fast rules as to actual quantities can possibly be given, as so many factors influence the growth, such as variation in soil, composition of farmyard manure, variety of plant, and so forth. Observation and experiment must go hand in hand with gardening. For instance, if it is found that the tomato plants in the above example are getting too luxuriant in stem and foliage, then less ammonia must be supplied, and a good dressing of bone meal applied to steady the growth.

Gardeners with little experience in the use of artificial fertilisers should try experiments on a small scale, and carefully note the results. It is rather futile to attempt such a complicated matter as the feeding of a crop by merely following instructions in books and gardening papers. One may acquire a fair working knowledge of the principles underlying the practice of manuring by intelligent reading and study, but the successful application of such principles can only be attained by actual trial and from observation and reasoning based upon comparative results.

Should a crop appear to lack vigour, the growth too stunted, and the foliage a sickly green, try the effect of a little nitrate of soda. Such an appearance is often due to nitrogen starvation, and the nitrate will supply the missing element. On the other hand, a too luxuriant growth of shoot is frequently due to excess of nitrogen compounds and a poverty with respect to either phosphates or potash. Should you notice such excessive growth, try the effect of an application of superphosphate; it has a great steadying influence, checking shoot formation and encouraging the production of flower and fruit.

Potash appears to have a great influence upon the rate of starch- and sugar-making in the green leaves of the crop, and as the bulk and weight of the crop depends upon the amount of starch made during the hours of sunlight, the presence of potash in sufficient quantity in the soil is very essential to success. Clays are usually well supplied, but sandy, chalky, and peaty soils are, as a rule, insufficiently supplied for the needs of ordinary garden crops. Wood ashes contain potash in an easily absorbed state. Sulphate of potash is a very convenient salt to use. It is much purer than kainit (the most commonly used potash manure), and, although dearer in price, it is the best to use in a small garden, especially during the summer months.

In applying manures, the nature of the crop, as well as the composition of the soil, must be understood. Peas and beans, for example, will benefit little, if at all, from being fed with a nitrate, as owing to the work of the bacteria in their root nodules they can get their supply of nitrogen from the air. All Leguminous plants are similarly independent of nitrogenous manures. On the other hand, green crops will thrive best with an abundance of nitrogenous food, while fruit trees will produce too much shoots and too little fruit if over-fed with rich nitrogenous substances. Again, root crops, like turnips, have a difficulty in obtaining minerals, especially phosphates, while potatoes demand relatively large quantities of potash.

The above remarks were suggested by the perusal of a little manual on "The Science and Practice of Manuring," by W. Dyke, sent to us for review. It deals with the whole subject in an accurate yet popular style, and any one desirous of knowing more about the subject can get the booklet from the Lockwood Press, 1 Mitre Court, Fleet Street, London, for 1s. 2d. post free.

Roots and their Functions

By G. O. SHERRARD

IF a seedling plant be lifted very carefully from the soil it will be found that the soil particles adhere with great tenacity to the parts of the root system close behind the tips of the main root and of the various side

in soil, these root hairs may be seen as a sort of fur at a short distance behind the tip of the root. Only a small portion of the root is covered with these hairs, for as the root elongates the upper hairs die off and fresh ones develop lower down; the root hair region is thus continually advancing as the root-tip penetrates further into the soil.



From a photograph by]

[W. Winstanley

AMELANCHIER VULGARIS (THE SNOWY MESPILUS)

Is a native of Europe, flowering in this country in early April. The flowers individually are not large, but are produced in such profusion as to entirely justify the popular name. There is no difficulty in cultivating this beautiful tree, as it will flourish in any soil of average quality. Like other early-flowering subjects an evergreen background enhances the beauty of the flowers

rootlets; even if the plant be given a gentle shake it will not at once detach the soil particles from these regions. A close examination of the root will reveal the fact that the particles are attached to fine hairs which radiate from the surface of the root in all directions. If the seedling has been grown in moist air instead of

These root hairs indicate the region of the root where absorption takes place; in fact, they are themselves special adaptations for the absorption of soil water by the root.

Under the microscope a root hair may be seen to consist of a finger-like protrusion of one of the cells of the skin of the root into the soil.

This elongated cell is hollow and filled with fluid (cell sap), while its wall is composed of vegetable membrane. There is no opening in the cell, so that it is by no means apparent how the water from the soil carrying the materials for nutrition in solution can enter the root. However, it may be shown by a simple experiment that, if a vegetable membrane separates two liquids containing substances in solution, and one liquid is more concentrated than the other, then the weaker fluid will diffuse through the membrane into the more concentrated one, and this is what happens with the root hair and the soil water. The cell sap of the root hair is more concentrated than the soil water, consequently the latter passes through the cell membrane into the root hair. Thence it diffuses into the neighbouring cells of the root until it reaches the vessels which stretch from the central core of the root upwards to the veins of the leaves like sets of water pipes. Up these the soil water is forced, how exactly we do not know, and finally the leaves are reached, when part of the water is evaporated off into the air, part used in the manufacture of starch, and the dissolved salts built into complex food-substances of value to the plant.

But why, we might ask, does the root hair cling so tightly to the particles of soil if its object is merely to obtain soil water? The answer to this is that in all except water-logged soils or immediately after rain the water surrounds the particles of soil in the form of thin films and does not fill the interspaces (which contain air), and it is to draw upon these encircling films that the root hair clings so tightly to the particles.

The absorption of water is not confined to those cells of the root epidermis which are prolonged into root hairs, but also takes place through the ordinary flattened cells of the root skin. Some conifers possess no root hairs, while in the case of water plants they are very seldom present, as these plants do not have to seek for their water supply.

Roots, in common with all other organs of the plant, absorb oxygen from the air and give off carbonic acid; in other words, they breathe. Hence the necessity for a well-aërated soil for all except marsh or water plants, the roots of which have adapted themselves to more or less airless conditions. The sickly appearance of an overwatered pot plant is principally due to

root suffocation. The carbonic acid gas excreted by the root becomes dissolved in the soil water and acts as a weak acid in breaking down and rendering soluble some of the mineral constituents of the soil, thus enabling them to be absorbed by the roots. If seeds are germinated in contact with a slab of smooth marble the young roots, where they touch the marble, may be seen to etch its surface owing to the dissolving action of the carbonic acid which they excrete.

The roots of many forest trees are helped by certain fungi which attach themselves to the roots, and in return for a certain amount of nourishment help to change the leaf-mould into such a condition that it can be absorbed by the roots of the tree. A somewhat similar arrangement for mutual benefit exists in the case of the bacteria inhabiting the swellings on the roots of leguminous plants which render the nitrogen of the air available as plant food.

In the case of semi-parasitical or wholly parasitical plants the roots have partly or entirely lost their functions, and the plant attaches itself by suckers to the roots or branches of other plants. The Eyebright, Yellow Rattle and Lousewort of our pastures are examples of semi-parasitical degenerates, while the mistletoe does not attempt to obtain any food materials from the soil for itself. The aerial roots of orchids hanging from the branches of the trees in a tropical forest are enveloped in a parchment-like sheath which can absorb moisture from the air and hold it like blotting paper, thus they fulfil in the air the absorptive functions which other plant roots perform in the soil.



HIGH upon the bleak cliff where the wild wind dashes
Grows that little garden which my soul loves best,
Filled with flower-faces, white and blue and yellow,
Sheltered from the east wind, but cradled by the west.
Tossed against its limestone clings one pallid Woodbine,
Spreads the golden Trefoil, waves the Hairbell tall,
Saxifrage and Bedstraw, Pimpernel and Eyebright,
One little hollow rift finds room enough for all.

Close along its ledges cluster snowy Dryas
Roses are the flowers, yet it clutches hard the rock,
Claw-like its rootlets, roots like claws of seagulls,
Scornful of the tempest, and proof 'gainst every shock.
Campions fill the corners, careless little growers,
Loved of the roving moth, which visits them at night;
Under silvery leaflets round, balloon-like blossoms
Tumble in a tangled mat, mingled green and white.

—Emily Lawless.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Breenstown, Cabinteely, Co. Dublin.



SUMMER has now fairly thrown open her doors of green, the whole landscape is clothed in foliage of different shades; the fields are covered with gay-coloured flowers, and the gardener begins to reap some of the pleasures which he has been working and planning for so long.

Where summer bedding is extensively practised, the beginning of the month will find us hard at work "bedding-out." Until the individual plants are sufficiently grown to meet and intermingle, the beds cannot be expected to harmonise perfectly; but this period of their growth is fast approaching, and some judgment may now be formed of the taste with which their arrangement has been carried out. Plants which may have been planted out during warm, bright weather will well repay careful watering and some shading during the hottest portion of the day. Water towards the evening, and frequently stir the surface of the beds and borders to prevent rapid evaporation and cracking of the surface. Any failures should be made good from our reserve stock. Carefully stake and tie any plants

which are likely to get broken by wind or heavy rain. Where an early display of flowers is not required, the buds should be picked off; this will enable the plants to grow stronger. Remove any seed-pods forming on plants required to continue blooming.

The most pressing work during June will be to keep walks, lawns, flower-beds and borders in good order; all lawns will require mowing at least once a week. Now is a good time to apply daisy sand to weedy lawns, as it is most effective during warm, bright weather. If tulips are left to ripen off in the borders, it is necessary to have the seed-pods removed; by so doing we greatly assist our bulbs to enlarge, and prepare for next year's flowering. If hollyhocks, delphiniums, phloxes, asters, &c., seem to have too many shoots or present the appearance of being overcrowded, thin out the shoots. What are left will flower much better.

During the early part of the month tree-peonies (*Paeonia moutan*) will be giving a fine display; these plants always look best growing on a lawn or front of a large shrubbery. They can be increased by layering the shoots.

Roses will require a great deal of attention, standards and pillar roses should be carefully tied in. All forms will require to be kept free from the rose-maggot and greenfly. The maggot must be looked for and destroyed; we shall find him in the curled leaf at the

end of the young shoot. If not picked off they will destroy a lot of bloom by eating out the point of the shoots. It will be necessary to use a good insecticide at least once a week to keep greenfly in check. A knapsack sprayer is the quickest and most economical method of applying the wash. We must also fight the mildew, and I believe if spraying is commenced early and regularly, and systematically carried out, it will be easier to prevent it than what it is to cure it if we get our plants bodily infected. Liquid manure applied now will greatly assist the blooms and encourage the plants to send up strong shoots for second flowering; towards the end of the month some sorts will be firm enough for budding, and some sorts work best on the flowering shoots, but, generally speaking, July and August are the best months to bud in.

Carnations and pinks as they grow should be secured to their stakes, reducing the number of flowers should the plant be weakly. They may require shading during the brightest part of the day. Do not allow them to suffer from drought.

Auriculas, primroses and polyanthuses, when removed after flowering, should be carefully broken up (not cut) and planted on a north border to make good plants for planting out next October. Sow seed now and prick off in boxes when large enough to handle.

In the shrubbery tying up and mulching is the chief duties. Some shrubs are best if carefully pruned after flowering, such as ceanothus, exochorda, loniceras, &c., especially if trained against a wall. They then throw out nice young shoots which will be fully ripened before the autumn, and will flower well the following year, while presenting a compact tidy habit. As the rhododendrons and other American plants go out of bloom remove the seed-pods and give an occasional good soaking with liquid manure water. Trim box-edgings during dull, showery weather, and generally maintain a clean tidy, surrounding to your flowering plants.

The Fruit Garden.

By G. DOOLAN.

THINNING THE FRUIT.—This work is usually overlooked by fruit-growers, although it is an important factor in the production of extra choice fruit in addition to the benefits which accrue to the trees. One reason for this neglect is, no doubt, the rarity of heavy crops, for continuous crops are the exception, not the rule. Growers have to contend with many causes—such as frosts, hail, or pests—with the result the thinning is often done in a drastic manner, hence only under favourable conditions is a good crop assured. It should be remembered that all fruit trees store up food for the succeeding year, but if an extra heavy crop has to be borne the strength and resources of the trees are over-taxed. This is very noticeable after an excessive crop, when the trees are more or less fruitless the season following. Thinning the fruit when the crop is an extra heavy one is therefore very necessary. All small and deformed fruit should be removed and fruit in clusters reduced to two or three of the best shaped. Different varieties vary in cropping capacity, so it is difficult to state definitely the amount to be

removed. A glance at the tree from all points is a good guide, and it will then be seen how thickly set is the crop, which can be reduced accordingly. Healthy, vigorous trees may be allowed to carry a much greater amount than weak-growing varieties; indeed, it is the weak-growing varieties that often need the severest thinning, as they are very prone to crop heavily. Trees on the Paradise will need more attention than those on the Crab stock, as the tendency of the former is to produce too much fruit in proportion to the amount of growth, whilst with the latter the converse is the case. Apples of the Early Victoria type may be thinned a second time when the fruit is about three-parts grown, and thinnings will then be found useful for stewing. It is not, as a rule, necessary to thin small bush fruits, except gooseberries, which should have the largest berries picked when there is a good crop. Gooseberries realise a good price when marketed early. In the case of newly-planted apples, no fruit should be allowed on the trees the first year, and in the second year only a very few to each tree.

WATERING FRUIT TREES.—This is not often necessary in the open ground, especially where the trees are well established and mulched with manure, but on light soils trees often suffer during dry weather, and wall trees also suffer. Water should be applied to such trees at intervals of three weeks. This should be done in a thorough manner. Constant wetting of the surface is of little avail—far better to effectually saturate the ground at every application. If the trees are bearing crops, liquid manure, applied immediately after the watering, is of great benefit to improve the yield and quality of the fruit. For this and spraying purposes it is advisable to have the water convenient.

GENERAL REMARKS.—The young growths or suckers of raspberries should be reduced to six or eight of the strongest, and if the ground about these has not been mulched it should have a good mulch of manure without delay. Of all fruits, the raspberry requires liberal treatment in this respect. Suckers arising from the base of apple, pear and plum trees, and gooseberry bushes, should be removed. Not only are they unsightly, but they rob the trees of much nourishment. Grafts will now be growing freely, and where clay has been used it should be removed. This can easily be done by placing a stone against the ball of clay, and then striking it on the opposite side with a hammer or stone. The young shoots must also be made secure against accident from wind or other causes. A stake tied firmly to the stock near each graft, and allowed to extend beyond the growth, will provide a suitable support to which the young shoot can be tied.

The Vegetable Garden.

By J. G. TONER.

GARDENING in all departments will now be in full swing, and much thinking as well as work must be done. This and next month will see many important crops for winter and spring use planted out in their final quarters. Though the weather of late has been dry, warm and summer-like, ground that has been well handled still retains plenty of moisture, so

there need be no fear that transplanting will in any way hinder growth. It is the rule with all good gardeners—not necessarily professionals, for there are many amateurs who could give them a long start—to, if possible, have all such plants as Brussels sprouts, broccoli, cauliflowers, and such like, pricked out on temporary beds to gain strength, and where this has been done they should be thoroughly watered some hours before being disturbed, so that large balls of clay may accompany the roots. Let water be given again after the planting has been done, and they will never look back. Those who must depend on plants pulled from the seed bed, or that have come from the nursery all innocent of soil, will do well to “puddle” them before planting. What in the name of goodness is “puddling”? It means the placing of the roots in a thick, creamy mixture of manure, clay and water. A proportion of this mushy stuff adheres to the roots, keeps them moist for the time being, and gives them a start ever so slight in growth.

CELERY.—Very often celery plants are kept too long in the boxes or beds, and there is much destruction of roots by-and-by, when they have got badly matted. Big, crispy, sweet celery is not to be had no more than anything else that is worth having without the taking of plenty of pains and care. It is true to say that hardly any vegetable resents ill-treatment more nor revenges itself so surely, not perhaps on the person who neglected it, but on the unlucky consumer. There are thousands of gardens at present where no trenches have yet been prepared for the reception of the plants. Let it be done at once. The upper layer of soil taken out should be kept to one side, and when the subsoil is removed return that which was on top to the bottom of the trench, with equal or nearly equal bulk of manure. Superphosphate will also be of much benefit, and might be mixed with the soil before it is returned to the trench. The water supply is even of more importance, and must be plentifully given while there is opportunity for doing so.

INSECT PLAGUES.—In perhaps the majority of gardens much difficulty is experienced in cultivating even middling crops of carrots and onions owing to the presence of their special enemies, the carrot and onion flies. The former, *Psila rosea*, will be coming along just now, and eggs will be laid just beside the young roots. When the maggots hatch from these we may say good-bye to nice, clean carrots, or perhaps to roots fit for use at all. There are many methods of dealing with this pest, and, needless to say, good culture has a lot to do with staving off such attacks. Sowing rather early and observing the same rule as regards the thinning helps very largely to bring them through alright. The thinning should be seen to when they are an inch high, and the soil made fine and closed well in about the crowns. Over this might be laid a layer of fine ashes that have been passed through a quarter or three-eighth sieve, having sprayed it lightly with paraffin oil and mixing thoroughly before applying to the rows of plants.

The onion fly lays its eggs in much the same manner, and if the onions are grown in lines they may be treated in precisely the same manner as the carrots. If in either case the crop is grown broadcast, the better

method would be to apply the following materials with a sprayer or fine-nosed syringe:—1 lb. soft soap, $\frac{1}{2}$ pints water, boil for half an hour; then stir in immediately $\frac{1}{2}$ pint paraffin, and make up to 8 gallons by adding water. Evening is the best time to apply it, and it would be well to do so at intervals, for all the visitors may not make their appearance at the same time.

LATE PEAS.—It will be nearing the end of the season for sowing these, as after this month has passed a week or two it would be surer to depend on the earlier kinds. No garden should, however, be without its row of Gladstone pea. It is a great grower and cropper, besides being quite the best for the show bench late in the season. Above all other kinds it seems to benefit most by being sown very thinly. Three rows of seeds placed three inches apart each way will give surprising results. The cautious people may of course sow thicker, but ought to thin them out to that distance when danger of gaps is past.

BROCCOLI.—Round about this time seeds of the very late broccoli are sown, and the later in season this is done the greater the length of the supply. Any of the three or four sorts that are most in favour—such as Model, Last of All, Late Champion, Methuen's June—will, if seeds are sown now, be in use at this time next year, and welcome they will be to those who survive to eat them. The mild winter that is past and the recent warm weather caused quite a lot of these to tumble into readiness all at once, thus curtailing our supply by a fortnight or more.

Book Notices.

FERNS.

EVERY lover of wild plants is interested in ferns, and every gardener recognises their value as decorative subjects when planted in situations that favour their free growth and full development of foliage. Yet, excepting a few of the very commonest species, the generality of gardeners—professional and amateur alike—are practically unfamiliar with the names and characters of the forty odd species that are native to these islands. This is perhaps due not so much to a lack of interest in the subject as to the want of a book written in plain language, and suited to the requirements of people unfamiliar with the botanical technicalities of the schools. Such a book is the one before us,* in which Mr. Francis George Heath presents, in his usual lucid and popular style, a series of accurate descriptions of forty-five species of ferns, most of which are native to this country. The book is of convenient size for the pocket, and is well illustrated with fifty illustrations that will prove most helpful to beginners in the field.

In the chapter devoted to a comparison of seeds and spores there is an unfortunate confusion of ideas as well as misstatements and apparent contradictions, but this, after all, is a small matter in a book intended as a "pocket help for the collector."

To any one desirous of devoting some of his spare

* *British Ferns: a Pocket "Help" for the Collector*, by Francis George Heath. Sir Isaac Pitman & Sons, Ltd. 2s.

time to the study of ferns in the field cannot do better than to get and to use this little book as a help towards becoming acquainted with the species growing in his own locality. For a summer holiday it is just the book to take in one's pocket when rambling over the country.

THE "IRISH REVIEW."—With the month of June the *Irish Review* reaches its fourth number. This periodical improves with each issue, and readers with literary taste will find much to interest them in its ample pages. The type used and the whole "get up" of the magazine make it a positive pleasure to read. Not that the contents need the beautiful setting to commend it to the reading public. It deals essentially with Ireland, and its promoters have succeeded in securing the services of some of the best literary men and women in the country. The foremost leader in the present revival of letters in Ireland—Standish O'Grady—contributes a wonderfully graphic article on an episode in ancient history, and applies it to present-day conditions in Ireland. John B. Yeats' painting of Mr. O'Grady, hung in the Municipal Art Gallery of Dublin, is reproduced in the present number. George W. Russell continues his remarkable and outspoken series of articles on the "Problem of Rural Life in Ireland," which ought to be read by every one interested in the future of the country, and, as the *Aberdeen Free Press* says, by every rural reformer in the three kingdoms. Literary articles, poetry, sketches and the continuation of James Stephens' clever story dealing with lowly life in Dublin go to make up the interesting contents of a magazine that has already found its place among the monthlies. It is sold at sixpence.

A Progressive Horticultural Society.

A SUGGESTION TO THE COUNCIL OF THE ROYAL HORTICULTURAL SOCIETY OF IRELAND.

WE have received a copy of the first number of the *Monthly Magazine and Circular* issued by the North of England Horticultural Society. The idea of publishing such a journal is excellent, and we sincerely congratulate the society in its enlightened public spirit in providing its members with such a medium of inter-communication. It consists of a neat little pamphlet of 32 pages of reading matter, put up in a coloured wrapper, well printed on good paper and illustrated. It begins with a full list of the members of the different committees and of its fellows, followed by a series of interesting reports, papers and information as to forthcoming meetings, shows, lectures, &c.

The first article deals with a suggested scheme of education for a young gardener, drawn up by the secretary, the Rev. Bernard Hall, and this is followed by a thoughtful paper on the qualifications of a gardener, by a member of one of the committees. Then there is a full report of a lecture on "Soil Germs and Plant Food," given by Dr. E. J. Russell, of the Rothamsted Research Station, in which some of the latest results of science bearing upon horticultural practice are described with fascinating interest. It will thus be seen that the society is making a bold attempt to realise the primary object for which it was established—namely, to be "educational in the broadest

sense," to hold exhibitions, to arrange lectures on horticultural subjects, and by means of a journal to keep its members abreast of the times. An interesting feature will be a monthly review of the chief articles and illustrations in the gardening press, and for this purpose an honorary staff of reviewers has been enrolled.

We should much like to see our own Royal Horticultural Society follow the lead of this North of England Society. There is certainly wanting some material bond of union (one other than mere fellowship) between the members of a national society scattered widely apart throughout our four provinces. A journal appears to be the best instrument to use, as it would not only link together its members in a common interest, but at the same time would give to non-exhibitors something material in return for their annual subscriptions. We have little doubt that the adoption of such an idea by the council of the society would result not only in greater efficiency but in increased membership. At all events it is well worth consideration.

W. E. GUMBLETON.—The current number of the *Kew Bulletin of Miscellaneous Information* contains the following appreciation of the late W. E. Gumbleton (Belgrove, Queenstown, Co. Cork):—"Gifted with an artistic temperament and at the same time possessed of a wide knowledge and endowed with a strong character, his personality was an extremely interesting one. A constitutional readiness to cavil at the opinions expressed by others and a peculiar sensitiveness to contradiction so far as his own views were concerned, prevented his being universally popular. But by those who could realise and appreciate his enthusiasm, who could find their way to the kernel within the husk—and the number of these was by no means limited—the death of Mr. Gumbleton will be felt as having created one of those blanks which cannot readily be filled. A man of means, leisure and taste, Mr. Gumbleton devoted himself to gardening, and accumulated at Belgrove one of the richest libraries of works bearing on this subject in Ireland, and brought together there an extremely interesting collection of plants. These he dealt with in a characteristic and methodical fashion, concentrating his interest for the time being on some special genus or group of genera, acquiring as many forms as possible of the genus or group on which his attention was focussed, and studying them thoroughly from the horticultural standpoint. He could not, how-

ever, be induced to supplement the notes which he made, and often published by the preservation of authentic specimens; as a consequence much of the varied and valuable information so carefully acquired disappears with his decease; a circumstance which intensifies the regret which his death causes, not only to those who fully understood him and appreciated his many high qualities, but to those who only knew him as a keen and competent student of garden plants."

A FERN GARDEN.—The planting of hardy ferns should be one of the most beautiful forms of wild gardening, says Miss Gertrude Jekyll in the current number of *Country Life*. Though they are well suited for many uses in the garden proper, yet for their full enjoyment in fair quantity and sentiment of association with shade in woody places is the one that is the most sympathetic. Therefore, a copse or any kind of woodland that adjoins or approaches garden ground should form the most desirable setting for the fern garden. Best of all would be some natural pathway in a shaded hollow. Such a place often occurs in wooded land—possibly a former pack-horse track or some such ancient way that has long gone out of use, but that retains its form and has acquired a rich surface soil, precious for ferns from the accumulation of the decayed leaves of hundreds of years.



ABELIA FLORIBUNDA

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GETTING RID OF STINGING NETTLES.—From experiments conducted in Germany it appears that spraying with a 15 per cent. of kainit in spring gets rid of stinging nettles. The shoots blacken and die off, and any new young shoots are weak and puny. The underground stems, too, seem to blacken and die away. It has been suggested

that it is the presence of the common salt existing in the kainit that produces the harmful effect. It has been found that cutting the shoots down in the spring and dressing with salt at the rate of about 5½ lbs. per rod will free land of these pests. Another plan has been successfully adopted in America for these and other bad weeds—namely, to spread tarred brown paper over the cut clumps, and load the sheets down with stones to keep them in position. This will starve and choke off the weeds.

A WRITER in *Nature* recommends belladonna plaster as a remedy for bee stings. It should be applied immediately after being stung, and in the majority of cases it seems to be an effectual antidote.

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NOTICE—

**TO THE READERS OF
"IRISH GARDENING"**

The January number commenced the Sixth Volume of "Irish Gardening." A Title-page and Index for Volume Five has been issued, and will be sent free to any Subscriber applying for same.

Readers of "Irish Gardening" are asked to kindly introduce the paper to any of their friends interested in plants and gardening, and to suggest that the commencement of a new volume is a good time to become a subscriber.

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Irish Gardening

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A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

JULY
1911

Alpine Ireland

By W. H. PAINE, F.R.H.S.



SITUATED in the extreme west of the British Isles, overlooking a rugged coast, bounded on one side by Lough Corrib, that famous Irish inland sea, and on the other by the vast Atlantic, is the territory of mountain and water. Such varying conditions of altitude and complexity of situation for plant-life presents itself as an ideal spot for a varied flora, and with these sunny prospects in view I set out to climb the Galway mountains.

The most surprising thing to record is the height to which the boggy land ranged in these mountains. Truly, Ireland is a bog-begotten country. After two hours' upward march the voice of the water was still to be heard as we marched along.

Then suddenly we entered into a barren district of stone, which had

fallen from the mountain-tops and formed long sloping moraines, which consisted of such huge boulders that no soil rested on them, and consequently no plant life was observed.

Just above this our climbing began in earnest. From ledge to ledge we scaled for some little time, and finally came on to a tableland, which was clothed with *St. Dabeoc's Heath*, *Menziesia polifolia*, and *Erica tetralix*. Leaving this highland moor we proceeded upward in company with a prostrate form of *Juniperus communis*, which clung with affectionate embrace to those sombre rocks and slopes, and scarcely ever attained a height of more than three inches, though many yards wide. It had an eaten

appearance, caused, I suppose, by the wild goats, who subjected it to a continual process of clipping. It has bluish-black fruits, which in Holland form an important article of commerce, and is said to impart a peculiar flavour in the national liquors. Then for some distance the mountain is practically barren, having large bare faces of rocks sloping upward before one, presenting rather a difficult ascent.

Here and there came bright patches of *Armeria maritima*, growing in wee dots, its leaves forming rosettes resembling that of an *Androsace*, throwing out spikes of flower of surprising size, yet dwarf compared with the vitality of the plant. Also *Arenaria ciliata*, the *Fringed Sandwort*, was seen but only at rare intervals. Climbing on we came across colonies of *Armeria maritima*, in such surprising forms of growth and shades of colour, and particularly one stands out which is deep crimson in flower, with a much corymbose formation of flower only about a half an inch away from the stem, which at first sight probably suggests starvation or malformation, but it was continual throughout the mountain-top of *Soldier's Bent*, one of the mountain tops of the twelve Galway pins.

Thus far we had arrived by lunch time. Sitting on the very apex of this mountain, looking to right hand over County Mayo in all its hills and dales and to the left along the undulated coast of Clare, with its washing, roaring waves, and in surveying the inland landscape, you would notice a number of small pools which increase in size as they approach the mountain district, like straggling clouds which mark the approach of a breaking storm, and running up inland are numerous fjords,

which altogether give the appearance of a conquest between land and water. Away in the skyline it is hard to distinguish the black of the land from the dark clouds in the sky or the lake water from the light horizon in the distance, and it is a question of not knowing where land ceases and sky begins.

An atmosphere of weird solemnity in that sombre outlook rules supreme, and then began one of those sea mists which present one of the charms, or otherwise, of the beautiful open-

One of the most notable pieces of vegetation was the usually insignificant sphagnum moss, for it was here growing in the dale, taking upon itself such marvellous hues of green, where moisture favoured it, and where the struggle was keener it blended into brown and red of such bright colours that in the distance it was difficult to be persuaded that it was moss.

After surveying the possibilities of this valley for some time we again ascended to another point, and here we found growing *Saxifraga*



Photo by

DRVAS OCTOPETALA, SHOWING CHARACTERISTIC HABIT.

[R. Welch

air life. Still we plodded on down deep slopes, scaling greater precipices, noting nothing of more interest than *Erica vulgaris* in abundance. We had done four of the pins before anything attracted our attention, when a few straggling pieces of *Saxifraga oppositifolia* gave evidence of Alpine flora.

The scarlet Pimpernel was glorious in the afternoon, and studded the grave rocks like rubies in the glitter of the setting sun.

A little farther away were huge patches of London Pride, *Saxifraga umbrosa*, forming dense carpets of green, and growing in many cases with the aforementioned *Menziesia*.

serratifolia. It was just throwing its flower buds, and there are patches of it which will look very pretty when its floral splendours are at their height.

I think this is only found at considerable elevations, and then only at a few places in Ireland, such as on the bare summit of Curantuhol, the highest mountain in Kerry, also on Croagh Patrick, Co. Mayo.

Then wandering on over the various habitats of plant life *Eriocaulon septangulare* made its appearance. The plant was not in flower, but when it is it has compact scaly heads, which present a woolly appearance, and are thrown

up on stems of a considerable height. Its leaves are striped and grassy like. R. Lloyd Praeger speaks of it in the following terms:— "A little plant with grassy, submerged leaves, and a button-like head of greyish flowers, this little hydrophyte constitutes a very great puzzle. It proves to be a pipewort, a North American species unknown on the continent of Europe, and it ranges up and down the west coast of Ireland, and re-appears sparingly in the west isles of Scotland. Elsewhere it is confined exclusively to the Northern U.S.A. and Canada."

We surveyed the country in that day's travel and retraced our footsteps the following morning, gathering up the gems "en route." For fully thirty miles we were accompanied by *Dryas octopetala*, just a garland of snow-white splendour. Such luxuriance of foliage, with its deep-sea green, with none of those burnt, struggling appearances it presents in cultivation, the Mountain Avens stands as an isolated beauty, and raises the admiration of the horticulturist to unlimited bounds, to say nothing of what a botanist would discover on closer



Photo by]

[R. Welch

SAXIFRAGA STERNBERGII AT HOME ON COAST OF COUNTY CLARE.

I quote the above merely to emphasise one of the peculiarities of the Western Hibernian flora, showing as it does some historic connection between this and other lands.

From here we must leave the flora of Connemara, as time did not permit me to exhaust its other pleasures.

Leaving Recess early in the morning and motoring to Galway, from there by the coast route of Clare we passed through a maze of Alpine beauty. Just out of Galway we encountered *Gentiana* growing on a hill projecting out into the sea, but its importance here fades into insignificance when seen in the Ballyvaughan district.

inspection. It is the predominating plant over this area of mountain region, yet growing with and about it are *Geranium sanguineum* and *Orchis mascula*, which is one of the most beautiful associations of plants that I have ever seen in nature. There you have the dazzling brilliancy of the *Geranium*, the subdued purples of the *Orchis*, and the *Dryas* carpeting below them, which is a sight worthy of reproducing, and, after all, to imitate is the severest form of flattery; and this is one of the instances where Nature teaches us, for a plant growing in nature is never wrongly placed.

Below the rocky slopes on which the *Dryas* is growing is *Saxifraga Sternbergii*, and here

and there a straggling piece of *Gentiana verna*

On the foreshore facing this situation is another field for study. We find *Arenaria verna* growing in every small crevice in the rocks, sending up its wee star-like flowers from dense tufts of green, grassy-like leaves.

Down in between the huge stones, which have become worn by the action of water in ages, will be found growing the Maidenhair fern, *Adiantum capillus-veneris*, so luxuriating that it would do credit to a stove greenhouse. Also a few plants of *Neotinea intacta*, a little plant which is interesting chiefly because it is one of those plants which do not re-occur elsewhere in the British Isles, and points again to our having once belonged to the mainland of Europe. It seems curious to find tender plants, such as the last two mentioned, growing in association with the hardy Alpine plants in one habitat.

There was also growing *Helianthemum vernale*, a most delightful rock rose of deep yellow tone, but this plant is by no means common, its coarser brother predominating—viz., *H. vulgare*. I also saw two plants of *H. vulgare tomentosum* which have thick, fleshy leaves, densely covered with greyish hairs.

The Sea Pink, *Armeria maritima*, was here abounding in such quantity that it presented a wave of colour, and was considerably stronger and of altogether different character to that seen in Connemara.

Leaving this most glorious Alpine scene we toured on to Ballyvaughan. Here we encountered literally acres of *Gentiana verna*.

Words almost fail me to describe those shining stars of blue, stretching up the hillside and meeting the familiar *Dryas octopetala*.

We wandered among the splendours of Gentians, noticing various forms, some being dark dense blues that have made them famous, while others shine like opals and glitter in the western sun.

Such magnificence, such luxuriance, such telling amalgamation of hues, made a picture that an artist could not depict!

Yet when seen it is painted within the mental vision never to be forgotten.

A memory of that delightful work of nature shows a touch of a master hand. Long years of evolution, strenuous efforts to become more worthy than its fellows, truly *Gentiana verna* has accomplished that aim, for it is indeed the star of the western shore.



Notes

THE technical education of the gardener is a matter of considerable national importance, and its influence upon horticultural progress cannot be ignored, especially in these days of rapid transit and keen international competition. In England there is Kew, where considerable numbers of men are turned out yearly as highly trained gardeners. There are colleges and schools throughout the country entirely devoted to a scientific and practical training in horticulture, while quite a number of county councils have special institutions for a similar purpose. The effect of all this is that English gardens are being gradually staffed by men of the highest rank in the profession—men well equipped in that special knowledge that makes for efficiency and success.

THE education of the gardener in the sciences underlying the practice of horticulture has always received considerable attention in Scotland. For a very long number of years back gardeners at the Edinburgh Botanic Gardens have had the advantage of special courses of instruction from men of university rank on chemical, physical and natural sciences, and with the happiest results. We now note that the East of Scotland Agricultural College is promoting a scheme whereby young men following a series of instruction for two winter sessions can qualify for certificates in the art of gardening. The scheme includes (1) chemistry, (2) botany, (3) zoology, (4) geology and meteorology, (5) land surveying and mensuration, (6) horticultural botany, (7) horticultural chemistry, (8) horticulture, (9) entomology, (10) book-keeping, (11) arboriculture (optional). No certificate can be granted to any candidate who fails to produce evidence of having undergone at least a twelve months' practical training in an approved nursery or garden.

WHAT are we doing in this country in the

way of technical education in horticulture? Apart from the training of horticultural instructors at the Albert Agricultural College, Glasnevin, there is nothing done in Ireland for the direct teaching of the gardener. There is no school of horticulture or specialised course of instruction at any of our technical schools for the benefit of young men desirous of learning the scientific principles upon which the practice of gardening is based. There is even no accredited horticultural examining body in the country, and therefore, so far as Ireland is concerned, gardening as a profession is simply neglected.

THAT in respect to the technical training of professional gardeners Ireland is not only lagging behind her sister nations, but actually standing still, there is, unfortunately, no gain-saying. We are not marching with the times; we have not even yet made an attempt to march. We recognise, of course, the enormous amount of good work done by the Department of Agriculture in instructing farmers and cottagers in the art of fruit and vegetable growing, but it is not that side of the question we have at present in our mind. We want to see the educational status of the professional gardener raised as it is being raised in Great Britain. We want to see provision made for the technical education of the young man who has chosen gardening as his trade, to provide him with such facilities as will enable him to make intellectual progress, and to encourage him to devote his spare time in the pursuit of knowledge appertaining to his craft.

THE organisation of a workable scheme of technical instruction for garden apprentices would certainly require much thought in order to overcome the difficulties peculiar to the case. But a start might be made in towns already provided with technical schools. Facilities for giving practical instruction in the sciences are, in most cases, already in existence, so that it would really only require the addition of horticulture to the syllabus of subjects to make a workable scheme possible. It must be understood, however, and remembered that the realisation of any such idea rests largely with the gardening fraternity itself. There must be a desire for technical knowledge among the young gardeners themselves, as otherwise we

must, and assuredly will, remain in our present backward condition. Development must ever come from within. External factors can help, direct and inspire, but the first step in all evolutionary processes must be a spontaneous quickening of the organism itself.

WE are afraid that the existing state of affairs is largely due to the apathy of the gardener himself. He fails to appreciate the situation. He is content to continue in the old way; to work on rule-of-thumb principles instead of upon principles based upon a knowledge of science. This belief is partly formed on what we have observed close to our own door. Let us state the example:—Kingstown is the centre of a well-to-do district. It has a fine technical school and a large and well arranged school garden. The district has fine residential "places," beautiful gardens, and enthusiastic gardeners. There is a gardeners' association and an annual exhibition of fruit, flowers, and vegetables, second to none of its kind in Ireland. The members of the society meet during the winter months for lectures and discussions, and altogether this district may be taken as being representative of the best gardening districts in the country.

HERE one would think are all the conditions favourable to making a fine start in the educational march that this country must hasten to join if we are to progress with the times. A brave endeavour was made by the Principal of the technical school to organise a first winter's course of systematic instruction in science for the young gardeners of the district, but the scheme failed for want of support. It has failed for two years, and there is a fear that the garden which is such a valuable asset to real teaching must be abandoned. May we make an appeal to the gardeners in this district? We appeal to the older men to exert their influence with the younger, so that next winter may see a specialised course for gardeners in full swing at these technical schools. A beginning and a success here will mean the opening of similar classes elsewhere, and thus a movement will be set agoing that will in time vibrate throughout the whole of the country.

THERE are, we believe, winter schools of agriculture for young farmers in different parts

of the four provinces, why not then winter schools in horticulture for the technical training of young gardeners? Perhaps there is not a demand for such classes. On the other hand, if there *is* a desire, and it remains inarticulate, we are afraid nothing will be done until the want finds expression from the lips of the gardeners themselves. We suggest that the different horticultural societies in Ireland take this matter up and devise some scheme whereby the Irish gardening youth be given the same educational advantages as the young Britisher, whose technical training is being so well looked after by his county educational authorities. Will the council of our Royal Horticultural Society give an inspiring lead to an educational movement in this country? This old society seems to us to be the right and proper body to take the lead—nay, more, we expect it to lead. The council of the English Royal Horticultural Society were pioneers in this particular work. It formulated a scheme of instruction, issued a syllabus of subjects, instituted a system of examination, and so furnished the plan upon which the technical instruction committees modelled their horticultural teaching.

WILL the Royal Horticultural Society of Ireland do for this country what their English sister society did, and is still doing, for Great Britain? Will they take up the subject seriously and start a vigorous campaign for the education of public opinion upon the technical training of the gardener. Authoritative representations ought to be made to all the technical boards in Ireland with the view of making a start during the forthcoming winter months. We are in dead earnest over this matter, as we know how vitally it affects the progress of horticulture in this country.



AMERICAN BLIGHT

American blight, if it makes its appearance on fruit trees, ought to be dealt with effectively and at once. A swab of cotton wool, tied to the end of a cane, and made wet with methylated spirit, is an excellent thing to use in cases where the attack is only here and there. If the wetted swab be rubbed into the woolly spot it will destroy the little colony of aphides that are responsible for the damage. Methylated spirit is safer to use than paraffin oil, which is frequently recommended. If the attack is widespread, then spraying with a good insecticide must be resorted to in order to free the trees from the pest.

Potato Disease.

BY PATRICK MURPHY.

ALTHOUGH the potato blight has made its appearance in our fields each recurrent summer for more than sixty years it is not yet known with certainty how the pest regenerates itself and gains a permanent footing in the new crop. For many years it was taken almost as settled that the very rapid spreading so characteristic of the disease could best be accounted for by the scattering of the foliage of healthy plants, by means of wind and other agencies, of the delicate summer "spores." These "spores" may be found in very great abundance on the discoloured patches on the under-surface of diseased leaves. Further, it has been proved beyond any doubt that they can infect a healthy plant with the disease, provided the conditions of moisture and warmth are favourable. Yet, in spite of the presence of such an obvious and successful means of reproduction, Massee* has recently propounded a new theory to account for the apparently sudden appearance of blight over large areas.

The theory is based on an experiment carried out with potatoes in pots in a greenhouse. Shortly summarised it was as follows:—Three tubers which contained the blight fungus were cut in halves, and each part was planted in a flower pot. Three of the pots were placed in a hot-house where the air was very moist, and the other three in a cool, dry house. The lot kept at a high temperature were all killed by blight two months after planting, while at that time those grown at the lower temperature were healthy. Subsequently two of the latter healthy plants were removed to the warm house, and there they also succumbed to the disease. The third plant was left in the cool house, and it remained healthy to the end of the experiment.

To explain these facts the experimenter elaborated his theory of dormant mycelium and direct mycelial infection. According to this hypothesis the three plants grown in the warm house contracted the blight from mycelium which grew through the stem from the set to the foliage. That this may happen with *young plants* such as were used in this experiment is fairly generally allowed; and the explanation

*"Diseases of Cultivated Plants and Trees." London: Duckworth & Co.

given is probably correct in this case, particularly as the plants were covered with bell-jars, and therefore the risk of infection by aerial "spores" was somewhat reduced. At the same time the experiment does not *prove* that infection took place through the stem by means of mycelium. If plants grown from healthy tubers had remained healthy in the same house, then the proof, in so far as such a small experiment can prove anything, would be much more complete. It is not quite clear if it is necessary to assume in this case that the fungus mycelium lay dormant during the six weeks which elapsed between planting and the first visible appearance of blight. According to Masee's theory, dormancy lasts only until the atmospheric conditions become favourable, whereas there were six weeks of favourable "weather" before *Phytophthora* made its appearance externally in this experiment. If the mycelium was not dormant it must have been growing exceedingly slow through an uninjured stem. Such a phenomenon in the case of *Phytophthora infestans* is unknown and quite unlikely, and until it has been proved we may be allowed to disbelieve its existence. Consequently we have to fall back on the assumption that the mycelium lay dormant most of the time in spite of the extremely favourable atmospheric conditions during the whole period. One of the advantages of the theory of direct mycelial infection over that of aerial infection by means of spores is, according to Masee, that it accounts more easily for the outbreaks of severe and simultaneous attacks over large areas, with the result that whole fields of potatoes, "under certain climatic conditions," are reduced to a blackened, fetid condition within twenty-four hours. If the necessary climatic conditions mean six weeks, or even three weeks, of weather similar to that of the experiment it is only in abnormal seasons that we would have such visitations as that just described.

To return to the experiment. The three plants grown in the cool, dry house remained healthy as long as they were left there. This is accounted for, according to Masee, by assuming that the mycelium remained dormant in the parent set (?) owing to the lower temperature and comparative absence of moisture in the air. When, however, two of the plants were removed to the hot, damp house—one eight and the other ten weeks after planting—they suc-

cumbed to *Phytophthora* in seven and nine days respectively. This, we are asked to believe, was due to the dormant mycelium springing into activity immediately it was placed in a favourable environment, and rapidly growing from the set to the foliage. Why it should take only a week to destroy a vigorous plant and eight weeks to kill one that was "attenuated and weak" is not very clear. If we assume, on the other hand, that these two plants were infected by "spores" from the three plants which had just died of the disease in the same house we have a complete explanation of the more sudden and virulent attack. Such an assumption may be borne out by experiment, as will be shown in the further course of the paper.

A further experiment, similar in all essentials to Masee's, was carried out by Dr. Pethybridge in Ireland,* with the addition, however, of an equal number of pots containing sound sets. Thus, in the warm house there were six pots of sterilised soil, three being planted each with half a blighted tuber and three with half a healthy tuber. In the cool house there were six similarly treated pots planted with the other halves of these tubers, three healthy and three blighted. In this house there were also twelve pots of unsterilised soil, six planted with healthy sets and six with blighted ones; thus making a total in the cool house of nine pots of healthy seed and nine of sets diseased with *Phytophthora*. The sterilisation or otherwise of the soil does not seem to affect the results.

One of the diseased sets in the warm house failed to produce a plant; the other two produced plants which remained free from blight till the end of the experiment, a period of five months. The three control plants grown from sound tubers also remained healthy. In the cool house things went differently. All the nine healthy sets produced healthy plants; but only six plants grew from the nine diseased sets, the remaining tubers rotting in the soil. Of these six one quickly became blighted when only two or three inches high, the attack spreading from below upwards, and doubtless originating directly from the parent set. The plant was

* "Considerations and Experiments on the supposed Infection of the Potato Crop with the Blight Fungus (*Phytophthora infestans*) by means of Mycelium, derived directly from the Planted Tubers."—Scientific Proceedings of the Royal Dublin Society.

removed at once for fear the others might become infected from its spores. The next plant to become affected was one grown from a healthy set, in which case, of course, there can be no question of mycelial infection direct from the parent tuber. This plant was also removed at once for fear of contaminating the others, but without avail. The blight spread from one to another indiscriminately, and in less than a fortnight all the plants but two had shown signs of blight and been removed, these two being the produce, one of a diseased and the other of a healthy tuber. These plants were left in the cool house for a further period of about five weeks, and at the end of that time they were still absolutely free from *Phytophthora*. They were then transferred to the warm, damp house, covered with bell-jars, and left there for just four weeks. A thorough examination of the foliage was finally made, but no trace of blight could be found.

The results obtained in this experiment were quite different to Masseur's, and Masseur's hypothesis will not account for them. On the contrary, the hypothesis which accounts for these, accounts for Masseur's equally well and better than does his own.

It is admitted that the mycelium of *Phytophthora* may grow direct through the stem from the set to the foliage, *but only in very young plants*. This, however, does not involve any period of dormancy on the part of the fungus, and the stem is killed as it is traversed by the blight from below upwards. It may be assumed, in the absence of more complete knowledge, that this is an important means by which the fungus establishes itself in the new crop every year. It is conceivable that "spores" produced on such plants early in the season infect isolated spots of the general crop, particularly the lower leaves, which are less subject to drying. These spots are, of course, then overlooked on a superficial examination of the crop; but with the advent of trained observers it is becoming increasingly clear that little patches of blight may be found here and there in a crop long before the farmer announces that the blight has "struck."

This view is strengthened by the fact that in Dr. Pethybridge's experiment in the warm house the fungus in no case grew up through the stems, with the result that there was no blight. In the cool house, on the other hand, one plant

succumbed in this way, and no doubt spores were produced. An interval, of which unfortunately we do not know the length, then elapsed before the next plant became attacked, so that it is impossible to tell whether or not the "spores" were probably produced from the original diseased plant or from another source. But this is not vitally important, for the plant must have become infected from spores, no matter where produced, because it grew from a healthy set. Although this plant was removed at once the blight now set in in earnest just like a field epidemic in miniature, seven of the eight remaining healthy plants and four of the five remaining ones which grew from blighted tubers becoming attacked within twelve days. The former seven plants must have become infected by means of "spores" since they grew from healthy tubers; and it is extremely improbable that the latter four contracted the disease from mycelium derived from the sets, because, in the first place, the mycelium had failed to develop in them during the three months which had elapsed since planting, whereas it had grown very much more rapidly in the one plant in the same house, which had undoubtedly become directly infected; and, in the second place, the only plant grown from a diseased set which failed to take the blight in the cool house also failed to reveal any latent mycelium when given the postulated conditions of moisture and warmth during a period of four weeks. Consequently, in this case also infection was probably by "spores."

The conclusion that one is inevitably driven to from a consideration of this experiment is that the ordinary attacks of blight which occur in the fields in June, July, and August are practically entirely due to "spores." It is equally clear that isolated plants are killed much earlier in the year, possibly in April and May, by a direct invasion of mycelium from the set to the shoot. How far the former attack depends on the latter, if it does at all, it is yet premature to say.

Masseur's experiment appears to point to a perfectly similar conclusion. In the absence of details it is not possible to say how the three plants in the hot-house became infected, but we may assume, as the experimenter did, that all three were attacked directly from the sets, in which case they would correspond to the plants in the field which show the presence of

blight immediately they appear above ground in April and May. On the other hand, this may have happened only in one or two cases, the remaining two or one respectively becoming infected by spores. Which ever happened, the result is not affected. In any case the three plants were attacked when six weeks old, and two weeks later they were killed. *About this time* a healthy plant from the cool house was brought in, and this was killed within nine days; and yet, in spite of the abundant means of infection by spores, the experimenter found it necessary to elaborate a theory of dormant mycelium and direct infection to account for the fact. The second plant, which was treated in the same way, met with a like result. The third plant, however, was left in the cool house, and it remained healthy because, we are told, the conditions necessary for the development of the dormant mycelium were not present. There is also another possible explanation—namely, that no “spores” were present to attack it.

The position resolves itself into this:—“Spores” have been proved capable of infecting potato plants; dormant mycelium which, given suitable conditions, can openly infect potato plants is entirely hypothetical; either, if present, could account for the facts recorded by Masee; but spores were present; therefore, the presence of dormant mycelium cannot be held to be proved.

Evergreen Flowering Shrubs for Sunny Walls.

By J. W. BESANT, Royal Botanic Gardens,
Glasnevin.

AS mentioned in a previous article, it is more satisfactory to include a proportion of evergreens when furnishing a wall with shrubs. For most people those sorts which bear showy flowers are preferable.

The following selection includes kinds which in most parts of the country are benefited by being grown against a wall:—

Abelia floribunda, a Mexican plant, can be trained to a considerable height by keeping the leading shoots attached to the wall. It is not densely evergreen, but retains a large proportion of the leaves through the winter, and produces quantities of beautiful rosy-purple flowers in April and onwards into June.

Among the ceanothus are many admirable wall plants. Of the evergreen species, perhaps the most beautiful is *C. Veitchianus*, a native of California. The leaves are small and rounded, and the charming blue flowers are produced in great abundance in spring.

C. divaricatus, another evergreen, is also from California. It has larger leaves than the preceding, but bears blue flowers also. *C. rigidus*, a stiff-growing species, with small leaves and bearing clusters of blue flowers, makes an admirable wall plant. A robust grower is *C. thyrsoiflorus*, the Californian lilac; the flowers are blue, borne in large clusters.

Carpenteria californica is a most beautiful evergreen flowering shrub, well worth a place at the base of a sunny wall. It is in no sense a climber, neither is it usually very tall growing. Nevertheless, it will be found quite suitable between taller shrubs, which are apt to run up and leave the lower part of the wall bare. The leaves are lance-shaped, some four inches long, and the pure-white flowers, with numerous yellow stamens, are very beautiful.

Choisya ternata, the Mexican orange, although often grown in the open in Ireland, is not too hardy, and does well when grown against a wall; only the main branches require to be fixed to the wall; the smaller side branches may be left free, and will produce clusters of white flowers in spring.

The cistuses are a useful class of shrubs for warm, sunny walls, their showy if somewhat short-lived flowers being much admired in summer-time. *Cistus ladaniferus* has large white flowers, with a red spot at the base of each petal. *C. laurifolius* has large pure-white flowers; *C. cyrius* is very similar to the first-named, and *Cistus montspeliensis*, a dwarf grower, has also white flowers.

Caryopteris mastacanthus is a late flowering member of the verbena family. The flowers are blue, a welcome colour among shrubs at any time, but especially in October. It grows only three to four feet high, but is admirably suited for furnishing the base of a wall between taller growers.

Fabiana imbricata, a native of Chili, resembles a strong-growing heath, though it really belongs to the potato family. It is admirably adapted for growing against a sunny wall, and will attain a height of ten to fifteen feet in such a position. The tubular, pure-white flowers are

produced in abundance in early summer, and prove quite attractive.

Helichrysum rosmarinifolium, better known as *ozothamnus*, is the Australian "Snow in Summer" bush, and makes an attractive wall-shrub. The leaves are small and narrow, and the creamy-white flower heads are produced freely in summer.

Jasminum fruticans and *J. revolutum*, two evergreen, yellow-flowered jasmines, make useful shrubs on walls, though the first-named, at least, is often cultivated as a shrub in the open.

The *olearias* are well adapted for growing against sunny walls, and flower freely in summer. Two of the best are *O. macrodonta*, with spiny, holly-like leaves, and *O. stellulata* with smaller leaves but most attractive white flower heads. To furnish shaded walls much use is made of ivy. For such a position there is no better self-clinging evergreen shrub. There is, however, such a wide and varied selection of varieties that the use of the common or Irish ivy, to the exclusion of others, is to be deprecated. The largest leaved variety is *Hedera Helix dentata*, which bears enormous leaves and is eminently suitable for a lofty wall. There is also a beautiful variegated form of this. Smaller-leaved sorts are *Cænwoodiana*, *palmata minor*, *saggitifolia*, &c. There are numerous silver and gold and variegated forms, and a very pretty effect can be got by planting the green leaved forms alternately with the variegated kinds. *Euonymus japonicus* and its variegated forms are also useful for shaded walls, and however much some people may despise variegated forms of shrubs, there is no denying their value for brightening up what would otherwise be rather unattractive places.

Another useful, self-clinging evergreen for shade is *Ercilla spicata* (*Bridgesia*). This grows rapidly, and soon covers a considerable space. The small, rather dull-coloured flowers are not of much interest. *Azara microphylla*, which bears numerous small, shining-green leaves, grows strongly against a wall, and does not object to a fair amount of shade.



For hanging baskets we advise our readers to try *tropæolum*, using preferably the variety *Fire Ball*. Use a large basket, and we promise a magnificent effect. Growers of *tropæolum* know how necessary it is to remove the old flowers as soon as the petals fade in order to prevent fruiting and to encourage the continuation of the flowering period.



Garden Notes.

THE recent exceptionally long spell of dry weather has been very trying in gardens, and especially in shallow soils. It has demonstrated the great importance of so cultivating the soil that it stores up and retains as large a quantity of water as a soil in a well-drained condition is capable of doing. The methods pursued by good gardeners are deep digging and trenching, thorough pulverisation of the broken earth, incorporation of organic manure, and then mulching early in the summer. The finer the particles of soil the greater is the quantity of water the soil can hold. The presence of organic matter, such as farmyard manure, leaves, &c., increase the soil's water-holding power, and mulching the surface of the soil with litter prevents loss of water by evaporation.

THE mulching of young fruit trees during the hot weather is an operation of the greatest benefit to them. Mulching ought not to be done, however, too early in the year, as time must be given for the earth to get warmed to some depth before the covering is applied. The material used should be of a loose nature only, so as not to exclude air. If the trees want feeding well or partially, rotted farmyard manure may be used; if they do not need additional food then any litter will serve the purpose. But before laying the mulching material down, the soil should be lightly hoed so as to have the surface loose and powdery.

FLOWER borders also benefit greatly by mulching during the early summer—June being perhaps the best month to begin. Well-rotted manure is an excellent material to use. The greatest good, of course, will follow in cases of light, shallow, or gravelly soils. Some people object to the appearance given to the flower border covered with mulching material, but the plants grow so luxuriantly under the favouring conditions as to food and water that in a little time any objectionable appearance will all but disappear. But in cases where an added mulch is really out of place, then careful and constant hoeing is the next best thing to do. The loose, dry powdery soil will act as a most efficient protection against loss of water by evaporation.

THE Cornflower or Bluebottle (*Centaurea cyanus* of the botanist) is a good example of a native plant, useful as a border decoration. It is annual or biennial in duration, and flowers from June to September. Grown as it ought to be grown (in masses) it is charmingly effective; it is good too as a cut flower. Some excellent varieties are sent out by seedsmen. We are very fond of this

wildling. It should be known that better plants will be obtained by sowing the seeds immediately they are ripe than keeping them over and sowing them in April, as is, we believe, the general custom. Sweet Sultan, a native of Persia, is another species of the same genus, but it is more exacting in its requirements. Sweet Sultan loves a dry, limy soil and plenty of direct sunlight. Its seeds should not be sown until April. It dislikes wetness at the root.

It is well known that peat plants, such as rhododendrons, cranberries and heath, dislike very much the presence of lime in the soil; but the reason for this peculiarity is not so well understood by gardeners. The peculiarity in question is apparently associated with the plant's power of obtaining nitrogen. A crop in an ordinary soil takes in nitrogen either in the form of a nitrate or of a salt of ammonia. These substances are liberated from the humus in the soil by the action of certain kinds of bacteria. Now, nitrifying bacteria in particular refuse to act in an acid soil, hence one of the valuable uses of lime in ordinary garden cultivation. It corrects acidity and encourages nitrification. There can be no nitrification, however, in peaty soil. It is naturally acid, and therefore no nitrates can be formed as no nitrifying bacteria could live in it.

How then do peat-plants obtain their necessary supplies of nitrogen? The answer is interesting. They get it by the help of certain fungi that live, thrive and multiply in the acid peat. These fungi are composed of invisible threads of the slenderest nature. (It would take about 100,000 of them lying closely side by side to measure an inch across.) The fungus lives partly in the tissues of the root of the peat-plant and partly in the soil. The part in the soil ferments the humus and absorbs the soluble products. These pass along to the parts anchored in the epidermal cells of the root, and so get distributed to the rest of the plant. In return for these valuable nitrogen-containing substances the plant gives

up to the fungus some of its sugar manufactured in the green leaf. The advantage therefore is mutual.

The evident dislike of peat-plant to lime is now easily explained. Lime destroys the acidity of the soil. It unites with the free organic acids in peat to form neutral salts. But freeing the soil from acid means death to the root fungus, and therefore left to shift for itself, the peat-plant dies slowly from nitrogen starvation. As a matter of fact, these peat-plants have become dependent upon the service of their more lowly brethren,

and so by disuse have considerably weakened or entirely lost the power of gathering nitrogen food for themselves. That lime in itself is not harmful to peat-plants may be easily shown by mixing lime with the peat, but in insufficient quantity to neutralise completely the acidity of the soil. So long as the soil is kept acid the presence of lime is of no account. It is the want of acidity, not the actual presence of lime as such that is harmful to peat-loving plants.

It is perfectly amazing how the snapdragon managed to live on stone and lime walls during the long spell of dry weather. We have been an interested observer, and noticed how the grass and all the other occupants of the wall gradually gave up the struggle, as day by day and week by week the drought continued. But the snapdragon kept fresh and green, and flowered gloriously in the baking heat. We intend to gather the seed and distribute them in the nooks and

crevices of all our old walls, and then expect a rare harvest of beauty next summer.

FOR downright, unabashed beauty the Oriental poppy is matchless in its flaunting arrogance. The size of its flowers and the flaming brilliance of its widespread petals claim the fixed attention of every passer-by. Its Oriental splendour strongly appeals to our primitive love of colour, and any garden, no matter how small, will be all the brighter if it includes a few clumps of this gorgeous Eastern flower.



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[Mackey

FLOWERING SPRAYS OF BLUE CORNFLOWER.

THE health of crops is the constant care of all successful gardeners. A plant, like an animal, is subject to disease, and the appearance of disease is a sure sign that something is interfering with the normal functions of the organism. Race, constitution, unsuitable conditions of soil or atmosphere, irrational treatment and fungal or insect enemies, are perhaps the chief disturbing factors in the garden. In all matters relating to hygiene a knowledge of the elementary principles of physiology is absolutely necessary if the sick is to be nursed back to health. In the case of plants their organisation and normal physiology are simpler, and therefore more easily studied than in animals, and every craftsman claiming the title of "gardener" ought to be familiar with the every-day processes of life carried on in the body of a living plant.

It is a common-place fact in biology that a body in vigorous health is far less likely to "catch" an infectious disease than one in a run-down or sickened condition. To keep our crops strong and healthy, therefore, is one of the cardinal points in gardening. Plants, according to their kind, want a certain amount of water, air, warmth and sunshine, and too little or too much of any one of these will upset the proper working of the organs and induce ill-health. Excessive drought or too much moisture will manifest itself in a yellowishness of foliage, accompanied in the one case with a hard stunted growth and in the other with a soft or sappy growth, and perhaps cankerous-looking swellings in addition. Want of sufficiency of air, as in overcrowding, will be followed by thinness of stem, the falling away of the lower leaves, and by general weakness. Too low a temperature will produce unhealthy-looking leaves of a yellowish-green appearance. Too little light will produce weak and lanky shoots, soft and unmaturing, late in flowering and unproductive. To the student of Botany these results are seen to be the natural outcome of the conditions. It is, for example, as natural to the student of physiology to expect "damping off" among crowded seedlings as it is to expect water to escape from a leaky watering-can.

AGAIN, as in the case of animals, the overfeeding of plants is quite as bad as partial starvation. Undue richness of soil produces rankness of growth, but delays the period of flowering, or even practically prevents it altogether. Poverty of soil, on the other hand, produces dwarfness and a too early and a too sparse flowering. But while plants grown in the open require care and knowledge on the part of the cultivator, plants grown in the greenhouse require still more the intelligent attention of the gardener, although it is quite true that long experience, without physiological learning, may yield success. Yet, at best, it is to a large extent mere rule-of-thumb. That certain results will follow certain methods may be expected, but why they should be expected is not known; and any serious alteration in the conditions may readily upset his calculations. Such a gardener has too little knowledge of the working parts of the living machine and of the effect of changing the intensity of the external factors influencing the smooth running of the machine, to reason out the exact change that must be made in the treatment to meet the particular alteration in the environment.

WITH respect to symptoms of disease or of mechanical injury in crops due to fungal or animal pests, a writer in the monthly leaflet of the Woman's Agricultural and Horticultural Union gives a very useful list, which we take the liberty of quoting. It is as follows:—(a) Pieces cut out of a leaf are due, near the ground, to birds or slugs; higher up, to caterpillars. A tear with a regular curve may be laid to the door of the leaf-cutting bee. (b) Transplant places in the leaf are usually due to very small creatures, some of them mites. (c) A rolled leaf will probably have a caterpillar or aphid inside; if not, it is due to a fungus in the tissues. (d) Discoloured spots generally betray the presence of a fungus. (e) Mildew begins as a faint down on either surface of the leaf. (f) Very small light spots like pin-pricks, that do not perforate the leaf, are due to thrips. The injuries of this pest also cause brown specks on the bloom, and light streaks on the leaves of carnations. (g) General ill-health traceable to no other cause may be due to injury at the root. (h) Brownness or dullness of foliage may be due to 'red spider,' visible as a rule on the under surface of the leaf. It is a very bright red, and very tiny; it makes webs when present in quantity. *Fungus diseases* are a special difficulty. Their diagnosis requires life-long study and a microscope, and to cure them is often impossible. Fortunately comparatively few of them are dangerous. The best course to pursue is that of preventive measures in cases where the attack is expected of a well-known and harmful parasite, such as potato disease, apple and pear scab, rose rust, &c. 'Mould' on plants under glass (*Botrytis* usually) should never be treated with disrespect. A dry atmosphere and ventilation are unfavourable to its development. Remedies are of most use when used as preventives, and one application is rarely sufficient. Most of the patent ones are excellent. Space forbids entering into details, but the following hints may be found useful:—1. Flies, butterflies, moths, leaf-miner.—Syringe foliage with soot-water to prevent laying of eggs. (Place bag of soot in a pail or can of water—the liquid should be so weak as not to look discoloured.) 2. *Fungus*.—Bordeaux Mixture—some bought preparation, as Woburn Bordeaux paste, Harrod's wash; sulphide of potassium, 1 oz. to 3 gals. water (washed off easily by rain). 3. *Aphis*.—Soft soap and paraffin mixed while hot to emulsify the paraffin; various manufactured washes. 4. *Red Spider*.—Copious syringing with cold water, also with salty water, 1 lb. to 16 or 20 gals. 5. *Slugs*.—Dusting plants with soot and lime, hoeing. 6. *Wireworms* and all soil pests.—A soil fumigant such as vaporite, hoeing. 7. *Caterpillars*.—Hand-picking and insecticides."

MR. WINSTANLEY, gardener to P. La Touche, Esq., D.L. (to whom we are often indebted for beautiful garden pictures), sends us an interesting photograph (which we reproduce) of a pergola leading to a woodland walk in the grounds at Harristown House, Brannockstown. The pergola as a garden accessory comes to us from Italy, and is the most effective method we have for the display of climbers. As shown in the photograph, a pergola should always cover an absolutely straight walk. In hot, sunny days a pergola gives delightful shade; it is not a resting place but a path, and used as

at Harristown House as a way leading to a wood beyond it suggests logical use in the scheme.

It adds greatly to the attractiveness of a pergola to have the walk flanked by borders filled with tall herbaceous plants such as *Lilium candidum*. It is a grave mistake to over elaborate the pergola, simplicity of framework should be the ruling idea. Of course no person of taste would tolerate paint being used. Nothing must be done to take away attention from the foliage and flowers.

Is there any border plant grown that can give more satisfaction than that most delightful hybrid pink, Mrs. Sinkins? It is, perhaps, the commonest pink found in gardens, but is nevertheless the rarest. It blooms most freely, is beautiful in form, deliciously scented, and flourishes under almost all circumstances. During the

especially if the precaution be taken to remove the blooms before the central florets are open. Another type, not so much grown as might be, is the peony-flowered dahlia. They are very free-growing and flower abundantly. They are most decorative as garden subjects.

On fruit trees during the past month, and especially on those recently planted, numbers of sappy shoots may have arisen from the lower parts of the stem or from the stock. These twiggy growths, being not only useless but exhausting to the head, ought to be speedily removed. Care must be taken, however, to cut them off close to the main stem, otherwise if a bud is left it will immediately push out into a shoot again. A sharp knife is the best tool to use. In the case of cordons, if there is a too vigorous growth of side-shoots, these



Photo by]

[W. Winstanley

PERGOLA IN THE GROUNDS OF HARRISTOWN HOUSE, BRANNOCKSTOWN.

recent dry weather it has made the bravest of show, although the soil was hard, dry, and riven with deep cracks. Its leaves, covered with silvery bloom, resisted transpiration and defied the hot sun that brought evident distress to its less fortunately endowed companions in the border.

THE planting out of dahlias has been receiving attention during the past month. Of the numerous types in cultivation the Cactus variety is perhaps by far the most popular. It is derived from *Dahlia Juarezii*, a Mexican species, introduced into Europe as late as 1872. For garden purposes there are two essential qualities in a decorative dahlia. It must be free-flowering, with the flowers carried erect on long stalks well above the foliage. Personally, we prefer the single type. Grown in clumps about four feet apart, and away from the shade of trees, the single dahlia will give a glorious autumn display of colour. It is also good as a cut flower,

should be checked by pinching off the tips. The same operation may be performed in the case also of bush and other trees, if any particular branch or branches show a tendency to so outgrow their fellows as to destroy the symmetry of the tree.

GOOD onion growers need not be told that success can only be attained by constant hoeing. It is the all-important factor in their growth and development. But the hoeing must be done lightly—certainly no deeper than an inch. The next important factor is the keeping down of weeds, as weeds are fatal to the best results; but if the hoeing is rightly done and, as it ought to be done, persistently there will be no weed trouble at all. Feeding is also important. Some of the best growers use a mixture of five or six parts soot, one part quick-lime, and one part common salt. But if this stimulant is used it must be understood that the quick-lime immediately releases ammonia from the soot, and it will be

lost if the mixture is not applied to the bed straight away, and while rain is actually falling. The rain-water absorbs the ammonia and carries it into the soil.

SANDY soils lack organic matter. They are so freely supplied with air that the organic matter is very rapidly rotted down by soil bacteria. Additions of farmyard manure, leaves, &c, will largely increase the water-holding power, and will also in very loose soils prevent shifting by wind. Sandy soils, as a rule, lack not only nitrogen but phosphoric and potash food as well. Leguminous crops are excellent for such soils, as they increase the stock of nitrogen compounds. If the soil is at all acid lime must be added. Heavy clay soils are too close-framed and suffer from a lack of air. Great care must be taken not to cultivate them when wet. It will destroy the texture. Drainage is of first importance, as this will admit air. The addition of organic matter, such as farmyard manure, will tend to further open the soil as well as supply a stock of nitrogen. Potash they usually have in plenty, but they are, as a rule, deficient in phosphates; therefore, a dressing of dung should be supplemented by a further application of phosphate of basic slag.

Book Notices.

MESSRS. C. ARTHUR PEARSON, LTD., send us the first two volumes of their "Small Holders' Library," one being "Profitable Beekeeping" and the other "Practical Hints for the Holding." The volumes are published at one shilling net. The work on beekeeping is by H. Geary, Expert to the Leicestershire Beekeepers' Association. It is written very carefully, very clearly, and to the point, and is well and fully illustrated. It is a little book that we can recommend to any one desirous to learn the fundamental facts about keeping bees. It is needless for us to draw attention to the importance of bees to fruit growers, as it is now universally recognised among gardeners that the more bees there are in a district the better for the fruit crop. The second book is an attempt to tell the small holders how to run his allotment of land with success, and concerns itself with all sorts of subjects on which he is likely to require advice. It is an interesting collection of suggestions and directions, and will be found extremely useful to the class of reader it is intended to help.

"THE IRISH REVIEW" for July contains two articles that make special appeal to readers interested in rural affairs. In one, Dr. Gerald McCarthy, writing from the United States, deals with the subject of "The Irish Race and Emigration," and shows how ill-fitted most of the States are to natives of the north-temperate countries of Europe, and gives the special biological reasons why Irishmen, even in the first generation, physically degenerate in America. The second article referred to is a continuation of Mr. George Russell's brilliant theses on the Problem of Rural Life. The other contents include a stirring poem by the Hon. Emily Lawless, Litt.D., an interesting paper on Dr. Samuel Johnson and Ireland, and a serial story of Dublin Life, by James Stephens. The price of the *Review* is sixpence.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Breatstown, Cabinteely, Co. Dublin.



JULY in many respects very much resembles January as regards our work in the flower garden, so much depends on the weather whether we have a busy or an easy time. If very dry weather occurs we must keep the water-barrel going; if not kept supplied with plenty of water herbaceous plants very soon suffer. When applying water we should do so most plentifully, and after watering, the hoe should be run amongst the plants to break up the surface and close all cracks. It will also be found a loose, fine surface prevents evaporation. Careful staking and tying of plants is very necessary, as we frequently get "gusty" days, and an hour's wind plays havoc with tall, soft-growing plants.

Give sweet pea plenty of water, with liquid manure in it, and keep all seed pods picked off; if allowed to remain and ripen seed, it prevents the plants flowering. Look after violets and see that they do not become dry; if allowed to get dry, red spider on the leaves will be the result. Dahlias are very thirsty plants and require a good deal of attention; if too many shoots are growing on the plant they will be requiring thinning, staking and tying out. Hollyhocks, whether planted singly or in groups, should be carefully staked and plentifully watered; mulching with well-rotted manure will tend greatly to prolong their flowering period and to keep them healthy.

If carnations are attacked by wire-worms place pieces of potatoes just below the surface of soil; examine these every morning, and destroy any worms found near them. Carnations and pinks should now be propagated by piping and layers; flower stalks should be neatly staked. A very neat method of staking consists of a circle of light, galvanised wire attached to a neat bamboo stake; those can be had from nurserymen, and will last several years if carefully put away when not required. Disbud carnations, but not too severely; too severe disbudding tends to make the flowers burst.

Bedding plants will require to be staked or pegged down, as the case may be. Beds of verbenas may be kept clear of aphid by occasionally syringing with weak tobacco water. This is also a very good method of keeping earwigs, &c., off dahlias, chrysanthemums, and plants in general which are troubled by insect pests. Campanulas, Canterbury bells, chelones, wallflowers, &c., should now be pricked off from the seedling beds and grown into nice bushy plants for autumn planting.

Divide and plant on border facing north primroses which may be required for spring bedding. This is the best time to divide polyanthus and primroses.

Now is a good time to put in cuttings of arabis, ceras-

tium, Sweet William, candytuft, wallflowers, &c. Almost all spring flowering plants may now be rooted from cuttings placed in a cool frame, and kept close in shade for some time. Several Alpines may be propagated in like manner, especially the mossy section of saxifragas, violas, androsaces, &c.

Where budding of roses is practised this is the best month, choosing a dull, showery time, when the bark parts easily from the wood. When taking off buds they should be as little as possible exposed to the air; they should be dropped into a bowl of water immediately they are removed from the bush and while being transferred to the stock.

Shrubs, as they go out of bloom, should be carefully pruned and trimmed into shapely bushes; frequently hoe and rake the surfaces of the soil around shrubs; it gives a tidy appearance and keeps the ground from cracking during dry weather. Remove all seed vessels from rhododendrons, azalias, &c., immediately they go out of bloom. Keep lawns regularly mown, edges of walks neatly trimmed, and every place as tidy as possible.

The Fruit Garden.

By G. DOOLAN.

LAYERING STRAWBERRIES.—To ensure strong, sturdy plants for new plantations, runners should be layered immediately they appear. The first growth on the runner only should be selected, as this always produces the strongest plant; any growth beyond this must be stopped. Runners root very readily if pegged into the ground surrounding the old plants. Many growers place the runners in small pots of prepared soil, and in this they root very quickly. Another method is to peg the runners on sods; the sods, however, need to be placed in a heap for several months so that the grass may be fully decayed; they are then cut into squares of four inches and the under side used for pegging the runners on. It is surprising how the plantlets will root into these sods, and in a very short time may be separated from the parent plants and placed close together, where watering can be done with more facility, and where they may be allowed to remain until required for permanent planting, whether layered in pots, sods, or on the ground; watering is necessary every evening except when the weather is wet. When layering different varieties care must be taken not to mix the sorts, each variety should be kept apart and labelled.

OLD STRAWBERRY PLANTATIONS.—As soon as fruiting is finished and sufficient runners secured the old plants should be dug up and burnt with weeds or other rubbish, and the ashes spread on the surface. If the soil is of a heavy nature, a better plan is to trench the soil two feet deep, and place the old strawberry around at the bottom. This will be found to greatly improve the soil and benefit future crops. Strawberries, however, must not be again planted in the ground for some years.

FIGS.—These usually make superfluous growth, and with abundant foliage provide rather too much shade for

the maturing of the wood and ripening of the fruit. All weak and overcrowding shoots should therefore be cut away, and those required for next year's fruiting carefully tied in. If dry weather continues occasional waterings to trees in fruit will be of great benefit. Figs as a rule fruit best in rather poor soil, dry summers also favour them in this respect.

AMERICAN GOOSEBERRY MILDEW.—This disease, which was first observed in this country about eleven years ago, infects the fruit and tips of the soft young growths. It is of a whitish, powdery appearance, changing to a chocolate colour in the course of nine or ten days. It is an extremely virulent type of fungus, and in the case of an outbreak the most practical measure to adopt is to burn the infected bushes, which can be done by saturating the bushes with paraffin oil and then setting them on fire. Spraying with a strong solution of pure copper sulphate is equally satisfactory, as it kills the bush. These methods are more satisfactory than digging up the bushes, as the spores of the disease spread when the infected bushes are disturbed. Of course where all the bushes are diseased the lot may be dug up, placed in a heap and set on fire.

GOOSEBERRY CLUSTER CUPS.—This disease is well known and easily recognised, as it attacks the berries in the form of a rust or scab of a bright yellow colour. Though familiar to growers for many years, it has never been looked upon as a serious pest. During recent years, however, it appears to have become more common, and this year, when the crop of gooseberries is not extra large, it is more plentiful than ever. To check the sources of infection all affected berries and leaves should be collected and burned; another stage of this fungus is found on the sedge.

GENERAL REMARKS.—Careful watch should be kept for aphides attacking fruit trees, and if noticed, the trees or bushes should be sprayed at once. The black aphid does a lot of injury to the fruit and foliage of Morello and other cherries. Quassia Extract, as advised in a previous issue, should be used to destroy these pests. Where the points of the shoots are badly attacked it will be necessary to dip the tips of the shoots in a small portion of the spraying mixture. The ground between fruit trees should be kept stirred frequently with the Dutch hoe; the month of May, and up to the present time, Mid-June, the weather has been ideal for working this invaluable little implement.

The Vegetable Garden.

By J. G. TONER.

LA TE PEAS.—The germinative qualities of many varieties of late peas have not reached a very high standard this season, due in all probability to their not being well ripened last autumn. To many, however, this will prove a blessing in disguise, for few gardeners sow them sufficiently thin. Indeed, it is the practice of some of our leading horticulturists to sow rather on the thick side, but those eminent persons take very particular care to have them thinned out to a proper distance at a fitting time. For the purpose of

aiding the growth during this and next month, the soil each side of the rows for the distance of two feet any way should be covered or, to use the proper term, mulched with long manure, grass clippings, or some similar material, so that the roots may at all times find a moist rooting medium. Nothing is so likely to bring about an attack of mildew, that deadly enemy of the pea, as want of sufficient moisture.

LETTUCE.—Two or three sowings may be made during this month, the last one towards the end. The earlier ones may be managed so that one thinning of the plants will leave those to remain at their proper distance. How many readers give a standard variety, like All the Year Round, one foot apart? Just try it. Large, crisp and tender the heads will be, and in every way superior to those grown at a less distance or transplanted. Seeds being so cheap, it is simply waste of time to transplant lettuces during summer. But for autumn and winter, the weather conditions being so much cooler, it is quite another matter. Those from the last sowing should be got into their final quarters as soon as they can be comfortably handled. Let care be taken, too, that the late plantations are made where shelter is to be had or can be readily provided.

PARSNIPS AND CARROTS.—After thinning, a few top-dressings—very light ones—of nitrate of soda will prove very beneficial to these. When the soil is in a moist state is the time to give it. The surface must, of course, be kept quite clear of weeds, but, at the same time, the hoe should be used very lightly. It is all very well to thrust it down when at work amongst such crops as cauliflowers, cabbage, &c., but does not answer so well amongst the taprooted subjects.

CABBAGES.—Dearly as most people love a good dish of spring cabbages, many let the right time for sowing seeds slip by during the busy and hot month of July. From some date during the second week of this month until the end, and according to the district, seeds of the favoured kinds should be sown. This must be done rather thinly, so that the plants grow sturdily, for weaklings are certain to fail either through frost, or, especially in stiff soils, Flower of Spring, Early Offenham, Sutton's April, and Harbinger are all grand varieties for present sowing, the latter being the quickest to mature.

TOMATOES.—The fair writer of the fruit garden column may properly claim that these are fruit, and so indeed they are; but as the great ones also recognise them as vegetables, it is hoped that our friendly relations may not be strained by the appearance of a few remarks on their culture in this portion of IRISH GARDENING. Whether in the open or under glass let them be restricted to a single stem. Abundance of air under the latter conditions is an absolute necessity; any neglect of this detail is certain to bring about an attack of one of the many diseases from which they are liable to suffer. Plants that are growing freely but have not set fruit require only plain water; but after the first and second trusses have set, feeding in moderation will be the proper course to pursue. Amateurs and others who grow a few in pots must see that plenty of water is given, for these soft plants suffer severely when allowed to get too dry.

GREEN CROPS.—At every favourable opportunity, as ground becomes vacant, broccoli, Brussels sprouts for late work, cauliflowers, cabbages, and curly kale, let these be placed in final quarters. All of them, with the exception of cabbages and cauliflowers, will be benefited if planted in ground that is firm rather than otherwise. A slow, sturdy growth, such as is made under this condition, is more likely to withstand the hardship of winter, and therefore some thought might profitably be given to this little detail.

CELERY.—For late use the red varieties may still be planted and well attended in the way of water-giving and shading too for a while until established. This crop, above all others, should never be checked in growth. Continue to water and feed earlier plantations. Soil may be drawn or placed by the hand against the forward rows. Lime or soot, or both, to be used plentifully with that portion of the soil intended for moulding purposes.

Bog and Water Plants.

THE rain which fell on Thursday night, 15th June, was welcomed by all gardeners. Thirty days and no rain was a serious matter for gardens. Two classes of plants, however, enjoyed it thoroughly, and revelled in the heat and sunshine, these being the bog plants and water plants. The water lilies gave proof of this by opening considerably earlier than usual. Among the best and brightest of these may be mentioned *Nymphaea Marlaiacea carnea*, a very lovely shade of pale pink; *N. M. alba*, a pure white with golden centre; and *N. M. chromatella*, a soft pale yellow. These three are strong growers and free flowerers, but should only be planted where they can have plenty of room. Another good white is *N. Gladstoniana*, a large, well-shaped, strong, pure-white flower, one of the best. *N. collosa* may also be classed as one of the good whites. Among the reds we have *N. atro purpurea*, the deepest red, with a beautiful yellow centre and dark foliage. *Lucida* is another red, with lighter outer petals and smaller flowers than the former. Among the bog plants a variety of *Iris spuria*, with lilac flowers and pale-yellow markings, has been very good. *I. sibirica*, blue and white varieties, were remarkably fine. *I. laxigata*, formerly known as *I. Kæmpferi*, the "Japanese Flag," promises a fine show in all colours through lilac purple and white. Where space has not to be seriously considered, *Senecio japonicus* makes a fine show, with its handsome divided foliage and large, bright-orange yellow flowers; but it is a coarse grower, and care should be taken that it does not smother smaller and more delicate plants. There is also *S. Smithii*, described in the Botanical Magazine as "this noble *Senecio*," another strong grower, with broad leaves and trusses of big, white, daisy-like flowers. In opposition to these tall bog plants may be mentioned one of the dwarf moisture-loving plants—*Neremburgia rivularis*, the "Trailing Cup Flower," from the Argentine, a beautiful little plant when covered with its pure-white, cup-like fragrant flowers. It creeps about through the damp earth and under the wet stones, forming a green carpet. We owe its introduction to cultivation to Messrs. Veitch and Sons, of Chelsea.

R. M. POLLOCK

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NOTICE—

**TO THE READERS OF
"IRISH GARDENING"**

The January number commenced the Sixth Volume of "Irish Gardening." A Title-page and Index for Volume Five has been issued, and will be sent free to any Subscriber applying for same.

Readers of "Irish Gardening" are asked to kindly introduce the paper to any of their friends interested in plants and gardening.

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Irish Gardening

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IRISH GARDENING

VOLUME VI.
No. 66

A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

AUGUST
1911



LADY PHYLIS MOORE.

Notes

IT was the King's pleasure during his Majesty's recent visit to Ireland to bestow the honour of knighthood upon the "Keeper" of the Royal Botanic Gardens, Glasnevin. This distinctive mark of royal favour, so gratifying to Mr. Moore's friends and fellow-workers, has been received with universal applause by the Horticultural Press of the three kingdoms. It is generally felt that the bestowal of knighthood upon the official head of Horticulture in Ireland was not only a richly-deserved personal reward for professional devotion to the public service, but a gracious recognition of the claims of Horticulture itself. We send our own hearty congratulations to Sir Frederick and Lady Moore—a greeting in which every reader of IRISH GARDENING will most certainly wish to be personally associated. Since the issue of the first number up to the present date the pages of IRISH GARDENING have been enriched by the writings of "Moore of Glasnevin," as he is affectionately called by his associates in the Horticultural world. During recent years in this country remarkable progress has been made in Fruit-growing and in Horticulture generally, and this development, as every one knows, has been largely due to the inspiration and untiring energy of Sir Frederick Moore.



THE report of the Development Commission that has been sitting for the last nine months is now published. It is an important document, and its findings are being read with much interest throughout the three kingdoms. We are glad to find that the matter of agricultural research has engaged the serious attention of the commissioners, and that very large sums of money are to be devoted to the encouragement of this important branch of national development. Out of a total of £165,000, no less than £105,000 is to be devoted to agricultural research and instruction in England and Wales. Cambridge University alone is to receive a yearly grant of £4,000 for the prosecution of original research. Scotland receives a lump sum of £60,000, with an annual grant of £5,000, while Ireland's share is put down at £9,000 a year, with an advance of £25,000 to £30,000 (with a promise of more) for the purchase of and for forestry purposes.

WE earnestly hope that horticultural interests will not be forgotten by the authority charged with the control of the Irish Development grant. There are a large number of important problems in gardening waiting solution by research workers, and an investigation station on the lines of the English Royal Horticultural Society's Research Laboratory at Wisley is very much needed in this country. The natural place for such a laboratory would be the Royal Botanic Gardens at Glasnevin, where material and conveniences for research are already at hand. Kew Gardens has its botanical research laboratory, why may not Glasnevin have a similar one if the necessary grant can be obtained to establish and maintain it? We are rather afraid, however, that unless some responsible body of men representing the horticultural interests of the country take the matter up and proceed forthwith to urge the claims of horticulture upon the authorities charged with the allocation of the funds, very little will be done in the way of research in matters bearing directly upon gardening as distinct from farming.



LAST month, in dealing with the technical education of gardeners, we suggested that the Royal Horticultural Society might perhaps be induced to give the country a lead in a movement that is making such rapid strides on the other side of the Irish Sea. We made the suggestion because this society is the only public non-local body in the country entitled to act as the popular representative of Horticulture in Ireland. For similar reasons we naturally look to this same society to make an immediate and strenuous effort to secure the expenditure of a fair proportion of the £9,000 annual development grant in the prosecution of research directly bearing upon problems of horticultural interest and utility. There should be no difficulty in co-opting a strong scientific committee for the purpose of advising the council upon matters bearing upon the purely technical side of the question. We trust that the present opportunity of doing something for the development of Irish horticulture will not be lost through apathy and lack of effort on the part of those who, by their position and influence, are in all such matters the rightful leaders of the country.



SIR FREDERICK MOORE, M.A., AND HIS SON
MASTER FREDDY MOORE.

Propagation by Budding.

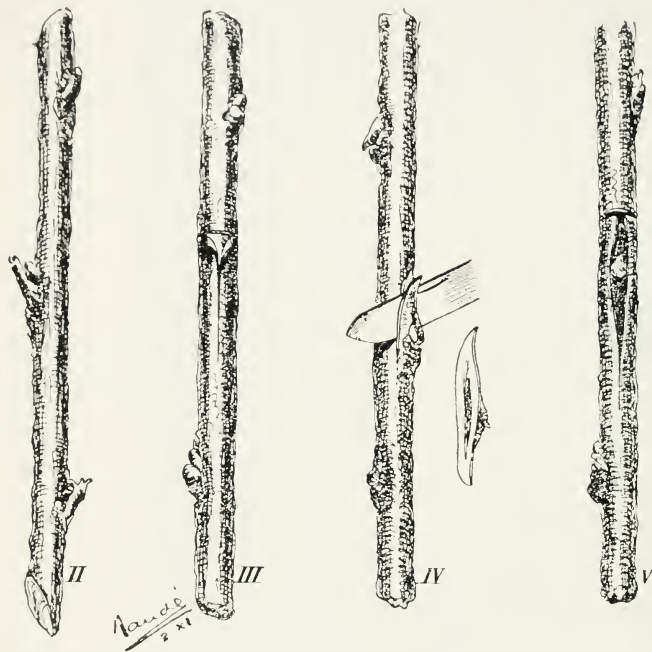
*"You see, sweet maid, we marry
A gentle scion to the wildest stock;
And make conceive a bark of baser kind
By bud of nobler race; this is an art
Which does mend nature; change it rather; but
The art itself is nature."* SHAKESPEARE.

BUDDING as an art has been practised from the remotest historical times. "Columella," a celebrated Roman authority living in the first century of the

Most shrubs and trees can be successfully operated upon, but with the many who do practice it the work is generally confined to rose bushes and fruit trees. With respect to the latter budding is rapidly replacing grafting so far as nursery stock is concerned. It can be performed so much more rapidly.

In the present case we are writing more especially for the amateur in the hope that what we say will excite an interest in the subject and arouse a desire to practice the art upon many and varied subjects. Budding is done during the summer when, owing to the cambium being full of sap, the "bark" easily tears away from the young wood. The cambium, as all gardeners know, is a thin cylinder of very actively growing and dividing "cells" lying between the wood and inner bark. It is the cambium that forms all the new wood and new bast of each year, and is, therefore, the centre and origin of practically all new growths that give increased thickness to the stems and branches.

The main idea, then, in "budding" is to remove a bud (with a shred of bark attached) from one variety of tree, and by making suitable incisions and uplifting of bark in the stem of another variety of the same species to so insert the bud in the latter as to place its bark in the same position as will exactly correspond with its original position in the stem from which it was removed. When the strip of bark carrying the bud is removed it will have on its inner or wounded surface a layer of living cambium cells. When the slit bark on the stock is uplifted the cambium is torn, but a layer of uninjured cells are left covering the surface of the wood. Now, when these two living layers of cambium are brought into close contact and



present era, in referring to the subject of "Emplastration" (the name used for budding), said that (even then) the operation was of ancient origin. It is, therefore, one of the oldest artificial methods of altering the character of a tree—a method the real biological meaning of which is described so wonderfully and with such supreme insight in the quotation with which we introduce this note.

The art of budding is really very simple, and one often wonders why it is not more extensively practised by our amateur gardeners.

kept so for a sufficient length of time they grow and knit themselves together into one tissue, and so the organic union is brought about.

The details of the process may now be given. It is necessary to use a pocket-knife with a special handle sloping off into a blunt, blade-like end, helpful in raising the bark of the scion by tearing rather than by cutting. Strands of bast or raffia for binding on the bud will also be required. Many gardeners, however, prefer narrow tape or even worsted to bast, as the latter is apt to become loose. Having then selected twigs of the variety carrying the buds to be used the operator is ready to start. In order to secure buds not too old or too young it is usual to take them from the mid-length of the twig. In the series of illustrations here given Fig. II. represents one such stem.

1. Select the shrub or tree to be used as stock.

2. Make first a longitudinal and then a transverse incision (like the letter **T**) in the bark of the stock.

3. Using the thin end of the knife-handle gently raise the lips of the cut as in Fig. III.

4. Remove a bud from twig of scion. It should resemble Fig. IV.

5. Insert its lower pointed end into mouth of slit and push gently down into position as shown in Fig. V.

6. Bind securely with bast strand tight enough to keep the two wounded surfaces close together, but not so very tight as to injure the bark (Fig. VI).

In about ten days or so the buds should be looked over, and if there is any undue tightening due to growth the ligatures should be loosened.

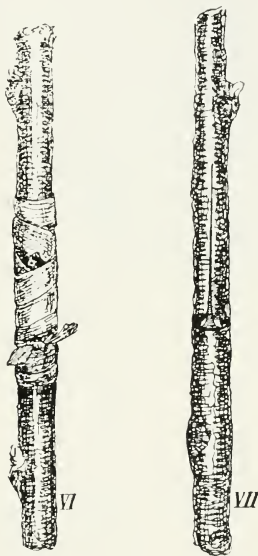
In cases where injury is feared from outside moisture penetrating to wound, the incision in bark of stock may be made in the form of an inverted **T** and the bud pushed upwards instead of downwards. The flaps will then act as a protecting "roof," as shown in Fig. VII.

The Propagation of Ferns from Spores.

THE raising of ferns from spores is a fascinating pursuit, the process being quite simple and success assured so long as certain precautions are taken to give the necessary requirements to the young plants. Spores are much simpler things than seeds. Seeds contain an embryo plant, spores do not—in fact, they resemble grains of pollen more than seeds. When the spores of ferns germinate they produce not a young fern plant as we commonly know it, but a tiny, flat, green structure like a liverwort. It is called a prothallus. The prothallus bears sexual reproductive organs on its under side, and from the fertilised egg of the female organ the young fern eventually makes its appearance.

The spores are contained in little cases as small as the grains of fine sand, arranged in lines or clusters on the under surface of the fronds. The spores should be gathered when ripe and either sown at once or put up in dry paper and kept until spring. Pans may be used for their propagation. The soil used by nurserymen is made up of four parts old loam, one part peat, one part leaf-mould, and one part fine sand. The pans are well crocked, as good drainage is essential. The compost before using is passed through a riddle and thoroughly watered with *boiling* water. This, too, is essential in order to kill the spores of moss plants that are the most troublesome weeds in fern-raising. The pan is filled with the sterilised soil up to within half an inch of the rim. As the spores are so small and thick, sowing is to be avoided; the soil should be marked off in sections and each section carefully "seeded." The spores are to be simply scattered over the surface and not covered.

The pan is then to be covered with a sheet of glass, as it is most essential to success to keep the air laden with moisture over the germinating spores. Shading is, of course, necessary, but diffused light is not to be excluded, as the prothallus is a green structure, and therefore requires light, even although it must be subdued. When the young frond appears arising from the prothallus the young fern may be pricked out and potted off. Good subjects for beginners to start upon are the Ribbon fern (*Pteris Winsetti*, for example), Maidenhair (*Adiantum elegans* and *A. cuneatum*) and *Aspleniums*.



Common Orchard Pests

Season 1911

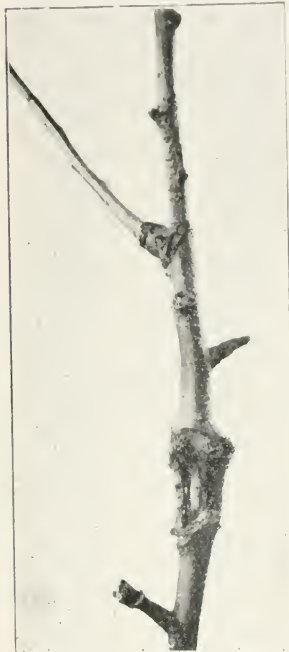
IN our annual circular to fruit-growers for information concerning the fruit crop prospects we invited correspondents to mention their most troublesome insect and fungoid pests.

From the replies received (covering the whole of Ireland) we have selected those that appear to be the most prevalent, giving brief descriptive accounts of the pests and the nature of the injury due to their attack, together with the most approved methods of dealing with them, with a view to their eradication.

CANKER.

This disease is attributed to the action of a fungus (*Nectria ditissima*) the spores of which gain an entrance to the stem or branch

through a wound in the bark. The delicate microscopic threads of the fungus find their way to the internal living tissues, feed upon the sap, and induce by their presence the abnormal appearance recognised as canker. The fungal threads form small reddish "fruits" along the tract of the wound. Each tiny fruit gives rise to very large numbers of extremely minute spores. Trees in bad health, due to conditions unsuitable to them, are more liable to attack than perfectly healthy ones. Canker is a case for the surgeon's knife. The affected parts ought to be cut out at an early stage and the wound covered with a coat of tar. Badly cankered trees ought to be cut down and burned, as they act as infection centres in the orchard.



APPLE BRANCH AFFECTED BY
CANKER.

APPLE MILDEW.

The apple mildew (*Podosphaera lemotricha*) is a fungus that attacks the leafy shoots of the apple, giving them a powdery, silver-white appearance and causing a serious arrest of growth. The best remedy we have tried is spraying immediately the trouble appears with a solution of potassium sulphide (liver of sulphur). The strength used will vary from 3-10 ozs. to 10 gallons of water according to the age of shoot, the hardness of the tree, or the season of the year. If the diseased shoot can be spared it is better to cut it clean away.

APPLE-SCAB.

Apple-scab is common. The "scabs" make their appearance on the fruit and leaves. They are of an olive-green, brown, or very black colour. The disease is due to the attack of a fungus (*Fusicladium dendriticum*) which interferes with normal growth, some time causing distortion, and not infrequently the falling of very young fruit. When the attack is severe the foliage looks brown and dry. As a preventative all fallen diseased leaves and useless fruit should be destroyed. In winter the trees ought to be sprayed with copper sulphate solution, $\frac{1}{2}$ -1 lb. to 10 gallons of water, or with a caustic wash. In summer spray several times with Bordeaux mixture.

GREENFLY.

The leaf-curling aphid attacks apple trees (known as the *Aphis Pomi*) is also prone to cause distortion of the young shoots. The injury is due to the little creatures stabbing the tissue of its host in order to suck its rich sap. Furthermore, the honey secreted by these pests choke up the stomal opening of the leaf and interferes with their work.

The most effectual remedy we know is to spray with a paraffin emulsion, made up of paraffin (16 ozs.), soft soap ($2\frac{1}{2}$ lbs.) and water ($9\frac{1}{2}$ gallons). It is most important to "churn" the mixture well with



APPLE TWIG AFFECTED BY
SCAB

(Enlarged to twice natural size).



GREENFLY.

a strong syringe into a perfect emulsion before applying. As eggs are laid on the shoots in late autumn much benefit will arise by spraying with a stronger emulsion after the leaves fall. The addition of caustic soda to the winter-used emulsion will be beneficial, in which case less soap may be used.

WOOLLY APHIS.

The woolly aphis or American blight (*Schizoneura lanigera*) is a troublesome pest in the orchard. The insects secrete white cottony-looking threads as a protection to their delicate bodies. It causes exhaustion by sucking the sap of the stem and lays the trunk open to the attack of injurious fungi by producing surface wounds. In summer and in the case of old trunks the spots may be scrubbed with a hard brush dipped in a strong paraffin emulsion. In young trees or young branches the weak paraffin emulsion referred to above may be sprayed direct and with as much force as possible upon the woolly patch with a good hand sprayer. As the insect winters in the crevices of the bark the trees should be thoroughly sprayed with a caustic wash during that season. But as it is also the habit of this aphid to pass the winter underground on the roots it is a good plan to inject carbon bisulphide into the soil at various points round the tree any time before the beginning of April.

CODLIN MOTH.

The codlin moth (*Carpocapsa pomonella*) is responsible for the "worm-eaten" condition of apples. The female begins to lay its eggs early in June, inserting one in the "eye" of each setting fruit immediately after the fall of the blossom, fixing it in position by means of a gummy secretion. Within a week's time the eggs hatch and the little grub sets to work, eating its way towards the core of the young fruit. When the fruit enlarges the grubs attack the seeds or pips, and this induces the premature fall of the fruit. The grubs then eat their way out, climb the tree, and finding a snug spot settle down and change into a chrysalis, from which the perfect moth escapes next spring. There may be more than one brood in one season. Various plans may be adopted in order to circumvent this destructive insect. (1) All fallen apples should be gathered at once and removed from the fruit grounds. (2) The caterpillars may be trapped in their journey up the stem by placing hay bands or strips of sacking round the trunk. They will select the shelter afforded to pass into the chrysalis state. Later the traps can be

removed and burned. (3) Scraping the bark and spraying with caustic wash in the winter. (4) If thought necessary spraying in spring after fall of blossom with arsenate of lead solution.

WINTER MOTH.

The winter moth (*Cheimatobia brumata*) is most destructive to the foliage of apples, pears, plums, and cherries. The perfect insect escapes from the pupa some time during the last three months of the year. Egg-laying is finished by February, and the grubs are hatched out towards the end of March or early in April, and begin at once to devour the young leaves. After attaining their full size they lower themselves to the ground by means of threads which they spin for the purpose. They burrow into the earth and pass into the pupa or chrysalis state, from which they emerge as perfect insects late in the year, as already noted. The males are winged, but the females are wingless. The females must therefore crawl up the trunk to lay their eggs in crevices often near the ends of the shoots. The attacks of the winter moth may be easily prevented by the use of "grease bands" fixed to the trunks of the trees before the first week of October, in order to catch the wingless females in their egg-laying journey up the stem. The bands are made of grease-proof paper, 6-8 inches wide, tied at bottom and top, and smeared with good cart grease. In spring the caterpillars and other leaf-eating grubs may be destroyed by spraying with arsenate of lead. (Swift's arsenate paste, 1-4 ozs., dissolved in $3\frac{1}{2}$ gallons of water.)



FRUIT OF APPLE CUT TO SHOW GRUB OF CODLIN MOTH AT CORE.



CATERPILLAR OF WINTER MOTH.



EGGS OF APPLE SUCKER ON FRUITING SPURS
(Magnified)

APPLE SUCKER.

The apple sucker (*Psylla mali*) is credited with a great deal of damage to apple trees during the period of blossoming and setting of fruit. The flower clusters die off, become brown, and may or may not fall away from the spurs. The fly lays its eggs in the autumn on the spurs and young shoots, and these hatch out in April. The young insect is a louse-like creature of a dull yellow and brown colour. It penetrates into a flower bud if it can find one, but failing that into a shoot bud. Their occupation of the bud can often be known by the presence of drops of honey dew. They cause the death of the bud. By the end of May or beginning of June they develop wings, and the females start egg-laying in September. The best remedy is to spray just before or during flowering with tobacco or nicotine solution. It is also helpful to spray in late summer with the weak paraffin solution already referred to, in order to destroy the egg-laying females.

GOOSEBERRY AND CURRANT SAWFLY.

The sawflies (*Nematus ribesii*) are terrible pests to gooseberry and currant growers. The caterpillars appear in May and June, and cause great destruction to the foliage, even in a few days. When mature the caterpillars change from green to orange colour, and lower themselves to ground, bury themselves, and pass into the pupa state. The early broods escape as perfect insects in about three weeks' time and start egg-laying; the later broods hibernate in the ground. These latter emerge as winged insects in April and May. The eggs are laid on the under-surfaces of the leaves.

The remedy usually recommended for this pest is the

use of gas-lime that has been exposed to the air for some time. This is stirred into the soil over the roots, the object being to kill the pupa. Spraying the foliage with a weak paraffin emulsion or with hellobore wash ($\frac{1}{2}$ lbs. to 10 gallons of water) is also recommended.

NOTE.—Some correspondents put down "gooseberry caterpillar" merely, and as there is another caterpillar (that of the Magpie moth) that attacks the gooseberry it is impossible to say which is the one intended. The caterpillar of the Magpie moth is one of the "loopers" (that is, it walks with the centre of its body curved in the form of an arch), and is white with black spots on it, hence the name, "Magpie." In the beginning of winter the caterpillars may be found in the rolled-up leaves of the gooseberry still hanging on the bush or lying on the ground, or in crevices of the bark. Obviously in this case care should be taken to remove the fallen leaves with an inch or so of soil and burn or sterilise by fire. Spraying, as recommended for sawfly caterpillar, may also be resorted to.

ERMINE MOTH.

The small ermine moth (*Hyponomeuta malinella*) is frequently destructive to the foliage of the apple. In their later stage of development the caterpillars live in colonies within the protection of a "tent" formed of a



A BRANCH OF GOOSEBERRY DEFOLIATED WITH GRUB
OF SAWFLY

Showing Winged Fly, Caterpillars, and Cocoon.

web spun by themselves. The eggs are laid on the twigs towards the end of summer—in roundish yellowish patches protected with a covering of gum—and hatch out in October. The grubs are at first quite minute, and remain under cover of the coat of gum until the following spring. When the leaves expand the minute creatures burrow into the substance of the leaves, but as they get bigger they bore their way out. They then congregate into colonies and spin their tent-like nests, from which they make foraging excursions, doing considerable damage to the leafage. The best methods of eradication are:—(1) To prune off and destroy the twigs carrying the egg patches; (2) to spray with arsenate of lead or a weak paraffin emulsion on fine days when they are out feeding (in dull or rainy days they remain within their nest); (3) remove the nests with the caterpillars inside. Caustic washes do not appear to penetrate the egg-cluster cases.

NOTE.—The Lackey moth is another of the nest caterpillars. The eggs of this insect are laid in the form of bands encircling the young twigs. The same remedies may be applied to this as in the case of the ermine moth.

BIG BUD IN CURRANTS.

Big bud is due to the attack of mites (*Eriophyes ribis*) that live in the buds, and to whose irritation the largeness of the bud is due. It is reported in very few cases. The adult mites lay their eggs in the newly-formed buds



LARVA OF APPLE SUCKER.

about June. They hatch out in March and begin their injurious attack. It is a trouble most difficult to deal with, and the only certain remedy at present seems to be the careful removal of all the affected twigs or, better, the total destruction of the bush. Some experimenters claim that dusting the bushes at intervals of a fortnight during the spring and

early summer with a mixture of one part quicklime and two of sulphur is an effective cure, but this is denied by others. Cuttings should never be taken from bushes affected with big bud.



BIG BUD IN BLACK CURRANT.

are more likely to be useful than otherwise, as many of them feed upon green algae, spores of fungi and beetle mites. If proved to be harmful, spraying with weak paraffin emulsion, or with a potassium sulphide and soft soap solution, will almost certainly destroy them.

WASPS.

Wasps are reported as being troublesome in some cases. They may be caught by trapping them in a hanging bottle containing a sweet fluid. The hanging nests of tree wasps are easily destroyed by cutting



CODLIN MOTIL.

them off at night and plunging them into a pail of boiling water. Nests in holes can be treated with potassium cyanide. A wisp of cotton wool saturated in a solution of this substance can be fixed to an iron rod and thrust down the hole. Potassium cyanide is a deadly poison. Tar is sometimes used. A spoonful or two is poured down the hole at nightfall.

APPLE-BLOSSOM WEEVIL.

This is a black weevil (*Anthonomus pomorum*) easily recognised by a light V mark on its back. It may be seen early in spring flying among apple and pear trees engaged on the important business of egg-laying. The eggs are laid in holes pierced in the yet unopened bud. The hatched-out maggot eats the essential organs of the flower, and so the clusters wither and die. The beetles pass the winter under the rough bark. It is difficult to cope with this little pest, and winter spraying with caustic wash, in order to destroy the hibernating beetles, seems to be the only remedy.

RED SPIDER.

Red spider has been mentioned by several correspondents as being injurious to their fruit trees. There are several kinds of red spider, but the most common on out-door fruit

Fruit Crop and Fruit Crop Prospects (Ireland), 1911

NOTE.—The date of this Report may be taken as up to the middle of July. In order to secure as much uniformity as possible in the Return a scale of descriptive terms was agreed upon, viz.:—Very good, good, average, below average, bad. The names of the County Horticultural Instructors are starred (*).

County and Locality	Apples	Pears	Plums	Cherries	Gooseberries	Currants	Raspberries	Strawberries	Names of Correspondents
ULSTER									
<i>Armagh</i> —County	Below av.	Bad	Bad	Average	Some good Some av.	Good	Average	Average	J. Hagan *
Anaghmore	Below av.	Bad	Below av.	Not grown	Average	Average	Average	Below av.	J. J. W. Dunlop
<i>Antrim</i> —South	Very good	Average	Below av.	—	Very good	Very good	Very good	Good	H. Drew
Crumlin	Good in young trees	Below av.	Below av.	Below av.	Very good	Very good	Good	Average	Lucy Douglas *
<i>Caran</i> —County	Average	Bad	Below av.	Good	Very good	Good	Very good	Very good	J. Ford
Ballyhaise	Good	Good	Average	Very good	Very good	Very good	Good	Very good	P. J. O'Carroll *
<i>Down</i> —County	Below av.	Average	Average	Bad	Very good	Very good	Very good	Very good	D. W. Baillie
Orangefield	Good	Bad	Bad	Average	Very good	Very good	Very good	Good	Jas. Lynas
Gifford	Below av.	Below av.	Below av.	—	Good	Good	—	Below av.	Samuel Todd
Lisburn	Average	Bad	Bad	—	Very good	Very good	Good	Good	John G. Toner *
<i>Monaghan</i> —County	Below av.	Below av.	Below av.	Bad	Average	Very good	Very good	Below av.	E. W. Ward
Portstewart	Average	Below av.	Bad	Average	Average	Average	Good	Good	Rev. K. Morrison
Cardonagh	Below av.	Bad	Bad	Bad	Average	Very good	Average	Below av.	J. Diamond
Tobermore	Below av.	Average	Below av.	Bad	Average	Good	Below av.	Average	L. B. Archibald
Eglington	Good on cultivated land, bad on grass	Bad	Bad	Bad	Below av.	Average	Good	Average	P. Brock *
<i>Fermanagh</i> —County	Very good	Good	Bad	Good	Very good	Very good	Very good	Very good	Wm. Sutherland
Enniskillen	Average	Bad	Average	—	Good	Below av.	Good	Average	S. J. Magill *
<i>Tyrone</i> —County	Very good	Below av.	Bad	Bad	Bad	Very good	Very good	Good	F. W. Walker
Stion House	Below av.	Not grown	Not grown	Not grown	Very good	Good	Spoilt by drought	Good	D. M'Laren
Clogher	Below av.	damsons bad	damsons bad	damsons bad	Very good	Good	Very good	Very good	J. Blemons *
MUNSTER									
<i>Cork</i> —North	Very good	Bad	Average	Average	Very good	Very good	Very good	Good	J. Dearnatey
East	Good	Bad	Bad	Average	Good	Good	Very good	Good	J. Bracken *
West	Good	Average	Average	Average	Good	Very good	Average	Bad	S. Bowles
Coma	Average	Bad	Bad	—	Very good	Good	Good	Average	J. Grennan *
<i>Clare</i> —County	Below av.	Average	Bad	—	Very good	Very good	Very good	Average	A. Barker
Carrigoran	Below av.	Below av.	Below av.	Good	Good	Average	Good	Average	J. Carter
<i>Dramoland</i>	Below av.	Below av.	Below av.	Average	Very good	Very good	Good	Average	W. F. Earls *
<i>Kerry</i> —County	Below av.	Bad	Bad	Average	Very good	Very good	Very good	Very good	A. J. Elgar *
Killarney	Average	Average	Average	Average	Very good	Very good	Very good	Very good	D. Calthorpe
Ballyheigue	Below av.	Average	Bad	Good	Very good	Good	Average	Very good	J. Malone *
<i>Limerick</i> —County	Below av.	Bad	Average	Bad	Very good	Good	Good	Average	

Fruit Crop (Ireland), 1911.

Report by W. S. IRVING, Chief Inspector, with respect to Fruit-growing under the Department of Agriculture for Ireland.

TAKING the fruit crop of 1911 as a whole it cannot be called a good one. The bush fruits in most cases have been good, and fairly good returns have been received for the produce. The prospects of the large fruits, however, are not at all promising. Apples are in general less than an average crop, and in many cases will not be so good as last year. Plums are also poor, and pears are a bad crop almost everywhere. Good Irish apples should bring a good price this year.

The weather during last winter, and especially in February, was all that could be desired by the fruit-grower to have the work of pruning and spraying the trees, and digging, cleaning and manuring of the ground accomplished. Growers in general are now taking more interest in these operations than formerly. Trees in orchards which had been well treated during the winter broke away stronger in the spring, and presented a much healthier appearance in June than where the trees were neglected.

The spring opened favourably, there being very little frost; and as almost all kinds of fruit flowered well there was every indication of heavy crops of all fruits. The harsh dry weather, however, which followed caused the crop to be very disappointing. The period between the middle of May and the end of June was of a trying nature, there being practically no rainfall, the days very hot and the nights very cold. There were a few heavy local showers, but we had very little of the soft, mild and good growing weather so beneficial to fruit blossoms at the time of setting. The continued drought and hot, parching winds had a very telling effect upon most fruits. It prevented many of the fruits from setting, and caused many of those fruits which had set to drop later on.

This has been one of the hottest and driest seasons on record, and has been favourable to the spread of insect pests. It has, however, been much against the crop of bush fruits, the bushes not having a sufficient supply of water to swell their fruits properly.

Hail and thunderstorms in May and June ruined many of the gardens in the south and west. Orchards throughout the country

having an easterly aspect were most exposed to the dry winds, and these have suffered most.

APPLES in general are from below average to a good crop. There are few very good crops in the country this year, though they are better in the south than in the north. There was a fair show of flowers; many trees did not flower anything like so freely as last year, and there was a nice set of fruit, though nothing like so good as was expected. Growers fully expected to have a very good crop, when the trees passed through the flowering stage without encountering very severe frost. Their expectations, however, were not realised, for with very hot, dry days, and the ground hard and dry, combined with the attacks of apple sucker and caterpillars, many of the trusses of flower failed to set a single fruit, and many of those which did set have since dropped off because of the continuous heat and drought. Apples continued dropping till the first week in July. Trees on cultivated ground, and where they are well pruned and sprayed, are bearing better crops than those which are not well attended. Unless we get a moist autumn apples will be small in size. Trees in old orchards are bearing about a third of a crop. The following varieties are bearing from a fair to a good crop:—Lane's Prince Albert, Lord Grosvenor, Keswick, Codling, Bramley, Lord Derby, Grenadier, Early Victoria, Newton Wonder, Worcester Pearmain, Cox's Orange Pippin, Irish Peach and Lady Sudley.

PEARS flowered very well in most cases, and growers were delighted at the show of blossom and the absence of frost during the flowering period. A very heavy crop was anticipated. Though we had a few severe hailstorms at that time, the fruit should have set much better than it did, and many of those which did set have since dropped, owing to the hot, dry, scorching winds. All varieties appear to have suffered in the same way, and there will be a poor crop of pears this year.

PLUMS are, in general, a poor crop. The trees flowered early and were a mass of bloom. It is some time since I saw so much flower on plum trees. The flowers set very well almost everywhere, and up till the time they were as big as peas there was every prospect of a very heavy crop. The very hot, dry weather of May caused many of the fruits to drop in some plantations; in others, almost all the fruit turned yellow, and dropped off at this stage. The variety Victoria is bearing better than the others this year, and young trees are bearing better than old trees.

DAMSONS, though they flowered very well, are also a poor crop, the fruits having dropped shortly after they were set.

CHERRIES are an average crop in general. They are good in Leinster; in the north, however, they are not so good. They flowered freely, but failed to set the fruits as well as they ought to have done. The Morellos are fruiting ever so much better than the sweet cherries, and they are also more free from insect pests. Black fly was very severe on the points of the young shoots of sweet cherries. Good crops have, in general, been obtained from wall trees.

GOOSEBERRIES are a good crop all over the country. They appeared to suffer less from the hot weather. The bushes flowered well and escaped any severe weather there was, and set well. They began to swell rapidly, and green gooseberries were in the market very early this year. Growers who make a practice of mulching their bush fruit plantations are gathering very heavy crops of fine, large berries, and I feel certain that these men will have more profit from gooseberries this year than they will from any other kind of fruit. Bullfinches did much damage to the bushes last winter, especially in the south, by eating out the buds, leaving many of the young shoots bare of leaves and fruit.

BLACK CURRANTS in general are an average to good crop. On low lying land, or where the ground is well manured and kept free from grass and weeds, the crop is a very good one, and excellent prices are being obtained. Where the bushes or ground have been in any way neglected the crop has not been so heavy, nor have the berries been so big. In general the crop is not so large as last year, nor are the berries so large individually. The varieties doing best are Boskoop Giant and Victoria.

RED AND WHITE CURRANTS are a good crop, though many dropped because of the continuous dry weather. Currant sawfly caterpillars did much damage to the foliage this year, many of the plants being almost denuded.

RASPBERRIES in most cases came through the winter well, and broke away strongly in the spring. They flowered freely, and the early flowers set well, regardless of the continuous heat and drought. As the drought continued, however, the later flowers on plants in dry ground failed to set and swell, thereby reducing the crop. The berries were ripe about a week earlier than usual, and the season promises to be a short one. Good prices were obtained for early berries. The young canes are not making such strong growth as they ought to do, and unless we get a good growing autumn next year's crop is almost certain to be a light one.

STRAWBERRIES gave every promise of being a very heavy crop. They flowered well and set well in the early part of the season. On damp soils, where the plants were mulched in spring, or where they were well watered, very good crops have been gathered. The fruit was also of excellent quality. Owing, however, to the large consignments of fruit shipped from France and England, the prices ruled rather low. On dry soils exposed to the winds, and where the plants were not watered, about half a crop has been secured, the plants failing to set the late flowers and to swell the fruit. The late fruiting varieties have suffered most from the continued drought, the rain, coming at the very end of the season, being too late to benefit the plants. The season was a very early and short one, the fruits ripening up very rapidly.

INSECTS have been very severe this year, especially apple sucker, caterpillars of winter, codlin, tortrix and ermine moths, American blight, and blossom weevil on apple trees. Sawfly caterpillars were bad on red and white currants and gooseberries; in some cases, where the bushes were not treated, the leaves were almost all eaten off the bushes. Greenfly were very

severe, especially on plums, damsons, cherries, black currants, and gooseberries. They damaged black currants very much this year. Raspberry blossom weevil was very prevalent in some of the large plantations, and there was also a case of raspberry sawfly. Black currant mite appears to be almost stamped out of the country. The warm, dry spring weather was very much in favour of the spread of many insects attacking fruit trees, and much damage was done where spraying was not thoroughly and persistently carried out at the right time. There was not much trouble with the pests, however, where this was properly done.

Fungoid pests are very troublesome this year, and growers are taking much more interest in them, and much more spraying materials are being used now than formerly. Apple and pear scab and apple canker are more or less prevalent all over the country, they being recorded by the majority of the correspondents.

Silver leaf on plums, brown rot on apples, and American mildew on gooseberries are given as affecting the fruit growing in many districts. A rather rare disease, "*Eutypella prunastrii*," which does much damage to young trees, is causing the death of many young plum trees in different parts of the country. The best way to deal with it is to pull up the affected trees and burn them. Gooseberry cluster cup was very prevalent in many plantations this year.

Apple mildew did not appear to be so prevalent this year, the only variety showing much of it being Bismarck.

On some plantations raspberry rust was very prevalent.



PLANTS IN RELATION TO SOIL ACIDITY.

BEARING upon our remarks of last month on peat plants and lime is an interesting article entitled "Taming the Wild Blueberry" in *The National Geographic Magazine* (Washington), written by Mr. F. V. Coville, a well-known plant physiologist and experimenter. As an example of the method of culture pursued by Mr. Coville we give the following:—The plants were potted in brown acid peat (the natural soil of the blueberry), and then given a topdressing of lime equal to 25 tons of lime an acre. The expectation was, of course, that the plants would die, but they did not! Examination of the soil showed that the lime formed a surface crust, and that for half an inch under the crust the soil was black, but below this the soil had retained its natural brown colour. It was only in the brown peat that the roots looked alive, normally developed, and functionally active. Chemical tests proved that the black layer had lost its acidity, but that the underlying brown soil still retained its normal acidity, and hence the growth of the microscopical fungus, so necessary for the feeding of this peat-plant, was not interfered with as it certainly was in the non-acid black layer. As Mr. Coville points out, this experiment has an important bearing upon the liming of meadow or other grass lands. Unless the soil is of an open, sandy nature the effect of liming as a corrector of acidity would only have a very limited range—so very limited, indeed, that it is exceedingly unlikely that it could do much good in the way intended—that is, neutralise the acidity of soil within the root-range.

Shrubs in Autumn.

By J. W. BESANT.

WITH the advent of August the first month of autumn is upon us. Spring and early summer flowering shrubs will be finishing their growth for the season, while later flowers like the Philadelphuses will be over, and should be pruned as detailed in previous notes. Should the weather continue hot and dry, several good soakings of water will help to plump up the flower buds for next year's display, and established plants will benefit from the application of weak liquid manure having been previously soaked with clear water. Attention should also be given to autumn flowering shrubs, which will now be in flower or fast coming on. Late flowering spiræas, ceanothus, buddleias, tamarisks, Clematis Jackmannii, &c., should be well supplied with moisture to ensure the flowers lasting over as long a period as possible, as well as to strengthen the buds at the base of the branches, from which will arise the flowering shoots of next year.

Notes should now be made of alterations and additions which seem desirable, so that there may be no confusion when the autumn planting season arrives. This is work which should be going on the season through, but which is often left till the planting season arrives. In the smallest as well as the largest gardens it is absolutely necessary to be constantly making notes if the most is to be made of the space and material at command.

It is an excellent plan, too, if at all convenient, to visit any large public, private, or nursery gardens with a view to the easier selection of suitable specimens for certain positions. To the amateur with limited means for purchasing shrubs this will be found preferable to pouring over catalogues without being able to decide which of the many subjects offered will prove most satisfactory.

Many evergreens succeed best when planted in early autumn, and where the planting of such is contemplated preparations should be made towards the end of the month or early in September. Hollies particularly, whether for a hedge or for single specimens, should be planted early, and will thus get established before cold weather sets in.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Brenanstown, Cabinteely, Co. Dublin.



AUGUST is the month in which the gardener may see the full fruition of his hopes or console himself as best he may for any disappointment (and I think they are many this year) by preparations for the future. The flower beds which have not been starved for want of water will now be in full bloom, the foliage at its best, and under the most perfect arrangements a critical eye will see the deficiencies and faults, and will profit thereby if notes are made of them and remedied in next year's plans, for now to a great extent is the time to decide on next year's arrangements. The advantage of decided colours in masses will now be obvious and the taste of the designer be apparent not only in the individual beds but in the whole design. I think the taste in gardening has changed very much during the past decade or two. Fifteen or twenty years ago distinctness or individuality even to crudeness was the rule, as witnessed by the amount of carpet-bedding, straight lines of very often ill-assorted colours, and individual plants standing out in bold assertiveness with well-raked soil showing between. Now that is changed

to a graceful and more natural massing of colours where all angles are "rubbed" off by a nice intermingling of plants and colours. High keeping, however, is above all the chief element in successful gardening; no combination or form or colour will please if neglect is apparent. Cleanliness, nice graceful staking and tying and removal of plants which are withered will keep our herbaceous borders looking well.

Propagate plants for next year; no time must be lost with the more delicate pelargoniums, so that they may be well established before winter sets in. It will be difficult in many places to get cuttings this year; owing to the continued drought the plants have made very little growth.

Plant out all recently struck cuttings of wallflowers, pinks and pansies. This is a good time to sow Brompton and intermediate stocks for early flowering next year, also lupins, delphiniums, snapdragons, cornflowers, and such like plants. Several herbaceous plants which have done flowering may be easily propagated towards the end of the month by careful divisions of the roots and careful watering afterwards.

Carnations should now be layered; they will root much quicker and move better if a compost of fresh loam, eaf-mould and sand is provided for them, and frequently watered. It is important to have the layers well rooted and planted in their permanent quarters

before hard weather sets in. All herbaceous plants will require water, especially dahlias and phloxes. If we have not a sufficient water supply, it is very necessary to frequently hoe and rake between the plants; it prevents too rapid evaporation of the moisture through the open pores of the soil. Look out for earwigs on dahlias and chrysanthemum plants; if not trapped and destroyed they will destroy the plants. Where it has been possible to supply roses with what water they required, it will be found that they are throwing up some very nice young shoots from which we may expect a very good second blooming. The Ayrshire, Boursault, Sempervirens and other climbing roses frequently send up very strong shoots from the bottom, which, if not required to fill some vacant places, may be removed with advantage to the top.

The saxifragas, androsaces, sedums, &c., may now be propagated by offshoots taken and planted in pots, in which they may remain during the winter, thereby making nice, strong plants for next spring's planting.

The Fruit Garden.

By G. DOOLAN.

SUMMER PRUNING.—The time to commence this operation is when the young shoots present a natural appearance, which is usually in the month of August. There is then a temporary cessation of growth, but different seasons affect growth, so much so that no hard and fast rule can be laid down in regard to the exact time this work should be done. In dry seasons like the present growth is always completed earlier than in wet, sunless weather; therefore the work may be done this season during the first and second weeks of August. The pruning consists in shortening all laterals (side shoots) of the present season's growth to four or five inches of their base. These are again shortened at the winter pruning to spurs of $1\frac{1}{2}$ inches. Summer pruning diverts the flow of sap to the lower buds, causing many of them to develop and ultimately form fruit buds. If the autumn is wet further growth usually takes place, but always from the outer buds of the shortened shoots, and these are, of course, removed at the spur-pruning in winter. The leading branches are not shortened, and where extra branches are necessary for the proper formation of the tree, the strongest and best placed lateral growths should be selected and trained in the required direction. Summer pruning is not necessary in the case of large trees, as these as a rule make short growths and develop many fruiting buds; but young apple, plum or pear trees, whether trained to walls or growing in the open, should be treated. It must be remembered that well-ripened buds and wood are essential to fruit production. The objects of summer pruning are to open the centre of the trees by the removal of superfluous growths and so permit the entrance of sunlight and air; to promote firmness of the wood and develop fruit buds, and to assist the ripening of fruit in the centre of the tree, summer pruning also simplifies winter pruning.

CURRENTS AND GOOSEBERRIES.—Where the growths of these are very thick, they may be much improved by

cutting out a certain number of branches. This will improve their fruitfulness next season, and will also permit of the fruit being more easily gathered. The black currant bears on the young wood, therefore some of the old shoots should be cut away. The gooseberry bears both on the young and old wood; the centre of the bushes should be opened somewhat by the removal of old branches preferably. Gross, vigorous shoots (water shoots) should also be removed.

PLANTING STRAWBERRIES.—The earlier strawberry plants are placed in their permanent quarters the better will the results be next year. If the runners were treated as described in an earlier issue they will still have a long season to grow before winter sets in, and should then be sturdy and firm for next season's fruiting—a very essential point. The soil should be well prepared and a liberal dressing of manure added. A strong, loamy soil is the most suitable, but where sufficient manure is used strawberries will do well. The soil should be well broken up during digging and made level on the surface. Plant firmly in lines 28 inches apart, and allow about 22 inches from plant to plant. Do not have the heart of the runner below the surface, and where the soil is inclined to be light thread the ground about the plants firmly with the feet. Give the runners a good watering in the evenings after planting. The after-treatment consists in keeping the ground clean by hand-weeding or by the use of the Dutch hoe in dry weather. Good varieties are Royal Sovereign, The Laxton, Kentish Favourite, Givan's Late Prolific. Those preferring high-class flavour should plant British Queen or Vicomtesse Hericat de Theory—two old, very good-flavoured varieties.

THE FRUIT CROP.—Apples suffered much from the drought, and a great deal of the fruit fell, though in some districts a fairly good crop will be obtained. The fruit will be smaller in size than last year, but on the whole about an average crop will result. Plums are under average. Pears and damsons are poor. Gooseberries and black currants are an average crop, but the fruit of the latter are small. Raspberries are good, but they also suffered from the dry weather. Strawberries suffered most of any fruit, and where watering was not done a poor crop resulted.

The Vegetable Garden.

By J. G. TONER.

LITTLE difficulty will be found in marking down the lazy gardener in such a season as this. It is somewhat doubtful if such exists, at least in any great numbers, for gardening certainly makes for bringing forth those active qualities that are indispensable to the successful gardener, amateur or professional. Where the soil was honestly dug—or trenched, a far better method—crops of most kind have held their own exceedingly well, notwithstanding the unusual amount of sunshine and absence of rain. But in cases where seeds or plants, as the case may be, were committed to plots that merely got a lick and a promise, the harvest will not prove satisfactory. Which proves over again, were such necessary, that whatever is worth doing is

worth doing well, and if it is not worth doing well just let it alone and endeavour to find consolation in idleness, a futile task.

For many reasons, often for want of space, plants must stand over beyond the usual time for planting. Haymaking is often, most unfortunately, included in the duties of the gardener and his staff, to the detriment of the garden and its occupants. Would it not be more fitting to introduce such work to the coachman, supposing he were a separate entity, which he often is not? or, in a difficult case, let the chauffeur toss a coin with the gardener as to the performances in the hayfield; it would be just as reasonable to put the man of petrol on the job as the overworked gardener. The begoggled one would protest with truth that motor cars don't consume hay, but neither do the gardeners charge at least those that belong to the vegetable kingdom.

PLANTING.—At present it is safe to say that there are plenty of vegetable plants to be put out yet in their final quarters. The weather was not suitable for such work except for a couple of days lately. Out they must go, however, and it will be found a good plan to draw shallow trenches about 3 or 4 inches deep and the necessary distance apart, and let them have a thorough watering in the forenoon—that is, supposing water is to be had handily. In many gardens there is little or none to be had presently; it is nearly as scarce as the stronger liquids. The bed containing the plants to be treated likewise. If the plants have been dibbled out from the seed bed and stand as they should, four or so inches apart, they can be easily transferred without much check to the required positions. Those that have not been so well cared for as regards early transplanting had better be puddled—it will prove helpful.

CAULIFLOWERS.—Some time during the month, early or late, according to the district, seeds of Early London and Autumn Giant cauliflowers should be sown on a sheltered border or position. Fine, well-worked ground is the thing for them; it must not be over-rich or failure will surely follow. It might prove a wise move to make two separate sowings so as to dodge the weather, no matter how tricky the winter and spring may prove. We gather wisdom as we grow old. Smart growers having good conveniences in the way of frames and heated pits dispense with autumn sowing altogether, for there are many fine varieties of what are known as forcing cauliflowers that are very dependable, and when sown very early in heat and well managed are quite as early as their older brethren and very delicious at table.

MOULDING CELERY.—The markings of good sticks are often spoilt by roughness and carelessness in connection with this important detail of their culture. Everybody has heard of "the careful hand of the gardener," but when this busy personage is obliged to delegate work of this kind to his assistants the plants come in very often for a bad time. A sensible way of attacking the work is to arrange the leaf stalks in a natural manner, beginning at the middle and bringing them closely together. Temporary ties will keep them secured until the earth is put to them. From six to eight weeks are required for blanching. Soot might with advantage be plentifully used with soil so as to keep slugs as far as

possible at bay. Water in plenty ought to be applied before any moulding takes place, as unless special means are provided it is not easy to apply it afterwards.

TRIPOLI ONIONS.—Broadest is the better method of sowing these seeds. The remarks made about cauliflowers in regard to time will serve for these also. A wonderful weight of bulbs can be produced from an ounce of seeds. All round few kinds can beat, for hardness and general purposes, the Red Flat Tripoli. No better place can be selected for their accommodation than potato ground just levelled and made fairly firm. If necessary, some may be transplanted before spring, but this does not always succeed when the winter proves severe.

Garden Notes.

THE most successful growers of the Shirley poppy know that the best clumps of this gayly-coloured flower are obtained from summer sown seeds. Immediately the seeds ripen they ought to be sown in their permanent quarters, and before the wintery days are upon us they will have formed well-established colonies that will survive the winter and make early and rapid progress in the spring. They should be sown thinly and never be allowed to unduly crowd one another. The best show of poppies we ever had were from self-sown plants persistently thinned as growth progressed.

A CONFIRMATION of the belief that strawberry plants propagated from first runners give the best results is furnished by a recent Report issued by the Fruit and Cider Institute. The total crop for three years with five different varieties was 1,517 lbs. from first runners and 1,207 lbs. from second runners. The variety President gave the greatest difference, Royal Sovereign medium, and Paxton practically no difference at all.

IN the same Report is given the results of some experiments dealing with the influence of grass or fruit trees. It would appear from what is stated that the injurious effect of grass is only operative in the case of young trees, and then also only during the first and second year after planting. The results, therefore, suggest that the best plan is to plant first on tilled land, and then after the second or third year after planting to lay down to grass if the desire is to have a grass orchard.

As a remedy against the attacks of apple-sucker the use of a lime and salt wash is recommended by the English Board of Agriculture. It is made up of 20 per cent. lime and 2 per cent. salt, and applied in the form of a spray between the opening of the buds and a fortnight before. The effect of the solution is to form a hard case upon the egg-covering and so preventing the escape of the larvæ.

THE annual exhibition of the National Sweet Pea Society was held in London on the 11th and 12th of July. According to the *Gardeners' Chronicle* the show "will rank as one of the best of the series. The quality of the flowers was up to the average, although not exceptional. No outstanding novelty was forthcoming, the older varieties well holding their own, and the best flowers in the show were grown in Ireland."

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TO THE READERS OF
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The January number commenced the Sixth Volume of "Irish Gardening." A Title-page and Index for Volume Five has been issued, and will be sent free to any Subscriber applying for same.

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ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

SEPTEMBER
1911

Alpines for Exhibition.

BY W. H. FAINE, F.R.H.S.

AT the spring show of the R. H. S. of Ireland last year a cup was offered for a table of Alpines, and encouraging as were the exhibits, for the first occasion, there was criticism among experts as to whether that method of showing was the severest test for the culture of Alpine plants. As a result, another cup was presented, by five enthusiasts in this branch of plant lore, to the R. H. S., and to be duly competed for, the first time next year.

The following article is to make clear, to probable exhibitors, what is really meant, in this competition, by truly Alpine plants. It is hard to define a line of demarkation of what is, and what is not, an Alpine.

The following description has been adopted by the R. H. S. for the interpretation of the word Alpine:—

“That the word ‘Alpine,’ as understood in this competition, includes diminutive, deciduous, and evergreen herbaceous plants, such as are generally used in modern Alpine gardening.”

Now, it will be noticed that this at once strikes out diminutive, hard-wooded plants, such as *Polygala chamæbuxus* and *Erica carnea*. So intending exhibitors will be wise to exhibit nothing of this nature.

I propose to deal with the most important

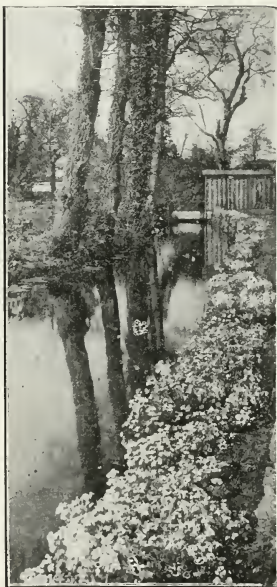
families that will be in flower at that time, the most popular among which are the Primulas.

Primula rosea, and its varieties *grandiflora* and *splendens*, should be grown in the open ground during the summer, and when the

leaves begin to decay in the autumn they should be panned up in the pan they are intended to be shown, pressing the crowns as close together as possible to get a massed effect when in flower. A liberal amount of leaf-soil should be used in the composition in which they are planted. Then the pans should be taken out and plunged to the rims in sand in some shady aspect, or, better still, in a damp, boggy situation, and before the winter frosts come on the pans should be covered with half-decayed leaves to a depth of one inch.

Primula frondosa should be panned in August, getting as many plants as possible into the pan, using equal proportions of sand and leaf-soil as the rooting medium. This plant can be treated the same as *rosea*, with the exception that gritty sand should be used as a protecting medium instead of leaves.

Primula spectabilis, *P. calycina*, *P. alpina*, *P. Mrs. G. F. Wilson*, and *P. marginata*, being all evergreen plants, require different treatment. They are more or less a dry-loving section which require a well-drained soil, and the longer



AUBRIETIA BY THE WATERSIDE AT
TULLY

they are established in show pans the better the effect.

They should be planted at once in a mixture of equal proportions of sand, leaf-soil and good loam, with a good amount of crocks at the bottom to assure good drainage. They should be kept close for a few weeks after panning up, and be placed in a permanent sand bed, the pans being plunged up to the rim. In severe frosty weather it would be well to collect a few pine needles, or bracken fern, and lay lightly over.

Primula denticulata and its varieties *alba* and *purpurea* are of easy culture. These plants will flower much stronger if given some artificial manure as soon as growth sets in. They also should be panned as soon as possible after the leaves have died away and treated very similarly to *P. frondosa*.

The *Androsaces* will also be considered plants of highest merit in this competition, but only four of them are available at that time of the year, and even they with a little protection.

Androsace primuloides and *A. Chumbyi* require the same treatment. They should be panned during August in a mixture of one and a half part leaf, one part sand, a half a part of loam. A number of sandstone cobbles, about the size of hens' eggs, should be mixed through the soil. The plants should be placed round the pan, not quite touching each other, and planted, as it were, above the level of the rim of the pan, making a kind of mound contained in the pan. They should afterwards be placed in a sand bed and covered with a hand-light or cloche, resting on a few bricks to allow a current of air and to keep off the rain, and they should be watered without wetting the leaves.

Androsace villosa. The same rule applies to this species, with the exception that fine sand should be sprinkled over the top to allow the little rosettes to root individually, but the rooting medium should be the same as in the previous case.

Androsace Laggeri, a limestone lover, will yield very much to the same treatment, with the important exception that limestone sand and limestone cobbles must be used.

It will be found that these plants, though later flowering when planted out of doors, will flower in good time if protected the whole of the winter with cloches or hand-glasses, which should never be allowed to become closed.

THE VIOLA.—This family presents one of the most showy of spring Alpines, and to which a general rule can be adopted. Species and varieties that are suitable for flowering at that time of the year are—*gracilis*, *bosnaica*, *olympica*, *ceinsia*, *florescens*, *cornuta*, *C. alba* and *C. Papilio*, and *rupestris*. These plants should be panned up not later than



AUBRIETIA BRIDESMAID—IBENS LITTLE GEM

October, and cut hard back in order to get bottom growth. They should be placed in a frame till about an inch of growth has taken place, and afterwards hardened off and placed in a sand bed to winter, using bracken fern as a protection in very frosty weather.

Another method is to insert cuttings thickly over a pan at the present time and place them in a frame till struck, then cut back as in the previous method. Suitable soil for this family is a mixture of sand and loam, with a preponderance of coarse leaves.

Aubrietia is another family that can be dealt with in a general way. They include many

beautiful shades of colour. Only established plants should be used in making up pans. They should be panned up during October in a mixture of rich loam, leaf and sand in equal proportions, and they yield to a little feeding with success.

The varieties best suited for this work are Dr. Mules, Lavender, Daisy Hill, Bridesmaid, Moerheimi; Hendersonii, Pritchard's A1, and Leichtlini.

ALYSSUM.—Although this family includes many early flowering Alpine plants, I do not think they are classic enough for a competition of this kind.

Yet *A. saxatile* fl. pl., and *A. saxatile citrinum* are quite good enough if well flowered. Established plants should be used and similar treatment given as in the case with *Aubrietias*.

Arabis aubretioides resembles in some points an *Aubrietia*, and requires the same treat-

ment as that family, with the exception that it is a lover of sun.

The *Æthionemas* give us two plants suitable for competition at that season, *iberideum* and *grandiflorum*, which are very effective owing to the distinct characteristics, although uncertain flowerers. Should any one desire to attempt them, it would be well to give them a well-drained soil and peg them down evenly over the surface of the pan.

The genus *Saxifraga* can for purposes of this competition be divided into two sections. The first, including *Sax. Boydi* and its variety *alba*, *longiflora*, *Burseriana*, and its varieties *gloria*, *multiflora*, and *minima*. This section are plants that require a very well-drained soil, and should be crowded into the pan as closely as possible,

using a compost of sand, finely broken crocks, leaf-soil and loam. They should be panned as soon as possible and protected from excessive moisture throughout the winter.

The other section, namely the Mossy, includes *Wallacei*, *bathoniensis*, *Clibrani*, *Guildford Seedling*, *Red Admiral*, *Hibernica*, *Lindysiana*, *Rhei* and *Rhei* varieties, *Alba* and *superba*. Strongest cuttings of these plants should be taken in the August, inserted thickly over a pan, placed in a cold frame till struck, when they should be hardened off and placed in an open plunging bed. An equal proportion of

sand, leaf-soil and loam is a good compost for this section.

A number of cuttings should also be struck in a spare pan to fill up any that may damp off, and thus assure an even display of flower.

ANEMONES.—Several of this family are available.

These again can be divided into two



SAXIFRAGA WALLACEI

sections, the first including *pulsatilla*, *Halleri*, *sulphurea*, *alpina*. These should be panned up as early as possible, selecting strong crowns only for the purpose, and using leaf-soil and peat in equal proportions to loam and sand. The other section includes *ranunculoides* and its variety fl. pl. and *nemerosa*, with its varieties fl. pl., *cærulea*, and *Robinsoniana*. These being corms require a little different treatment. Fill the pan with the same soil as before mentioned, to within about one-and-a-half inches from the top, then lay the corms evenly over the surface about one-and-a-half inches apart. Sprinkle a little fine sand among the corms, then fill the pans with finely sifted soil of same mixture.

Ranunculus montana, a delightful little

yellow bog alpine, should be treated the same as *Primula rosea*.

Gentiana acaulis can also be shown if large; strong crowns are selected and pressed closely together all over the pan, using a good strong loam with a little leaf-soil as a rooting medium. This operation should be carried out as soon as possible.

Morisia hypogæa is another plant that can be flowered at that time of year without trouble. Good established plants should be procured and planted round the pan at about four inches apart, using equal proportions of leaf-soil, peat, loam, and limestone sand, and heaping up the soil in a little mound the same as recommended in *Androsace*, and wedging the plants in with cobbles of limestone.

Cyclamen repandum and variety *alba*, I fear, comes out of question, as it must be established several years before a free show of flower can be assured, but it is worthy of attention for future competition.

Shortia galacifolia and *uniflora* come last but by no means least. They are peat-loving subjects and hate shifting, so if any one attempts them it would be well to get plants established in pots, and carefully insert them in the pan without breaking the ball, using a mixture of peat, leaf-soil, and silver sand of equal proportions.

A general rule in the cultivation of all these plants can be applied. That after the establishing has been accomplished they should be plunged in sand beds in the open, except where otherwise recommended, and make no attempt to coddle them through the winter months.

The show which takes place some time in the middle of April is just a little early for most of these things. Also locality makes a little difference as to the season of flowering of Alpine plants, and I find the safest rule to adopt is that if a plant is three weeks late of any given time, it will require six weeks' cool frame protection and encouragement. That is to say, when depending on a slight forcing, commence that operation double the time that the plant is required before its normal flowering.

During the six weeks before the show all these subjects will require close attention, keeping backward and bringing forward, as the case may be, and before this operation the plants should be pricked over and the pans cleaned, and the surface of soil sanded, then a layer of

pebbles about the size of large peas be scattered over the surface to give a furnishing where the plants have not yet met,

Probably this list is too large for the average exhibitor. I therefore propose to pick out twenty of the best subjects, of which intending exhibitors should have at least two pans each:—

Primula rosea splendens; *P. Mrs. G. F. Wilson*; *P. marginata*; *Androsace primuloides*; *Viola gracilis*; *V. rupestris*; *V. bosnaica*; *Aubrietia Dr. Mules*; *A. deltoidea cilicica*; *Saxifraga Boydi*; *Saxifraga Burseriana gloria*; *S. Wallacei*; *S. bathoniensis*; *Gentiana acaulis*; *Ranunculus montana*; *Shortia uniflora*; *Anemone Robinsoniana*; *A. pulsatilla* and *Halleri*; *Morisia hypogæa*.

Shrubs for Peaty Soils.

By J. W. BESANT, Royal Botanic Gardens, Glasnevin.

APART from rhododendrons there is a considerable number of shrubs peculiarly adapted for growing in peat. Many of these belong to the *Erica* or Heath family, and it is noticeable that a large proportion of them are evergreen and also bear beautiful flowers. For nearly all a constant supply of moisture is essential, but many of the heaths, as well as the common "Ling" *Calluna vulgaris*, flourish in the light, sandy peat of open moors and hillsides. Stagnant moisture is detrimental, and should be guarded against by deep cultivation and good drainage. In districts where the soil is naturally of a peaty nature little difficulty will be experienced in preparing for planting if a reasonable amount of labour is expended on trenching and cleaning the ground. All ericaceous shrubs are surface rooters, and it is sometimes thought on this account deep working of the soil is not necessary. But although deep planting is fatal deep working ensures good drainage and a consequent sweetness about the roots which is wholly beneficial. Sandy loam from which lime is absent can be made quite suitable for many of the shrubs we are considering by the addition of plenty of peat or leaf-mould. In this case the peat may be kept on the surface, merely working it into the staple soil to a depth of fifteen inches or thereabout. In thin, open woods, too, there are often natural accumulations of leaf-mould

in which many peat-lovers will flourish and be all the happier for some amount of shade.

Prominent among shrubs for moist, peaty soils are the *Kalmias*, which produce highly ornamental-showy flowers in early summer.

Kalmia angustifolia, the North America Sheep Laurel, makes a handsome shrub bearing rosy flowers and evergreen leaves some two inches long. *K. glauca*, also from North America, grows about two feet high, is deciduous, and bears red flowers in summer. *K. latifolia*, the Calico Bush of Canada and Florida, &c., is the largest growing of the genus and generally considered the handsomest. The leaves are comparatively large and the heads of rosy pink flowers most attractive.

Clethra alnifolia, a deciduous member of the *Erica* family, comes from the States, and bears racemes of white flowers in late summer. It grows some three to four feet high. Other hardy species are *C. tomentosum*, *C. paniculata*, and *C. acuminata*, all bearing white flowers. *Cassandra calyculata*, the North American Leather Leaf, is a hardy, easily grown shrub, bearing small leaves and producing quantities of pure white, bell-shaped flowers in spring; the variety *nana* grows only about a foot high and makes a useful shrub for the margins of beds of such shrubs. Very beautiful, too, are some of the species of *Pieris*, often called *Andromeda*. *P. floribunda* is a compact growing evergreen, bearing short panicles of white flowers in spring, while *P. japonica*, also evergreen, bears larger handsome leaves and pendulous racemes of beautiful, pure white flowers. The *Ledums* are useful moisture-loving shrubs, bearing narrow evergreen leaves, rusty coloured on the underside, and white flowers in spring. *Ledum latifolium* and *L. palustre* are two of the best. The former is from North America, and known as Labrador Tea, the latter is found in northern and arctic regions. *Kenobia speciosa* is a very beautiful shrub for moist peaty soil. A native of the southern United States, from whence it was introduced about 1800, this species is the only one in the genus. The leaves are oval, and the pure white, waxy flowers are produced in clusters mostly on growths of the previous season. There is one variety with glaucous leaves known as *K. speciosa pulverulenta*, and is, if anything, more decorative than the type.

Leucothoë Catesbæi, from North America,

represents a genus not too frequently met with in private gardens. The leaves are ovate lance-shaped and the flowers white, appearing in early summer, the whole plant attaining a height of three to four feet. There are several other species in cultivation.

The barberries are useful shrubs for peaty soil, the best known being *Arctostaphylos uva-ursi*, a shrub of trailing habit, bearing small dark green leaves and pretty pink flowers. *A. alpina*, a low-growing species is like the former an evergreen, but with white blossoms; both are found wild in the highlands of Scotland.

The Sand Myrtle, *Leiophyllum buxifolium* is a charming little shrub for sandy peat, or even loam. It will scarcely reach a foot in height, and bears tiny leaves, and small pink and white flowers in summer.

An interesting dwarf shrub for moist peaty soil is the Crowberry *Empetrum nigrum*, though less conspicuous than some of the heaths; the crowberry is a useful dwarf evergreen for growing in association with other plants requiring like conditions. The flowers are quite small and pink, and are followed by black fruits in autumn. The *Gaultherias* are first rate evergreens for peaty soils, the two best being *G. procumbens* and *G. Shallon*. The former, from North America, grows only four to five inches high, bearing finely-toothed, ovate blunt leaves. The small white flowers are followed in autumn by ornamental bright red berries. *G. Shallon*, from North America, is a much stronger grower, reaching a height of from two to three feet, bearing racemes of pinkish flowers, followed by purple berries.

The *Ericas* or heaths have been dealt with by writers in earlier numbers of IRISH GARDENING, and need not be enlarged on further. Suffice it to say, there is no more beautiful or useful class of shrubs for light peaty soils, nor one which gives greater value throughout the year. It may be useful to note the flowering season of the various species. Winter and spring—*E. arborea*, *E. australis*, *E. carnea*, *E. lusitanica*, *E. mediterranea*, *E. med. hybrida* and *E. med. Hibernica*. Summer and autumn bloomers—*E. ciliaris*, *E. cinereo*, *E. stricta*, *E. vagans*, *E. tetralix* and *E. multiflora*. In some districts *E. arborea* and *E. lusitanica* may not prove quite hardy, but there is selection enough for all. The common Ling *Calluna vulgaris* which decorates the hillsides

with a wealth of colour in August is represented in gardens by many varieties, varying in colour from white to rose and deep red, and some have double flowers.

St. Dabeoc's Heath, *Dabeocia polifolia* is a particularly handsome dwarf evergreen, bearing large red, pure white, or red and white flowers. This is a beautiful plant for massing and is always greatly admired.

Other excellent peat plants are the Bilberries belonging to the genus *Vaccinium*.

Vaccinium Myrtillus and *V. Vitis-Idaea* are two desirable native species of comparatively low growth, while *V. corymbosum*, the Swamp Bilberry of North America, and *V. pennsylvanicum* are useful shrubs, growing some three to five feet high. The cranberries, *Oxycoccus macrocarpus* and *O. palustris* are useful trailing plants for various positions, while *Epigaea ripens*, a dwarf-creeping evergreen with white flowers, tinged with pink, is a lovely subject for a shady position; it is known as the North America Mayflower.

Nitrogen Fixation.

By PATRICK DUFFY, Associate Royal College Science for Ireland.

NITROGEN is one of the elements essential for the life and growth of plants; and it is the element in which most soils are deficient, only a very small quantity of it being present in a form which can be utilised by green plants. Nevertheless, nitrogen is very common in nature, the air being composed of four-fifths of it, but in a form in which ordinary plants can make no use of it. It must be in the form of a nitrate or an ammonium salt before plants can absorb it into their tissues. As nitrates and ammonia compounds are very soluble they are readily washed out of the soil; so that in order to grow a crop successfully nitrogen must be applied in one of these forms at about the time when growth has started. Nitrate of soda, sulphate of ammonia, calcium cyanamide, and nitrate of lime are the nitrogenous manures now most commonly used. Nitrate of soda occurs as a deposit in certain rainless regions of South America. The supplies in those regions are now getting worked out, and so far no new deposits have been located in any other part of the earth, so

that it seems only a matter of some years till this source becomes exhausted. Sulphate of ammonia is obtained chiefly from gas works, where it occurs as a bye-product in the manufacture of coal-gas. The quantity produced is not by any means sufficient in itself to supply the amount of nitrogen required by our crops from year to year. The other two nitrogenous manures, calcium cyanamide and nitrate of lime, are produced by causing the nitrogen of the air to unite chemically with calcium carbide and oxygen respectively in an electric furnace. There is a probability that this method will in time afford large quantities of nitrogen in a suitable form for plants, but at present the output is comparatively small owing to the great expense of producing the electric current necessary for the process.

From the foregoing considerations it will be seen that the problem of nitrogen, as it affects crop growers, would be a very grave one if there were no other sources of supply than the ones named. There is one other important source by means of which nitrogen is made available for plants, and it is with this we propose dealing here. This source consists of certain species of bacteria which are found in most soils, and which have the power of taking up nitrogen from the air and building it into the substance of their bodies. When they die nitrogen in their bodies becomes changed by ammonification and nitrification into a form in which it can be taken up and used by green plants. Because of this power of using up the nitrogen from the air these bacteria are spoken of as *nitrogen fixers*. They can be conveniently divided into two groups—viz., (a) those which are free-living or which live apart from green plants in the soil, and (b) those which live in association with plants of the pea-family or leguminosae.

(a) It has been long known that ground which has been allowed to lie fallow for a time increases in its store of nitrogenous compounds during the interval. At first this phenomenon was explained by the fact that nitrates are formed in the air during thunderstorms and other electric manifestations, and are washed on to the soil by rain and dews. Later investigations have shown, however, that the amount of nitrogen derived in this way is comparatively small, and it became necessary to find out what other source or sources was responsible for the

increase. By various and conclusive experiments it was proved beyond doubt that by far the greater part of the increase of nitrogen was brought about by the agency of bacteria in the soil. These free-living bacteria are present in practically all soils, but their rates of activity differ considerably with the conditions. In order to encourage their multiplication and growth, and consequent addition of valuable nitrogenous matter to the soil, it is of the greatest importance to make the conditions as suitable as possible for their development. They are retarded in their action, if not killed out, by the presence of acids in the soil, while plenty of air, a sufficiency of moisture, a good supply of lime, phosphates and potash are all essential to their active existence. Drainage and liming to remove acidity and superfluous water, good tillage to ensure aëration, and dressings of phosphates and potash, are the chief means by which these minute organisms can be encouraged in their valuable work of adding a valuable fertilizing ingredient to the soil.

(b) Amongst green plants there is an extensive order known as the Leguminosæ, so called because the seeds are borne in legumes or pods. Peas, beans, vetches, clover, lucerne, and sainfoin are the chief cultivated plants belonging to the order. From experiments carried out at Rothamstead, in England, and at various centres in Germany, it has been clearly shown that the soil on which a leguminous crop has been grown contains more nitrogenous matter after the crop has been removed than was there before it was planted; and this notwithstanding that the leguminous plants are highly nitrogenous, and consequently use large quantities of nitrogen in the building up of their own tissues. Leguminosæ are unique amongst green plants. In the case of all others the nitrogen they contain is derived from the supply already in the soil, and it can never exceed this amount. The power of increasing the store of nitrogen in a soil is possessed by all leguminous plants, but as the quantity added by any given crop varies with the conditions, it becomes of interest to find out the causes which are most helpful in building up this valuable store. It has been known for a long time that the frequent growth of leguminous crops increases the fertility of the land, but it is little more than thirty years since it was shown how this was brought about. If you pull up a large clover plant with its roots you

will invariably find numerous little roundish growths or *nodules* at intervals on the root-fibres, while a weakly plant will have few or none of these nodules. When grown on ordinary soil clover plants almost always bear nodules, and when the crop is harvested the soil will show an increase of nitrogen. On the other hand, if the plants be grown on sterilised sand no nodules appear on the roots, and all the nitrogen required by the plants must be applied artificially. These results led to the suggestion that the nodules were caused by living bacteria in the soil, and that they were also in some way connected with the increase of nitrogen already spoken of. Further and numerous experiments have shown the suggestion to be true. It is now well established that the nodules are caused by bacteria which are present in almost all soils where legumes are grown, even at long intervals. When the delicate root-hair of a leguminous plant comes in contact with one of these minute bodies the latter enters into the cells of the root, and by its presence causes an irritation which leads to rapid growth at the part, resulting in the formation of the nodule. Inside the nodule the organism rapidly multiplies, so that in a short time all the cells are filled with the bacteria. During their growth they take in nitrogen from the air and utilize it in building up the substance of their own bodies. After a time, and when the cells constituting the nodule have become choked, as it were, with the bacteria, the latter become disorganised; they get dissolved, and the material of their bodies is carried to the seeds of the plant on which they have been growing. This dissolved material derived from the bodies of the bacteria is highly nitrogenous, and is of very great help in supplying the nitrogen of which leguminous seeds need so large a proportion. The nodules are now of no further use, they shrivel up and disappear; but some of the bacteria which they contain escape destruction and make their way into the soil, where they remain waiting for another leguminous crop.

As the nodule-forming bacteria are found in almost all soils it is seldom necessary to add them artificially. In reclaimed land, where no leguminous plants have previously grown, it will be found beneficial to add the bacteria. This may be done either by adding a little soil from a field where the nodule-bacteria are known to be, or, better, by using one of the

artificially prepared cultures of the bacteria which are now on the market. But while inoculation of the soil is hardly ever necessary, because the bacteria are already present, it is yet possible to stimulate their activity by suitable treatment of the land. The presence of acids in the soil has a restraining influence on them, and they are encouraged in their work by a sufficient supply of phosphates and potash.

From the foregoing considerations it is obvious that the nitrogen-fixing bacteria are of immense importance and assistance to all crop growers, whether of farm or garden; and a knowledge of their methods of work and of the conditions favourable and otherwise to their development is essential to success. So far there is comparatively little known about these organisms, but there are a few general truths well established which have been briefly indicated, and of which the following is a summary:—

1. In all soils there are organisms which lay hold of some of the nitrogen of the air and build it up into a form in which, after further changes—decay, ammonification, nitrification—it can be utilized by green plants.

2. Such organisms are encouraged in their work in soils which are well aerated, free from acids, and have a fair supply of lime, phosphates and potash. Hence good cultivation, drainage, liming, and liberal dressings of phosphates and potash are desirable.

3. In most soils are bacteria which, when in union with the roots of leguminous crops, take up nitrogen from the air and ultimately give it up to the leguminous plants in a form which the latter can utilize.

4. Some of this nitrogen remains in the ground in the roots after the crop has been removed, and will in time become available for subsequent crops. It follows that, by often growing leguminous crops, large quantities of nitrogen will be added to the soil.

5. The nodule, or legume, bacteria are invariably present in almost all soils, but where they are absent they can be added artificially.

6. The nodule-bacteria require the presence of phosphates, potash and lime for their work. Acidity and too much moisture hinder their activity. Therefore, good tillage, manuring with phosphates and potash, drainage and liming, will favour the storing up of nitrogen in the soil through the agency of the nodule bacteria.

School Gardens.

Some Practical Suggestions.

By L. J. HUMPHREY.

IT is now some years since the subject of gardening was recognised as a valuable adjunct to the teaching in rural schools, and, following on this somewhat tardy concession, many schemes, some ambitious, others most simple, have been prepared and in many cases acted upon. Gardening is, undoubtedly, a subject for rural schools, but at the same time in towns and cities there is a strongly growing tendency to return to the country, and it might well be that some instruction in gardening in town schools would just turn the scale in many instances in favour of the more natural life of the country.

One of the advantages of this subject is that it is adaptable to almost any locality, and almost every subject has a distinct connection with the cultivation of the soil. For instance, geography is rendered more attractive by an acquaintance with some plant that grows in a particular country. South Africa, as the home of the lily, should be more real and less abstract than South Africa a sub-continent. History is enlightend by the knowledge of the reign in which some well-known plant was introduced, while the practical problems of arithmetic and drawing are capable of almost endless application in the garden.

Although it is neither possible nor desirable to turn out accomplished gardeners, the familiarity with the garden plants, the garden tools, and, above all, the garden methods, will lead to an ultimate interest in the cultivation of the soil, the advantage of which in a country of farmers can not be over-estimated. If more of the present generation could recognise good fruit and vegetables there would be a diminished sale of flavourless foreign productions and a more than corresponding sale for home-grown produce. The ignorance of the average householder in the matter of fruit is astounding, and until this ignorance gives place to at least some knowledge the efforts of home-growers in producing really excellent supplies must be very much retarded. A walk through a market will convince any one that the first consideration in regard to fruit is colour, and in vegetables size.

All this can be remedied by providing that

every scholar obtains an elementary knowledge of the garden and its produce; how best grown and the qualities such produce should possess, and, as in this subject, it is essential that instructions be practical, there is little reason to doubt that a school-garden, arranged on the proper lines, provides opportunity for this most satisfactorily and economically.

A school-garden could, without difficulty, be established wherever there is a school with a plot of vacant ground and sufficient scholars to form a class. A commencement can be made with just a few packets of seed, sufficient room to grow them, and a teacher who is interested in the subject; the knowledge will come with experience. From a small beginning in this way the school-garden, with its plot and set of tools for each boy, will be a natural result of the teacher's interest, who, if his knowledge is not at first equal to the increased responsibility, will call in some expert assistance till he himself is equal to it. But though this would, undoubtedly, be the result of small beginnings it involves delay, and as no time can be lost with impunity where education is concerned, a fuller scheme should be adopted where competent instruction and sufficient ground can be secured.

To dwell long on the question of soil for a school-garden and site would be both unnecessary and ill-advised, as too frequently a school must either utilise the site available or leave the work untouched; at the same time it would be impossible to lay any claim to completeness if these considerations were allowed to go unremarked.

Where possible, a site should be carefully selected, and the opinion of some competent authority obtained as to the suitability of the soil for the crops which it is proposed to grow; as a guide, however, it may be stated that a site sheltered from cold, harsh winds, but sufficiently open in its other aspects, would give the best results. The proximity of large trees or even hedges will have a prejudicial effect on most crops, their effect being most noticeable in a dry summer when the moisture in the soil is rapidly exhausted by the strongly-growing trees or hedge plants. The shade cast by such trees is dependent on their position relative to the garden, and should be borne in mind when arranging the beds and borders of the garden.

Most vegetables dislike shade, but where

shade exists the space can always be utilised to grow plants which thrive in such positions. Such plants are more numerous than is, perhaps, generally imagined, and the following list can be added to without difficulty by consulting a gardening dictionary or encyclopædia:—Columbine, foxglove, iris, daffodils, ivy, primulus, Japanese anemone, &c.

The soil for a school garden should preferably be light and well drained, as a soil which is at all inclined to be tenacious will be unworkable on many days, and in the unavoidable intervals of work in holidays will form a hard surface which will not only be difficult to break but will retard the growth of the plants by preventing air and moisture penetrating to the roots. Many soils can be much improved by repeated working at the proper seasons. A soil that is too light can be rendered more retentive of moisture by digging in spring, and adding at the same time good dressings of rotted farm-yard manure. A soil that is too heavy can generally be improved by a good dressing of lime and abundant manure; in this case digging in the autumn, as the soil being heavy, will retain the manurial substances during the heavy rains of winter, in contrast to the light, sandy soil from which a few heavy rains will wash a considerable proportion of the plant food obtained from the manure.

In the case of these schools which have a garden already in existence arrangements should be made, if possible, to enable pupils to perform the work of that garden even if anything is not of the best possible description for such work. Instruction is given rather to take advantage of existing opportunities than to have an ideal arrangement of plots and fruit trees. In other instances, when new gardens can be laid out, it is of the utmost importance to devise a plan which allows of economical working, and at the same time gives variety and scope to the garden work, and which is not entirely lacking in artistic possibilities. Perhaps the simplest plan which can be adopted is to roughly divide the available ground into two portions, one of which is to form an orchard plot, the other being devoted to the cultivation of flowers and vegetables. The initial expense of fruit trees is often a consideration, but an effort should be made to get a thoroughly representative collection of the chief kinds of fruit in as many varieties as possible, and space

should be allowed for this, even though it is impossible to plant the whole of it in the first year. A plot sixty feet by thirty feet will afford room for a collection of the greatest value for demonstration purposes.

In the portion assigned for vegetables and flowers, sufficient plots forty feet by ten feet should be planned to accommodate all the pupils it is proposed to instruct. As a general rule one pupil, aged fourteen or over, will be able to work one plot without difficulty, but in

habits of observation which gardening should instil into the mind can hardly be acquired on one day a week; consequently, visits paid on other days have a value considerably above the actual work accomplished, and at the same time the feeling of responsibility is largely transferred to the pupil who quickly realises that each day's work is intimately connected with that of the next, and, in his own interest, works conscientiously and well. As in all practical instruction small classes are essential,



NARCISSUS EMPEROR GROWN IN A BOWL

the case of those aged twelve, two boys should be allowed to each plot, and then in both instances there will probably be sufficient time available to perform the necessary work on the fruit plot. The amount of work done will depend on the time given to the subject, but at least in the case of older pupils efforts should be made to work on as many days as possible, even though for a short time only. The instructor could give formal instruction, say for two hours weekly, in fine weather, and on other days the pupils could be allowed to do weeding and cleaning up under mild supervision. The

and, as in many cases, the pupils receiving instruction are working at considerable distances from one another. The class should never exceed sixteen, and, indeed, the net result is, perhaps, greater when that number is reduced to ten. However, with clear instructions and constant attention good work can be done with the larger number, it being necessary to insist on implicit obedience, or the class will become unwieldy, and more damage will be done in a few minutes than weeks can repair.

(To be continued.)

Bulb Culture in Bowls.

THE culture of bulbous plants in bowls is becoming more and more popular every year. It is easy to understand why. It demands only a slight knowledge of plant requirements and may be followed by any one, even a town-dweller, who is sufficiently interested to make the attempt and give the plants a fair chance of success. No garden is needed. It is essentially an occupation for the home. Bowls of growing bulbous plants in flower give a charming effect to rooms—bright in colour, refreshing in their lusty greenness, and beautiful always.

The general effect is shown in the two photographs here reproduced. In order to secure success a few facts concerning the physiology of bulbous plants must be clearly understood and intelligently applied to their cultivation. A sound bulb carries a bud or cluster of buds from which the green leaves and flowers spring. The leaves and flowers are already formed, but they are extremely small. They are, when the bulb is planted, in a dormant state, but given moisture, warmth, and air they awaken into life and rapidly shoot upward towards the light. As to food, this is already provided in the "bulb"—stored away in the scale leaves of a true bulb (as in Narcissus) or in the solid mass of the corm (as in Crocus) or in the rhizome (as in Lily of the Valley).

The water is taken up of course by the newly-formed roots of the bulb. It follows therefore that, for one season at least, the bulb has sufficient food stored within its own tissues to nourish the growing shoots and flowers. Its requirements are thus reduced to a suitable water supply, so long as you secure the free entrance of air to the living roots, expose the foliage to light, and keep the plants in a place in which the temperature is not too cold to check development. The only point of difficulty (or rather the only essential factor likely to give difficulty) is to keep the roots sufficiently supplied with water and with air. This is secured by using as a "soil" some substance that is spongy enough to hold water and air at the same time—water saturating its substance, and air filling its spaces. Some bulbous plants form spongy water roots, so

that they can get air by downward diffusion from the foliage, and these may be grown in a bowl filled with pebbles and water, but in the majority of cases the roots would sicken and die under this mode of culture.

The difficulty is overcome by using some sort of absorbent fibre. Fibrous peat from a bog would do only it is frequently too acid for ordinary terrestrial plants. Fairly coarse rubble formed, for example, from the decay of granitic rocks is quite suitable, as we have ourselves proved. Townspeople, at all events, will find it more convenient to buy the fibre they require for the purpose, and any seedsman will supply them with one or other of the advertised media for bowl culture. The latest of these is "Bulbolin." We have not ourselves tried it, but we have seen a series of photographs of bulbs grown in Bulbolin by Sir James Mackey, Ltd., two of which we are permitted to reproduce in this issue.

The bowls should be three-quarters filled with well wetted fibre; the bulbs are placed rather thickly on this, and then the bowl is placed quite full with fibre and gently firmed. It is a wise precaution to put a few pieces of charcoal on the bottom of the bowl, and throughout the lower layer of fibre. It tends to keep the fibre sweet.

The bowls should be kept in a dark and moderately warm place until the shoots appear above the surface, when they must be placed in a fairly well lighted position to secure firmness of tissue and sturdiness of growth. During growth all the attention required is to see that the fibre is not allowed to get too dry. Care must be taken, however, not to add so much water as will fill the air spaces, or else sickness of root will be induced. Successful culture lies between the two extremes.

As to the kinds of bulbous plants that may be grown in this way we may mention Daffodils of all kinds, including the Polyanthus Narcissus and the Poet's Narcissus, Roman Hyacinths, Tulips, Snowdrops, Crocuses, Glory of the Snow, Squills, and Spanish Irises.

The great charm of bowl culture is that it is clean and can be conducted in an ordinary room, and gives intense delight to every inmate of the home.



SIR J. W. MACKEY, LTD.

CROCUSES GROWN IN A BOWL

The Month's Work.

Flower Garden and Pleasure Grounds

By W. USHER, The Gardens, Breenstown, Cabinteely, Co. Dublin.



SEPTEMBER, says an old writer, should be pictured with a merry and cheerful countenance and in a purple robe, signifying the abundance which crowns the year in this month of maturity and, I think, the pleasantest month of the year. All our bustle is over, and an observing man will have learned many lessons, some from his own failures and successes or those of his friends and neighbours, but chiefly from our old mother Nature; she has so many moods to treat us to that we cannot very well be prepared for them all.

The shrubberies ought to look well this autumn. The foliage on trees and shrubs is very apt to begin to turn colour early, owing to the dry season, and the colours ought to be good. As the month advances the darker foliage of the evergreens will assume more importance, and be shown up by the change of colour going on around. The colours which distinguish the foliage of the different trees and shrubs in autumn are amongst the most striking phenomena of the vegetable world, for it is observable that one distinct tone of colour is common to the autumnal leaves of all of the same species. In the flower garden, if the full measure of colour remains, the fragrance of the summer is gone.

Most of the flowers of August continue to bloom through September, but their number is gradually less as the month advances. The scentless hollyhocks, dahlias, China asters, and other autumn-blooming plants take the place of the fragrant pinks, carnations, honeysuckles, violets, &c.

Having thus arranged and enjoyed the highest amount of beauty which the garden is capable of producing, we turn our attention to next year's display by commencing to propagate in quantity such plants as pelargoniums, pentstemon, calceolarias, pansies, carnations, pinks, and, almost without exception, all our flowering and foliage shrubs. For cuttings of most garden plants, at this time of the year no place is so good as a cool frame kept shaded and close; the cuttings of hardy shrubs may be inserted in rows in the frame, and will remain there all winter; the tenderer flowering plants will require that the cuttings be inserted in boxes or pans of light sandy soil, well drained, and cuttings which have to remain in the box or pan all winter will require more space than those which are potted off when rooted; they will require but little water, but they should be carefully attended to, and no dead or decaying leaves left on

or near the young plants; decayed leaves will cause the cuttings to rot or damp.

Dahlias will well repay a liberal supply of liquid manure, as will also the late anclusas, verbascums, and delphiniums. Save seed and sow it from good varieties of herbaceous plants; no cutting is ever as vigorous as a seedling.

Carnations layered during end of July and early August will now be rooted, and may be either potted and grown during the winter in cold frames or transferred to their permanent quarters; they will repay planting, so that they may become established before the frosts set in.

Plant out early rooted pansies, insert more cuttings, and prick off seedlings into open ground.

A sowing of hardy annuals to stand the winter in the open air ought now be made.

Pot off pieces of Alpine plants about which there may be any doubt of their ability to stand the winter frosts and dampness.

The Fruit Garden.

By G. DOOLAN.

GATHERING AND MARKETING APPLES.— This work will now demand the fruit grower's attention, as many of the early apples, chiefly cooking varieties, will be fit to gather during the present month. Amongst these are Early Victoria, Grenadier, Lord Suffield, Lord Grosvenor, Ecklinville Seedling, &c. The fruit of such varieties, being of a soft nature, is best marketed directly from the trees, or as soon after picking as possible. Storing tends to soften the flesh of the fruit. Care should be taken during picking that the fruit is not injured, as the slightest bruise causes a blemish and affects its market value. All small and injured fruit should be used for home purposes. It is most important also to grade the fruit—that is, to have each pack of uniform size and quality. Fruit divided into three grades—viz., firsts, seconds, and thirds—should be packed separately in barrels or boxes, as the case may be. Fruit packed in this way will realise better prices than if packed indiscriminately, as they very often are. There is much to be learned from the foreigner, who is an adept at grading and packing fruit; however, during recent years there has been a great improvement in the method of packing practised by the home grower, and this improvement is likely to continue.

THE APPLE CROP.—Judging from the reports of the fruit crops, published in last month's IRISH GARDENING, pp. 122-3, it is gratifying to learn that this important crop promises to be good in many districts. In Ulster, however, where more fruit is grown than in the other three provinces, the crop is poor in places, and on the whole below the average. Much of the fruit dropped at an early stage of its growth, and such fruit that developed will, as a result of the very dry season, be light and smaller in size than usual.

RASPBERRIES.—All the old fruiting canes should be cut away close to the ground, and any of the present season's growth not required for fruiting next year may also be removed; this will permit the more

thorough ripening of the remaining canes. These canes are likely to be short this year, as the continual dry weather retarded growth. In good ground, and where liberal mulching of manure was given last spring, very fair growth has been made.

STRAWBERRIES.—Continue to make new plantations, and treat the soil and plants as described in a previous issue, p. 127. Plants already put out should have liberal and frequent waterings, and this should be done in the evening in preference to any other time.

WATERING FRUIT TREES.—This is important in the case of wall fruit trees, especially those carrying crops. In a season like the present such trees suffer very much from the drought. Late apples, such as Cox's Orange Pippin, Blenheim Orange Pippin, and Newton Wonder, will benefit if water and liquid manure be applied to the roots. Such varieties continue to grow and develop their fruit till late in the autumn.

SUMMER PRUNING.—If this work has not yet been done, it should be taken in hand without delay. The shoots have now a matured appearance, and by the removal of a portion of these, as described in last month's IRISH GARDENING, it will ensure ripening of the wood and buds, thereby contributing to the future fruitfulness of the trees. In the remarks on this subject in last month's IRISH GARDENING, p. 127, a misprint occurs in the first sentence—the word "natural" should read "matured."

The Vegetable Garden.

By J. G. TONER.

SPRING CABBAGES.—Every gardener, amateur or professional, prides himself on the earliness of his cabbages in spring. And the earlier they are the prouder is he, but with a proper pride. There are many factors that make for complete success in this detail of gardening. Amongst them is the selecting of a variety that is naturally quick to mature, but must have no tendency to bolt, as the formation of flower stems instead of nice little white hearts is termed. Again, the soil has of course a large influence, and so has the position of the garden itself. But more important, perhaps, than these is the date of planting. For however early the variety may be it cannot possibly do itself justice if the plants have not had time to make themselves at home, as it were, before the advent of cold wet weather and sharp frosts. Therefore let the early ones be put out in their final quarters, if possible, during the first week of this month. Provided the right variety is used, the soil in good order, and the planting done at this period, a sufficiency of nice cabbages will come to hand mayhap in April, and with them complete satisfaction.

TOMATOES.—Whether in the open or under glass some defoliation of these plants may be practised. As much advantage of the sun's influence as possible will thereby be utilised in the ripening of the fruit. Moderation, however, is advised. Now and again the lower leaves or portions of them can be cut off so that

the sun's rays may play directly on the fruit. At the end of the season, which, so far as these are concerned, in the open at any rate, will be the present month, those that have not ripened may be cut off, taking the whole trusses, and if hung up in a warm greenhouse or even in the kitchen they will colour all right, but will prove much inferior in flavour to those that matured naturally. However, "when all fruits fail welcome haws," and tomatoes artificially ripened are not so bad at all; in fact they appear to be very good when the others have vanished.

CAULIFLOWERS.—Prick out seedlings to stand the winter in frames or positions in which they can easily be protected in hard weather.

TRIPOLI ONIONS.—Let the bulbs that have reached full size be raised and treated to a roasting in the sunniest part of the garden for a few days. Afterwards they may be cleaned and hanked or bunched and stored in a cool, dry place.

SPINACH.—The prickly variety is the one for winter and spring. Thinning of August sowings must be seen to. The thinnings will make a nice tender dish just now. Encourage growth as much as possible by hoeing, at the same time cutting off the weeds in the flower of their youth.

VEGETABLE MARROWS.—If assisted by copious water supplies these will go on bearing for a long while yet; that is if the fruits have been cut young. When, however, they are required for jam-making or preserves they must be allowed to ripen or nearly do so.

PARSLEY.—Everybody almost wants a sprig of parsley now and again, and often, especially in winter, one must have it of their own or do without it. In some soils and districts there appears to be much difficulty in coaxing it to grow. This, however, may in nearly every case be met by using one or other of the various soil fumigants, and also by dressing the surface of the soil with very fine coal ashes which had been previously sprayed with paraffin. At this season this bitter topdressing is hardly called for, as the flies—well, let us say, have flown. But just try it in spring.

LEEKS.—The blanching of these may be continued so long as growth proceeds. Their mildness commends them to many for the flavouring of various dishes, and, as a matter of fact, when properly cooked and accompanied by a white sauce of the proper quality, they form a "dainty dish fit to lay before a king," as the nursery rhyme has it.

MOULDING.—The earthing-up of late planted broccoli, sprouts and curly kale is a rather important work. They all have to stand right through the winter and turn in for certain in spring. That is the season when the vegetable grower's weak points are most apparent, therefore such work must be kept in mind and duly performed. Wishing in the scarce time won't make plenty. The late crops of celery will be later still if the moulding—the final moulding—is deferred as long as possible. The precaution of having the soil in proper condition for the work should be taken, so that if the necessity arises it can be quickly done.

The Common Daisy.

By W. B. BRUCE.

THE presence of daisies in a lawn may often be undesirable. On the other hand, when occurring in sufficient quantity, they are capable of contributing a wonderful charm to a landscape. The writer has in mind a particular instance which he thinks bears out the latter contention. In the close-shaven, undulating sward that surround the lily pond in the Botanic Gardens, Glasnevin, this plant occurs in immense numbers, and in early summer the myriads of its tiny blossoms cover the ground like snow. By contrast with the various shades of green of the multitude of diverse trees and shrubs here, and the mirror-like face of the water, they constitute a delightfully brilliant picture.

To whatever cause it may be more particularly ascribed, there is to be experienced here, in daisy time, an indefinable charm, an air of joyousness peculiar to the place and the season. The effect appears not inferior to, but gayer than, the results obtained from, often costly and not always successful, attempts at naturalisation so much practised nowadays. Were the flower an exotic we may well believe it would take high rank in any such scheme.

Nor is the effect we have alluded to attained by converting the lawn into a meadow, and condemning folk to keep off the grass for some three months of the year.

Perhaps we are too ready to overlook its value in this respect, and wage, often unnecessary, war on this beautiful and modest, if somewhat ubiquitous, flower, which has so frequently been the theme, and has inspired some of the finest lines, of our poets from the time of Chaucer. In his "Legende of Good Women," Chaucer pays a fine tribute to the daisy, and proclaims the high estimate in which he held it:

"Above all flouris in the mede
Than love I most these flouris white and rede
Soche that men callin Daisies
To them have I so grete affection,
. whan comin is the Maie,
That in my bedde there dawith me no daie,
That I n'aim up and walking in the mede
To sene this floure ayenst the sunne sprede."

As a lover he has rightly noted the season of its plenitude—"whan comin is the Maie." It is just attaining the zenith of its bloom as April is about to give place to May.

It is conceivable that, between them, the daisy and the whitethorn have contributed more than anything else to our association of joyousness with the month of May, with its easterly winds. For during May the daisy and whitethorn flood the country-side with a virginal whiteness that is symbolic of youth and joyfulness, offering a spectacle such as is afforded us during no other period of the year.

THE Marguerite or Ox-eye Daisy of the fields makes a charming border plant. Taken from its natural habitat and given room, good depth of soil, and freedom from competitors, it makes good growth and a fine show in the herbaceous border. The Moon Daisy is a different species, while the "Shasta Daisy" is a hybrid between the two. They are all excellent for cut flowers.

Autumn Work in the School Garden.

BEGINNERS at gardening are apt to start work in the spring with a great burst of enthusiasm, but by the time the autumn has arrived their energy has sunk to a low ebb, and only revives with the approach of another seed time. This must not be the case with the teacher in the school garden. Not only is there important cultural work to be carried out in autumn, but observational studies of the most interesting nature abound at this season of the year. It is in autumn that planting for spring effect must be carried out, and provision should be made to have the school garden bright with flowers during the spring months.

Wallflowers and Forget-me-nots sown in May or June, and pricked out in nursery beds, will be ready in October for removal to their permanent quarters. Arabis and Aubrietia, from cuttings struck after flowering, will also be ready for putting out. These two well-known plants are invaluable for spring edgings or for rockwork. Arabis makes a good groundwork for tulips, and the double form, which is finer in every way than the single, is excellent for cutting. If cuttings of these plants have not been taken at the right time, it will often be possible to find self-rooted shoots round the old clump, which can be detached in autumn, and will flower the following spring. Polyanthus primroses which have been divided up in May should be moved in October to the positions in which they are to flower. All spring-flowering bulbs should be planted; the earliest to flower in spring (snowdrops, crocuses, and scillas) should be planted first in autumn. It is a great mistake to leave the planting of bulbs till mid-winter, as is often done; their roots begin to develop normally long before then. Mixed lots of narcissi can now be obtained very cheaply from most seedsmen; the early-flowering tulips are also inexpensive, and if their noble May-flowering sisters cost a little more, they are surely worth the extra price.

Sowings of some of the hardiest annuals should be made either at the ends of the plots or in the flower border. Frequently these make better plants and give a greater profusion of flowers than the spring-sown ones. Sweet pea, Shirley poppy, annual larkspur, nemophila, and Virginia stock are suitable kinds.

The spring window-box must on no account be forgotten, and for it bulbs are most suitable. A box planted with crocuses, Duc van Thol tulips, and narcissus (Sir Watkin or Golden Spur), the crocuses in front and the narcissi at the back, would keep bright for some time. Forget-me-nots and Cottage Maid tulips also give a pretty effect.

The vegetables for winter and spring use will need some attention. Broccoli and winter greens should be moulded up to prevent their being shaken by the winter gales. A line or two of an early spring cabbage such as Sutton's Flower of Spring, Harbinger, or Ellam's Early should be planted out in the plots eighteen inches between the plants. More of the autumn-sown cabbage plants might be put out in nursery beds, while the

smallest could be left in the seed bed till spring. Cauliflowers could be wintered in a sheltered portion of the garden in a nursery bed, protecting them with spruce boughs during severe weather.

For nature-study work there is ample material at hand in autumn. Besides the autumn flowers there are numerous fruits to be studied, and special attention should be paid to the method by which plants secure the dispersal of their seeds. Collections of weed seeds might be made in small corked glass tubes; the birds which are seen feeding on weed seeds should be noted. Leaf-eating caterpillars are abundant in August and September, and their life-histories could be studied by keeping them in breeding cages in the schoolroom.

The autumn work might fittingly be ended with the study of the fall of the leaf.

Royal Horticultural Society of Ireland

THE Royal Horticultural Society of Ireland held their Autumn Show on Tuesday, 22nd August, in Lord Iveagh's beautiful grounds at Stephen's Green, Dublin. The weather was all that could be desired, the show was well attended, and in every way it appeared to be a success.

The Lord Lieutenant and Lady Aberdeen visited the show in the afternoon, and were received by members of the committee and the secretary. The show was an improvement on last year's both in number and in quality of exhibits. The attendance was also better than last year, and it would appear that the Dublin public are taking more interest in their horticultural society than they have done for some time past.

One of the finest exhibits in the show was that of grapes, exhibited by Lady Emily Howard Bury, Charleville, Tullamore, King's County (gardener, Mr. Roberts), and it was well worthy of the large gold medal awarded.

A very fine collection of crotons, other foliage plants, grapes, melons and peaches was staged from the Vice-Regal Lodge Gardens, which was awarded a cultural certificate.

Hardy cut flowers were the chief feature of the show, and considering the very dry season it was a pleasant surprise to see the flowers in such good condition. It is evident that hardy herbaceous plants are growing in public favour annually, chiefly because of the ease by which they can be cultivated.

Pot plants were very well shown, W. Robertson, Esq., Hermitage, Dundrum (gardener, Mr. Green), being first for twelve stove or greenhouse plants, and also for six zonal pelargoniums. For three fuchsias, Sir E. Cochrane, St. Michael's, Ailesbury Road (gardener, Mr. Colgan), was first, F. V. Westby, Esq., Roebuck Castle, Dundrum (gardener, Mr. Simmons), being first for four colours.

Roses were not up to the usual standard, the hot, dry weather having disastrous effects on the plants producing good blooms. The Lord Ardilaun Challenge Cup was won by Dr. Campbell Hall (gardener, Mr. Faris); second, W. H. Calvert, Esq. (gardener, Mr. Crothers); third, F. Thorpe, Esq., Enniskillen. For the twelve Hybrid Teas Dr. Campbell Hall was again first; Dr. O'Donel Browne, Naas (gardener, Mr. Milne),

being second. These two competitors were similarly placed in the class for twelve Teas and Noisettes. In the four classes open to nurserymen there was poor competition, H. Dickson and Son, Belmont, Belfast, winning all the first prizes and the two medals.

Dahlias were below the usual standard in size, though colour was well maintained. The Lord Ardilaun Challenge Cup was won by R. H. Stubber, Esq., Mr. Meehan being second and Lady Annaly third. R. H. Stubber, Esq., Lady Redmond, R. H. Maunsell, Esq., and R. T. Harris, Esq., were the chief prize-winners in the other dahlia classes.

For the best collection of hardy cut flowers shown in vases there was strong competition, first going to Mrs. Mitchell, second Lord Plunket, and Mrs. Keith third.

The Watson Challenge Cup, for twelve vases of picotees or carnations, was won by Mrs. M. G. Millar, Mrs. H. Hutchinson being second.

Sweet peas were a fine feature in the show, and some very good spikes were exhibited. For the champion class collection of eighteen varieties in single vases, the first prize and gold medal were won by J. Hall, Esq., Moy, County Tyrone; second and silver medal by Lord O'Neill (gardener, Mr. Wadge). The challenge cup presented by Sir J. G. Nutting, Bart., for nine bunches in nine varieties, was won by Miss Field, Shanganagh Park, County Dublin; Jas. Hall, Esq., Moy, being second; and Lady Redmond third. The cup presented by Miss Osborne, for six bunches, open only to those who have never won a prize for sweet peas at the society's show, was won by Miss Rowley, Sylvan Park, Kells; second, C. W. Parr, Esq., Ballivor; third, Mrs. Meade, Old Connaught, Bray. The chief prize-winners in the single classes were Lady Redmond, Miss Rowley, Lord O'Neill, Mrs. Butler, Jas. Hall, Esq., and Lady Rathdonnell.

Fruit was very well shown, grapes being very good, and also were the melons and apples.

For the best two bunches of white grapes Lady E. Bury was first, Sir A. Cooté (gardener, Mr. Thornton) was second, E. Bewley, Esq., Danum (gardener, Mr. Clarke), third. Lady E. Bury was again first for Black Hamburg, and also for any other variety black.

The Earl of Meath (gardener, Mr. Childs) was first with very good peaches, N. Hone, Esq., being second, and Mrs. Carlyle third.

For nectarines N. Hone, Esq., was first, Mrs. Goodbody (gardener, Mr. Davis) was second, and Mrs. H. Hutchinson third.

For the best green or white-fleshed melon the Earl of Meath was first; Col. Claud Cane, St. Woolstans, Celbridge (gardener, Mr. Horton), second; and C. M. Doyne, Esq., third. E. Bewley, Esq., was first for scarlet-fleshed melon; second, Mrs. Summers; third, Col. Claud Cane.

Apples were well shown, there being some very fine specimens of cooking apples and very highly-coloured dessert apples, especially the Beauty of Bath and Lady Sudeley from County Wexford. There was good competition in the collection of six dishes for prizes presented by Sir F. W. Moore. Mrs. Goodbody was first, Sir E. Cochrane second, and Major Henry, Firmount, Naas (gardener, Mr. Taylor), third. A. Claude Ellis, Esq., Ramsgate, Gorey, was first for Beauty of Bath,

and also for Lady Sudeley. J. Jameson, Esq., Glen-cormack, Bray (gardener, Mr McIntosh), was first for Irish Peach, and Mrs. Nesbitt, Tuberdaly, King's County, first for any other variety dessert with Quarrenden. The Earl of Meath was first for Lord Grosvenor; Lady Musgrave, Tourin, Waterford, first for Ecklinville; and A. Claude Ellis, Esq., first for Early Victoria, and first also for any other variety cooking with large fruits of Grenadier.

Pears were a poor lot, first prize going to Sir E. Cochrane for a dish of Clapp's Favourite.

Plums were fairly well represented, the Earl of Meath winning first with good specimens of Victoria in the red class, and first with Kirk's in the black or purple class.

Lady Rathdonnell was first for red currants and for red gooseberries, the Earl of Meath winning the white currant class.

Tomatoes were well shown, Lord O'Neill being first, N. Hone, Esq., second, and Mrs. Goodbody third.

Vegetables were very good considering the very severe season. For the collection of twelve varieties, N. Hone, Esq., was first, and Mrs. Brown second. There was good competition in the collection of six varieties, Miss Field being first, Major Henry second, and Dr. O'Donel Browne third.

In the trade section gold medals were awarded to Messrs. Hogg & Robertson for a magnificent collection of gladioli; to the Tully Nursery, Kildare, for a large collection of very choice gladioli; to Messrs. W. Drummond & Son for a very large collection of hardy flowers, which were well arranged; and to S. A. Jones, Gowran, Kilkenny, for an excellent collection of very choice gladioli.

A silver medal was awarded Messrs Pennick & Co., Delgany, for a group of shrubs, hardy flowers and fruit.

A bronze medal was awarded to W. S. Ryland, Grove Nursery, Stillorgan, for a very fine collection of violas.

Messrs. C. Ramsay & Son were very highly commended for a very nice exhibit of cut flowers, table plants, and floral designs.

Messrs. Watson & Son, Clontarf, were also very highly commended for a nice collection of ferns, clematis, and floral designs.

K. Wells-Bladen, Esq., French Garden, Dundrum, was awarded a cultural certificate for a magnificent exhibit of Canteloupe melons.

The following acted as judges:—Messrs. J. Kearney, W. J. Besant, T. Moorhouse, Rev. J. H. Pemberton, W. Owen, W. S. Irving, H. J. Digges, E. Bewley, and R. Anderson.

Catalogues.

W. BAYLOR-HARTLAND'S list is, as usual, full of information of great interest to growers of bulbous plants, the sections devoted to tulips and narcissi being particularly so. There are illustrations.

BULBS AND FLOWER ROOTS is the title of a dainty little catalogue issued by Edmondson Bros. of Dublin. We note that this firm makes a speciality of decorative bowls for bulb culture. The list of plants includes apparently all the varieties popular with growers. The illustrations are numerous.

BULBS FOR GARDEN AND GREENHOUSE is the title of the autumn catalogue issued by Sir James Mackey, Ltd. It is beautifully produced and abundantly illustrated, the majority of the cuts being from original sources. There is a good deal of interesting information scattered throughout its 32 ample pages.

McGREY AND SONS bulb catalogue (Portadown) is a descriptive list of all the varieties likely to be required by gardeners. It is well illustrated, and will prove useful. The culture of bulbs in bowls is described and illustrated, and a descriptive list of novelties in roses raised by this firm is given on p. 29.

DRUMMOND'S FLOWER BULBS, 1911, is the name of a very fine catalogue issued by W. Drummond & Sons, Ltd., of Dublin. This list of varieties are full and clearly described, while the illustrations, which are numerous, are beautifully printed. The culture of bulbs in bowls is described and illustrated.

RITCHIE'S autumn catalogue (Belfast) is an illustrated descriptive list of bulbs, roots, &c., for immediate planting.



A WRITER in the *Field* gives an interesting and useful note on raising trees from seed which very clearly describes the methods to be followed in this branch of forestry:—"A useful nursery for the growing from seeds of alder, birch, ash, beech, and other hardy trees which require, in the seedling stage, good soil and plenty of moisture, and which on account of their small size in the first year are liable to suffer from frost, scorch, or weeds, was made as follows. It covers roughly an acre in extent, and is situated by the side of a stream, which can be dammed at any time. Numerous irrigation channels about 18in. deep and a foot wide, which can be filled or emptied at will from the main stream supply water, and a moderate shade is afforded by a number of tall willows (*Salix alba*) planted at regular intervals between the beds. The soil consists of a mixture of sand and well-decayed humus, to which from time to time superphosphate is applied. In April the soil is dug over, thoroughly cleaned from weeds, and then levelled and raked. Furrows are drawn by means of a ringed iron roller, the seeds are sown, and then a light wooden roller is passed over them. The stream is then dammed, the irrigation channels are filled, and within a very short time the whole of the soil is thoroughly moistened. When the seedlings are strong enough and the roots have grown a few inches the water is gradually lowered, but it is raised again in periods of drought. When a situation, such as is here described, cannot be found good results can be obtained with beds about a foot deep, lined with bricks without mortar. The bricks are to prevent damage from moles and to a certain extent from insects, and to regulate the water supply. Water must be obtainable in the neighbourhood, and movable screens of some kind (cheap ones can be constructed of rushes, thatch, straw, &c.) must be erected in summer to protect the seedling from the scorching effects of the sun, and in winter from severe frost. Such beds need constant attention, and are consequently expensive to manage, but as the seedlings are so small the seeds can be sown very thickly, and the young plants transplanted in their second year."

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Irish Gardening

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A MONTHLY JOURNAL DEVOTED TO THE
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ARBORICULTURE IN IRELAND

OCTOBER
1917

Town Gardening.

By MISS H. M. WHITE, LL.D.

GARDENING in town is beset with many difficulties and disappointments of which the country gardener knows nothing. The best results are not attainable in town, and many people might therefore think that it would be wiser not to attempt gardening at all in town, and to allow it to remain a country pleasure. There are, however, people who cannot accept this advice, as the love of plants is too strong in them to be killed either by disappointments or obstacles. This feeling is testified to by the lanky, ill-grown geraniums in jam pots and the starved nasturtiums in blacklead boxes of the slums, no less than by the

sons between town and country gardens, if he desires to preserve even the semblance of serenity of mind. He must measure his achievements only with those whose limitations are similar to his own; he must not hope or expect

to produce results which are possible only where the east wind does not whirl round corners, devastating all that it finds in its path, where the sparrows do not descend in locust-like swarms to prey on every tender bud, and where the heavily-laden air does not leave a deposit of grime on leaves and flowers alike.

Space is the primary consideration in a town garden, and one's first feeling in beginning to



[Photo by]

[Miss Eileen Ball

LILY POOL, ALEXANDRA COLLEGE GARDEN.

well-cared-for little plots of the more prosperous parts. Further, it is always wise to make the most of our circumstances rather than to be paralysed into inactivity because the highest achievements are unattainable.

The town gardener must, however, remember that "the best is the enemy of the good"; he must therefore sternly repress all compari-

work there—especially if previous experiences have been under happier conditions—is that there is no room for anything. Hotbeds must be foregone, a propagating bed (that first necessity in a garden) is difficult to provide, and the storing of such essentials as manure, sand and sods is a still more serious trouble. In town the whole garden is *en evidence*—there are

no back parts in which unsightly requisites can be concealed. All that can be done is to find the darkest and most out-of-the-way corner and there to plant a hedge or invent some sort of

space in a town garden is to use the walls, and they can be made very effective if properly dealt with. The first essential is that the pockets made in them shall be large enough to contain



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[Mr. Richard Barrington

ARCHES AND WALL GARDEN, ALEXANDRA COLLEGE.

screen behind which indispensable stores can be kept. It is generally possible also to find a spot with a good aspect where some sort of ornamental screen can be improvised, and behind which the tiny propagating bed can be placed.

The most practical way of increasing the

a good quantity of earth. The pockets must be made of rough blocks of stone, supported underneath by iron staples, which, when all is finished, will not be seen. A little cement is necessary to join the stones, but use it sparingly, it stops the drainage in the pockets, and is generally undesirable. It is wiser to stand

by yourself when the pockets are being made, or it is not impossible that when you go to look at the large irregular pockets that you have ordered to be constructed on the top of your wall you will be confronted by a straight, regular line of small protuberances strongly resembling swallows' nests.

Next comes the filling of the pockets. It is well to put some pieces of roughly broken sods in the bottom, and in a few of the deepest we sometimes put a very little well-rotten manure,

almost, if not quite, as fine as those which hang from the rocks in its native home in the Pyrenees, where it is known as "Reine des Pyrenees." Then, in addition to the saxifrages, there is the whole of the dianthus family to select from, as all ordinary pinks thrive splendidly on walls, and the sheets of grey foliage clothe the stones beautifully, and later when the pink and white starry flowers appear their charm is still further enhanced.

The creeping veronicas, alyssums, arabises,



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SECTION OF HERBACEOUS BORDER, WALL GARDEN BEHIND, ALEXANDRA COLLEGE.

then fill up with a good potting mixture of maiden earth, leaf-mould and sand. Now comes the question of planting; wall-flowers, snapdragons and red valerian first suggest themselves, as these plants are everywhere to be seen on old walls. The tower of the church at Carlingford is a delightful example of the way in which wall-flowers can sow themselves over a building. The wealth of material is great from which you can choose for your walls, as fortunately most rock plants do well in town. We have had sprays of Saxifrage *Longifolia* here on our walls in the centre of Dublin

helianthemums, and the smaller cistuses all do well. Aubretias we find rather disappointing; they flower late with us and never very freely. German irises are much at home on walls, and they should be used where height is desired, as their stiff, sword-like foliage always looks well among the stones. There are scores of other plants which can also be employed; in fact, our experience would lead us to advise that anything that is left over in the propagating bed, which is not a moisture-loving plant, and is not manifestly unsuitable, should be experimented with on the walls. It once happened that we

had a plant or two of the variegated purple sage which we put on the wall simply to get them out of the way; the following winter was a very hard one, and every plant of this sage in the beds was killed; those on the wall alone survived.

Next, as regards a herbaceous border, quite fair results can be achieved in this direction in town. All the following plants can be relied on to bloom quite satisfactorily:—The various kinds of poppies, Michaelmas daisies, herbaceous geraniums, heleniums, helianthemums, veronicas, inulas, thalictrums, campanulas, carnations, out-of-door chrysanthemums, an-

non, but as a rule there is not much room for them; one or two may, however, be introduced; their dark foliage is good all the year round, and the flowers in spring make an attractive touch of colour. We had upwards of seventy blooms this year on one comparatively small plant. *Daphne Mezereum* does well in town; we had a very fine specimen here, which, unfortunately, was destroyed by the snow a few winters ago. *Choisya Ternata* thrives in town, and the small *Philadelphuses* are wreathed with bloom in summer. The common white lilac blooms well, but we have never flowered the newer varieties.

The following shrubs can be grown with



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[Mr. Richard Barrington

SECTION OF ROCK GARDEN, ALEXANDRA COLLEGE.

chusas, pyrethrums—including *Uliginosum*—irises, aconitums, erigerons and funkias, if the latter can be protected from the ravages of snails, which are a special plague in town gardens. Delphiniums here only do moderately well; they flower, but rather poorly.

Plants to be eschewed are roses. The results achieved in Stephen's Green with certain roses may seem to contradict this. There is, however, much more open space in Stephen's Green than in most town gardens, and the ordinary town gardener will do well to leave roses severely alone, and also violets and anemones. We have flowered and grown some anemones here such as *Baikalense*, *Sylvestris*, *Narcissiflora*, but they are not to be recommended. Rhododendrons do extremely well in town gardens if they are properly planted in peat, which is a *sine qua*

success against the walls:—*Azara Microphylla*, *Aristolochia Siphon* (for arches), *Buddleia variabilis*, *Clematis montana* (almost too rampant), *Clematis Jackmanni* (for arches), *Cistus ladaniferus*, *Ceanothus Veitchianus*, *Cydonia japonica* (all varieties), *Crataegus pyracantha* (for north aspect), *Escallonia*, *Jasminum nudiflorum* (and all the hardy jasmines), *Kerria japonica*, *Piptanthus nepalensis*, *Prunus sinensis rosea plena*, *Rubus deliciosus*, *Spiræa arifolia*, *Vitis Henryana*.

With regard to bulbs, they do admirably for the first year, but daffodils and tulips, instead of increasing, tend to diminish and to deteriorate. We find it necessary to take up all tulips every year; if left in the ground the bulbs become riddled with small holes, which, of course, kill them. We have grown in the rock garden

such species as *Batalini* and *linifolia*, and by taking up these bulbs they go on from year to year. Such varieties, however, as the *Darwins* and *Gesneriana* are never so good the second year.

With lilies we have not had much success. *Pardalinum* and *Pyrenaicum* do well, and we have flowered *Martigum album*, *Chalcedonicum Speciosum* and *Auratum*, but on the whole they are not very satisfactory.

A corner should if possible be found for a diminutive water-lily pool. The stronger forms of the *Marliac* varieties flower freely and well, and the water hawthorn, *Aponogeton Distachyon*, is a pleasure during most of the year.

Fuchsias do well, and it cut down and covered with turf-mould they stand the winter perfectly. There is always a strong element of chance as to what plants will or will not do in a town garden. Every gardener, therefore, should experiment freely according to his fancy; his failures and successes will be alike unexpected. We have flowered well such unlikely plants as *Cypripedium Calceolus* and *Iris Tingitana*, whereas no amount of nursing and coaxing will ever induce such an ordinary plant as *Monarda Didyma* to do anything but languish and die. My last word, therefore, to town gardeners is—venture freely and find out for yourselves what will grow in your gardens.

Shrubs for Town Gardens.

By J. W. BESANT.

IN some ways, perhaps, the cultivation of shrubs in towns is of more importance than in country districts. In the country nature is generous, and wherever one wanders trees, shrubs or plants of some kind are present around the cottages as well as the mansions. In large towns it is different, and although public parks and gardens are annually increasing in numbers, yet migrants from the rural districts miss the flowers and shrubs they have been accustomed to at home. Many are the pathetic attempts made to grow a few flowers or a shrub or two in the small plot attached to the house, and even window boxes are called into service in the endeavour to have something green amid a waste of bricks and mortar. There is, of course, a great difference in the

atmosphere of different towns. Large manufacturing cities are notoriously smoky, and there the cultivation of plants of any kind is decidedly difficult. There are other towns and cities where the staple industries do not involve the production of large quantities of smoke, and in these it is possible to grow a fair selection of plants of all kinds. In every city, however, there is always a pall of smoke more or less dense obscuring the sun's rays, and therefore plants which bear a certain amount of shade often succeed better than those which naturally demand abundance of light and the pure air of high altitudes.

Another circumstance which militates greatly against the growth of shrubs in and near large towns is the miserable nature of the soil about the houses. There are some old gardens in large centres like London and elsewhere that rival many in the country. This is no doubt due to the fact that they were in existence before the streets which now surround them, and the original soil has been kept in condition by good cultivation. That many fine trees and shrubs continue to live and grow in such gardens leads to the conclusion that a sweet and healthy rooting medium is a distinct advantage in assisting the leaves and branches to carry out their proper functions even in the presence of smoke, dust, &c. From some experience of the preparation of small suburban gardens I have found that the soil of these tiny plots usually consists of the subsoil which has been spread over the original surface in the throwing out of foundations, drains, sewers, &c. As the work of erecting the house proceeded this subsoil became mixed with cinders, wood-shavings, pieces of wood, lengths of wire, iron hoops, tin cans, rags, &c.; in fact, there is no telling what may turn up.

There is only one right way to deal with this state of affairs if shrubs are to be grown, and that is to trench the ground two feet deep and remove all rubbish as the work proceeds. Usually, the original top-soil will be met with in the trenching, and some of this should be returned to the surface to be mixed with the subsoil which has reached the top, as shown above. As the trenching proceeds, the surface should be made as level as possible, as then it will be easier to finish all off with a rake. The subsoil remaining on top will, after being exposed for some time to the action of sun, wind,

and rain, develop into quite good soil. All subsoil, except in the case of sheer gravel, which must come out if too near the surface, only wants exposure to the air to become capable of supporting plant life.

The size of the garden will determine the selection to be made. In the small front gardens of terrace houses wide-spreading species should be avoided, as they soon become unsuitable. As a rule, shrubs which shed their leaves annually are recommended as being best able to withstand the deleterious atmosphere of smoky towns; yet some evergreens have proved to be of great value.

For small gardens the following may be recommended:—*Berberis aquifolium*, *Euonymus japonicus*, *E. radicans*, golden privet, *Olearia Haastii*, which flowers freely as a small bush. The common boxwood, *Buxus sempervirens*, *Hypericum calycinum*, the smaller-growing bush ivies, *Cotoneaster thymifolia*, *Daphne laureola*, &c., all the foregoing being evergreen. Of deciduous shrubs *Berberis vulgaris*, *Forsythia viridissima*, Persian lilac, *Hypericums*, *Daphne Mezereum*, the smaller-growing *Philadelphuses*, *Spiræa japonica*, *Ribes sanguineum*, &c., may be grown and kept within moderate dimensions.

For larger town gardens where there is a considerable space about the house, which may be standing in its own grounds, all the foregoing may be utilised and in addition:—*Acuba japonica*, green and variegated; *Osmanthus aquifolius* and varieties; *rhododendrons*, especially Anningham's White; the yellow flowering currant, *Ribes aureum*; *Jasminum fruticans*, a shrubby evergreen jasmine; *Ligustrum japonicum*, a handsome evergreen privet; lilacs; the Guelder rose, *Viburnum opulus sterile weigelias*; *Philadelphuses*; *Colutea arborescens*; *Kerria japonica*, &c.

The following list of shrubs, not including those mentioned above, were shown and recommended by Mr. A. D. Webster, Superintendent of Regent's Park, at the Country in Town Exhibition, Whitechapel:—*Phillyrea decora*, *Olearia macrodonta*, *Clematis montana*, *Skimmi fragrans*, *Forsythia suspensa*, *Hibiscus Syriacus* (*Althea frutex* var.), *Azalea procumbens*, *Cotoneaster buxifolia*, *arctostaphylos uva-ursi*, *Vitis purpurea*, *Vitis Cognetiæ*, *Vitis Veitchii* (*Ampelopsis*), *Aralia sieboldii*, Almond, Sumach, *Cornus*, *Andromeda japonica*, *Ilex crenata*,

Senecio elegantifolius, *Lycium chinense*, *Potentilla fruticosa*, and brown Turkey fig.

It will be seen from this list that the choice of shrubs to grow in London is considerable, and many Irish towns could accommodate many more in the warmer parts of the country.

Plant Life in Autumn.

By G. O. SHERRARD.

THE gradual cessation of the activities of plants with the advance of autumn is evident on all sides in the changing colours of leaves, the lessening of the number of flowers, and the stoppage of growth.

During the spring and summer plants have been actively growing, expanding fresh leaves and flowers, and manufacturing vast quantities of food material. It might be asked, "What has become of all the plant food made during the summer months—is it all utilised in promoting growth?" It is stored in the seeds and various storage organs of the plant in the form of starch, proteid matter or oil, ready in the case of a seed to nourish the embryo plant during the earliest stages of its growth, or in the case of an old plant to build up fresh tissue with the coming of spring. The tubers of a potato, the bulb of an onion, the thickened root of a dock or dandelion, the underground stem of bracken, and the pith rays in the trunk of an oak, are all used as store houses and are all now packed with food. Plants still have the monopoly of the world's starch manufacture, and man gets his supply from them by harvesting each year so many million tons of the seed of cereals and rice or the tubers of potatoes.

The annual plant stores no food for its own use, devoting all its energies to seed production, after which it dies, leaving behind it a plentiful offspring.

It is to the interest of a plant species that its seed should be distributed over a wide area and not all fall immediately around the parent. Overcrowding is thus avoided and the range of the species extended. Plants achieve this end in various ways. Some rely upon the agency of wind, others upon water, and more upon animals, to effect the dispersal of their seeds. In autumn this may be seen taking place—the thistle-down carried in the wind, the birds eating the brightly-coloured berries of hawthorn and

holly, and the hooked fruits of cleavers and burdock sticking to one's clothes. Some of the structures which enable fruit or seeds to be borne by the wind are worthy of observation. In the great family of the composites, to which the dandelion, thistle, and ragweed belong, the fruit of many of the species is provided with a parachute-like arrangement of silky hairs. In the dandelion the hairs radiate from the end of a long stalk formed from the prolongation of the fruit. The fruit of the thistle has long and abundant feathered hairs attached directly to the top of the fruit, while in the ragweed the hairs are simple.

The winged fruit of the ash and sycamore cause the seed to fall some distance out from the parent tree, even when there is very little wind, by giving it a slanting motion through the air.

Some plants eject their seeds forcibly from the fruit, thus causing them to be scattered some little distance from the parent; amongst these are the bitter cress, the wood sorrel, and the furze.

Most trees in temperate and northern climates shed their leaves at the approach of winter. This is not simply due to the death of the leaves through cold, but is brought about in what one might call a deliberate manner by the tree itself. A special layer of cells is formed across the base of the leaf-stalk—the absciss layer. The cells forming this layer part from one another readily and the leaf falls; the scar which remains is covered by cork.

School Gardens.

(Continued from Page 138.)

Some Practical Suggestions.

By L. J. HUMPHREV.

THE weather will oftimes render work outdoors impossible, and if instruction is confined to one day a week such serious gaps will arise in the sequence of garden work that the season's crops may be ruined in the intervals. In such cases the pupils must be allowed to work on intervening fine days, if necessary without the instructor, who should be asked to leave written instructions as to the work to be done in his absence. Of course, where the instructor is permanently on the premises no such difficulty could arise, and in the majority of schools there is at least one

teacher who possesses sufficient knowledge to superintend the pupils' work.

On the plots already mentioned a regular system of cropping should be carried out, and the plots being arranged parallel to one another, a line of vegetables grown through the whole number. This arrangement not only gives a better appearance to the garden but simplifies the instruction, as each pupil will be engaged on the same work at the same time. For instance, when a drill of seed is to be put in, the ground is first prepared by raking level and the line stretched from end to end; each pupil then draws the drill, sows the seed and covers it in, labels being, of course, placed in suitable positions or the situation of the drill will be rapidly forgotten by the pupils. Working in this way there is no chance of getting crooked lines or mixed labels, and comparison is easy and to be relied on, stimulating the pupils in their work.

The flowers will, of course, be arranged on a different system. In the case of the older pupils some three feet could be allowed on each plot for the purpose of growing such annuals as individual tastes suggest. Another plan which has some advantages, especially for the younger pupils, is to set apart one or more borders for flowers, and, when this is done and the border made from six feet to eight feet wide, tall perennials can be grown at the back, while annuals, dwarf perennials and bulbs can be planted in unoccupied spaces in front. The latter plan gives more opportunity for tasteful arrangement, and the effect is in competent hands far superior to the individual efforts at the end of each plot. The annuals sown are apt to be ineffective when grown in small spaces without suitable background, and it is, perhaps, more easy to instil a love of flowers by means of a good "class" border than by annuals grown individually. All the sowing and planting should be done by the pupils, and if they are occasionally asked to select their favourite flower, and afterwards outline its cultivation, they will not lose more by this method than they would by the other.

In every garden a bed or beds should be allotted as seed beds and for cuttings, in which cabbages, leeks, &c., could be raised, and in which cuttings could be rooted and stocks for grafting prepared.

In the above notes an effort has been made

to give the outlines of a school garden, but many developments will suggest themselves as the work proceeds. For example, a greenhouse and frames could be erected, thus providing winter and wet weather work. Beds might be set apart for the wild plants of our country, collected, if possible, by the pupils, providing in a rock garden the variety of situations necessary; a bog could be imitated with a tub and rough peat; water plants could be grown in tubs, and rock plants placed in the crevices of stones roughly built up. Shrubs might well be planted in some spare corners to hide unsightly objects or for protection, and in many ways be used to render the garden not only useful but beautiful, and thus by fostering a love of the country's denizens, fostering a love of the country itself, making its children less ready to leave it either for the town or for some other country.

The influence of the teacher is at least as important a factor in the success or otherwise of the work as in any other subject commonly taught, and the extent of the work should be gauged, or if necessary limited, having regard to the power of the teacher to cope with it. The nature of the subject itself renders most of the ordinary school methods impracticable, but in this, as in most subjects, the sympathy and enthusiasm of the teacher are of the utmost importance.

The gardening work should be arranged in advance after consulting some gardening calendar, and elementary lessons on the principles on which the work is based should be given as the work proceeds. In this way samples of seed could be examined and tested before being sown outdoors. A bulb might be dissected in order to demonstrate its completeness and why it can flourish in water, but

numerous instances and experiments will suggest themselves as the teacher becomes familiar with plant requirements.

The influence of soil elements can be demonstrated by water cultures, and in the garden by manurial experiments, but care should be taken to avoid theory which cannot be well supported either by the results in the garden, or failing that by simple deduction from well-known facts.

The enemies of the crops will deserve considerable attention, and no opportunity should be lost of instilling into the pupil's mind the necessity of prompt and effective action in such matters. In fine weather as little time should be given to verbal instruction as the subject will allow, and all available time should be devoted to practical work by the pupils, even at the risk of some mistakes, as often more is learnt by a mistake than by a success. In wet weather more time can be spent in lecturing, but it is well that beyond some clear, concise comments on the garden work, formal lectures should be discouraged. A wet day will give opportunity for writing notes, and working



XANTHOXERUS SORBIFOLIA (Flowering Branch).

Photographed from a specimen growing in the Botanic Gardens, Glasnevin.

See also p. 155.

practically through some lessons on the principles of gardening such as have been mentioned above, and if drawing accompanies such lessons it will assist the formation of habits of observation essential to the gardener. One of the teacher's most valuable auxiliaries is a note book, systematically kept in diary form; in this the pupil should be encouraged to write observations of his own on the garden work, the crops, and if possible, on the state of the weather. This will then form a record of easy reference when the school garden has long been left behind.

The question of tools has often proved a

difficulty when starting the school garden, and sometimes false ideas of economy have interfered considerably with the proper furnishing of the tool shed. All tools should be of good quality, and, undoubtedly, there is much time saved and trouble obviated by providing a complete set of tools to each plot. The plots should be numbered and the tools numbered correspondingly, each pupil being then placed in charge of the plot and the numbered set of tools assigned to him. These tools he should be expected to keep clean and in order, hanging them on the numbered pegs in the toolhouse at the conclusion of each lesson. This method renders it easy to place responsibility for tools left out or not cleaned, and there is no possibility of disputes as to "borrowed" tools. The set of tools should consist of:—

1 Spade,	1 Draw hoe,
1 Fork,	1 Dibber,
1 Rake,	

and in addition the following should be allowed for every twelve pupils:—

4 Trowels,	1 Wheelbarrow,
2 Garden lines,	1 Measure, 10 feet,
4 Dutch hoes,	2 Measures, 3 feet.
2 Water cans,	

Knives for pruning, &c., should be retained by the teacher, to be lent when considered necessary. A tool shed, with room for storing seed, potato sets and chemical manures should also be provided, while if room can be allowed for potting and indoor demonstration it will be of considerable value in showery weather.

It has not been the aim of the writer to more than outline a scheme which has been found to give good results when carried out, and one which readily lends itself to modification to meet local considerations of economy or experience, and difficulties which may seem apparent at first will easily be overcome if the work is intelligently considered before a commencement is made. The gain to the appearance of the too-often bare schools and barren playgrounds in the country districts by the adoption of some scheme of instruction in gardening can be gathered from the few instances there are in this country of cultivated school grounds, and when the schools have led the way in this as in other matters the village homes will surely follow.

A County Cork Wayside.

By JAMES BRACKEN.

IN mid June the foxgloves are again in flower, and fern fronds, still in their tender tones, gleam from the cool shadows by the side of the rivulet that flows through the woodland. Under the sweeping beechen branches, in the sultry noon-day, this surely is a cool and pleasant place to be. Yes, here it is good to rest a space, while the cuckoo calls, and outposts of the seasonal host of gorgeous dragonflies and small blue butterflies flit through the languorous air, or repose on the flowers no less beautiful than themselves.

The forest trees have put on full massiness of form. How pictorial the effect of the sycamores, and the deeper hue of the leaves, and the closer shade seem but to show out more strikingly the colours of the flowers, and the easeful contours of the fern fronds below! How happily formed seems the companionship of the rich, stately foxgloves that grow in the well-watered dell by the brookside with these gracefully bending shield ferns! More restful to the eye than where, further down in the opening, the upright royal ferns are their paler partners—or out on the heath, where the brackens with stiffer forms fear not to surround, or even to surmount their purple majesty.

Here and there amid the virgin leafage, among the more lighted spaces of undergrowth, the Woodbine lightly twines its pale garlands, and lavishly gives out its exquisite breath. Where can we behold a fairer vision, or who tells us a sweeter tale? In simple grace the Dog-rose displays rival charms, some petals almost white, and some of that unspeakably lovely pink that reminds us of an ideal maid that haunted boyhood; with gold anthers and filaments glowing like the glory that shone in her transfigured hair; close by the modest Speedwell looks up with eyes as heavenly blue. This linking of the present with fresh feelings of youth is aided by the voice of one invisible Blackbird that sings of far, dreamful times—for its gold beak can cast this spell awhile on the spirit. The never-absent, and never-songless redbreast too, and the dear brown wren, chant occasionally; while the skylark, above the meadow starred with ox-eyes, scarcely

ceases to pour out the liquid refreshment of joyful song:—

“Tis well to be alive in the gay summertime,
‘Tis sweet to be young ‘mong the flowers.”

But the reverie of inwoven old dreams is dismissed by the sudden advent on the scene of a very frightened young rabbit that, rushing past in blind impetuosity, almost collides with one's boot,—whew! this is agility surely with a great plentiness of hurried fear thrown in—but what's that behind? bounding over a low tuft well within a stone's throw (this particular distance not without a mental note) a slim, brownish form fixes the eye. The very supple and swift motion of the creature advises caution. And more than swiftly from behind another tuft nearer still the elongated neck and raised head appear with as devilish an expression of lively mischief as is conceivable. So swift and so motionless it can be in turn, it might easily be taken for a very serpent. From its vantage-point the audacious little rogue now deliberately scrutinizes the situation. It is a stoat bearing also, as well as a fetid smell, the grand name *Mustela Erminea*, and is commonly called a “Weasel” in this country, and I dare say it bears out well enough the reputation freely given it of not being easily caught asleep. Observing its sinuous briskness and villainous aspect we accept the truth of this, and readily at that without desiring to make personal experiment. Of course the inevitable stone suddenly clutched and hurled makes the inevitable miss, and the scampering stoat departs—as the ideal maiden, and the scared rabbit have departed—out of the record of an hour.

Where the stream gains the lower level of the bogland hosts of many-hued blossoms are to be seen. Like the banneretts of innumerable fairy legions, there the “canaban” or bog-cotton is waving myriads of white plumes. There in gay abundance the ladies' smocks, all silver white, and its rose-coloured rival for the sweet name of cuckoo flower, the Ragged Robin, strive to outdo each other for human regard—one by wild comeliness, the other in quaintness. There the real heaven-hued forget-me-nots, and the lush flag iris impertune our sense of the beautiful and pure. But before claiming a closer intimacy with these and many another fair denizen of the marshland, let us look by the way as we go, for now, in the prime of the year, the treasures of Flora—who is

Nature's most winsome handmaid—are bounteously dowered, and her traces precede us in the upland as in the lowland. Under the greenwood, and over the wild wastes and the heath, and even in the commons and by the roadside, she showers her gladdening gifts and invites us to still follow, and to still find the peace and harmony that gives heart-quietude, which is the response and the reward of dame Nature to her wooers.

See,—here is a fence of turf and stone that divides this woody inclosure from the highway, and even here are spread out wonderful things—though *things* they are not—but wonderful creations of life that ought not so often be borne unto living loveliness to die unnoticed and unknown. In a spot open to the sky is a perfectly harmonious patch of nature's own mixing and planning. Tapering spires of greenish-white flowers of wall pennywort (*Cotyledon umbilicus*), with mingling sprays of the shining cranesbill (*Geranium lucidum*), which from the effect of heat and drought is now a vivid scarlet colour, like to the virginian creeper in late autumn; and both surrounded and interspaced with a close, starry carpet of white stonecrop in full bloom. And here again miniature foxgloves with spleenwort and wallrues, and a variety of other small species of fern as foils, and with elegantly formed and bright-hued trails of ivy lending the charm of contrasting habit. And there is the sweet, white bedstraw clustering among the first of the heath (*Erica cinerea*), that already is thus early in flower. This combination makes a sweet suggestion, if one dared speak of the like, for the trimming of a lady's bonnet—or hat, maybe it ought to be. And here may be seen the yellow stone crop, a very floral gem. And here are many various buttercups and potentillas, and pretty species of St. John's wort, and scabious, and bladder campions, and the blue and white milkworts clustering with the white galium and intermingling with the white stars of the greater stitchwort (*Stellaria holostea*). But this is but a fragment of a catalogue of names that could be compiled for a few perches of a roadside ditch, which, if extended, would but weary the reader. Yet, if one of the wild flowers here found abundantly, that is, the lesser stitchwort (*Stellaria graminea*), were to be lightly considered, it would be dismissed from notice as

the most insignificant of any—but a gathered handful of its slender growths and miniature white stars, and a few feint lilac-coloured dew-berry flowers (*Rubus cæsius*), with their pale-green leaves—and with these only—lo! it is a nosegay that might delight the soul of an artist, so beautiful is the outline of the bramble, flower and leaf, and so exquisite and graceful the pose of the little stellaria.

But here is the soft *Sphagnum* of the marsh that has been made so springy and so pleasant to walk over by the effect of drought, and here are the spotted orchis in delightful abundance and variety of purple shade, and here and there at greater intervals the whitish green butterfly orchis shows its more graceful outline. The pale rosettes of the butterwort too attract attention, but we miss the lovely blue of their violet-like flowers which but a short time since were by the thousand in flowery delightfulness. What time the gold of the marsh marigold shone

resplendent, the last of whose flowers are now rapidly waning away. But no sigh is now suggested by seasonable change, no, in the water of the little lake a little way off, and fortunately perhaps out of the reach of humanity, the pure cups of the white water lily are opening again; and shall the reeds not flower and sing in the soft winds of autumn, and the rowans grow scarlet in September, and the bracken's become gold and soft brown again? yes, even when summer leaves us, the big bunches of blackberries will grow shiny, jetty black and bend to us, and the immaculate mushrooms with a delightful

surprise will suddenly re-appear, and the hazelnuts shall tempt our feet from the dusty highway, and so it has been for some of us, and so may it ever be even to the end.

Xanthoceras Sorbifolia.

By R. M. POLLOCK.

THERE is a large plant of the above-named shrub in the Royal Botanic Gardens, Glasnevin. This plant measures about 15 feet across and about 12 feet high,

and is probably the largest specimen in cultivation. *Xanthoceras sorbifolia* is a native of China, and although seeds of it were sent home as far back as 1868, it has never become a common shrub in gardens. Perhaps this is due to the fact that, as it seldom fruited, seed was rare and cuttings did not answer. Root cuttings seem to be the simplest method of increasing this plant. Almost every year at



XANTHOCERAS SORBIFOLIA (Fruiting Branch).

Photographed from a specimen growing in the Botanic Gardens, Glasnevin.

Glasnevin the plant flowers, but this year it has also fruited. The fruit is somewhat like a small chestnut, and splits into three while still green, showing the round brown seeds lying on a smooth, ivory-white surface. This shrub is perfectly hardy and has stood many winters uninjured, and with its delicate foliage makes a very handsome plant. The accompanying photographs show the plant in flower, and also a fruiting branch.



At Christmas I no more desire a rose
Than wish a snow in May's new fangled showers,
But like of each thing that in season grows.

How and Why do Leaves Fall ?

THE fall of the leaf in Autumn is a phenomenon well known to every one. But the reason why our deciduous trees and shrubs shed their leaves after the season's work is over is understood by relatively few. It is caused by a deliberate act of the plant itself—in other words, it is the result of life and not of death. A dead bough will not and cannot shed its leaves. An excellent account of leaf-fall is given by Professor Boulger in a recent issue of *Knowledge* which we take the liberty of reproducing:—

There is no element, he says, which contributes more to the difference of the landscape as we travel from the Equator northward than the prevalent character of the foliage of the trees. In the tropical jungle the bulk of the trees are dark green, thick-leaved evergreens, a characteristic which extends northward in the more insular moist climates of coast and island regions, notably exemplified by the flora of Japan. In the Cooler Temperate Zone the predominant trees are dicotyledonous angiosperms, the "broad-leaved trees" of our foresters, with smaller, thinner leaves than those of the jungle, lighter in tint, producing a less dense shade, and, for the most part, falling in autumn. Northward of these again the polar limit of arborescent vegetation is reached by the striking Sub-Arctic Zone of "needle-leaved" conifers, mostly evergreen.

It must be noted, in passing, that this term "evergreen," though often true enough of a tree, does not apply to the individual leaf. A tree is evergreen when it retains the leaves of one year at least until after those of the next season are unfolded. We have numerous gradations, from our ordinary "deciduous" species, which are bare of leaves for five or six months in the year, through such cases as that of the privet, which retains its leaves through a mild winter, and that of the holm oak which is only stripped by exceptional frost, to such evergreens as the holly, or the cedars and pines, that retain their needles for several successive years.

If we look at the question of leaf-fall no longer geographically, but from the point of view of the systematic botanist, we find that the lower and simpler types of leaves do not fall. The primitive leaves of mosses have no articulation at their base: the elaborately-divided fronds of most tree-ferns wither and hang their dead stalks downwards from the stem: the needles of conifers wither similarly, generally after being several years on the tree; and the simple sheathing leaves of most Monocotyledons have not so perfect a system of articulation as we find in the Dicotyledons, especially those with compound leaves.

A thoughtless, unobservant conclusion would be that the leaf dies and then, and consequently, falls off; but this is far from being the case. Preparations may begin for the fall of the leaf almost as soon as it is formed; and in many cases the leaf is moist and its cells fairly inflated when it falls. As far back as 1758, Duhamel ascribed the fall of the leaf to a layer of tissue between the stem and the leaf, which remained "herbaceous," *i.e.*, capable of growth, but could not stand winter cold; whilst Vrolik, in 1797, spoke of the absorption of a layer between the dead and living parts but

belonging itself to the living. In 1848 a Dr. Inman, in a paper communicated to the Literary and Philosophical Society of Liverpool, described an inward extension of the cork of the bark and disruption taking place through cellular tissue external to this corky layer, from without inwards:—

"The provision for the separation," he writes, "being once complete, it requires little to effect it; a desiccation of one side of the leaf-stalk, by causing an effort of torsion, will readily break through the small remains of the fibro-vascular bundles; or the increased size of the coming leaf-bud will snap them; or if these causes are not in operation, a gust of wind, a heavy shower, or even the simple weight of the lamina, will be enough to disrupt the small connections and send the suicidal member to its grave. Such is the history of the fall of the leaf. We have found that it is not an accidental occurrence, arising simply from the vicissitudes of temperature and the like, but a regular and vital process, which commences with the first formation of the organ, and is completed only when that is no longer useful; and we cannot help admiring the wonderful provision that heals the wound even before it is absolutely made, and affords a covering from atmospheric changes before the part can be subjected to them."

In 1859 Hugo Von Mohl, the illustrious founder of the cell theory, chanced to spend his autumn vacation at home, so that he observed the successive fall of the leaflets and the leaf-stalk in the leguminous *Gymnocladus canadensis* with the conveniences of his laboratory at hand. He found that a layer of cork already extended through the cellular tissue at the base of the petiole in September. Immediately above this a layer of cells had become brown (suberised); and, separated from this by two or more rows of the ordinary colourless polyhedral cells of the leaf-stalk, what he termed the separating, or "absciss," layer originated. This only formed between the 4th and the 15th of October, extending across the stalk from the inner or axillary surface, and contained in its cells protoplasm and starch-grains. It is, in fact, what we now term "secondary meristem." Von Mohl only recognised two layers of cells in the absciss-layer, which he believed to split apart, while he thought that the fibro-vascular bundles were broken mechanically by the weight of the blade and the strain of wind and rain. He perceived, however, that the fall of the leaflets between the 10th and 20th of October, and the subsequent fall of the petioles was independent of the cork-layer formed at least a month before. This cork-layer, in fact, is not formed in advance in those ferns which are deciduous in beech, elm or most oaks. Von Mohl also noticed that when leaves fell suddenly, after an autumn frost, a thin layer of ice had formed in the delicate sappy cells of the absciss-layer, torn cell-walls evidencing the violence of the disruption.

In 1863, Julius Sachs traced the gradual removal of the contents of the leaf-cells. The protoplasm and nuclei are dissolved, the chlorophyll granules become disintegrated, the starch disappears, leaving only the few yellow granules, or the reddened cell-sap, which produce our autumn tints; while starch, potash and phosphoric acid travel down the leaf-stalks to be stored up in the twigs, and only the waste or end-products of

metabolism, calcium-oxalate crystals, resins and alkaloids remain to be thrown off with the falling leaves.

In 1882, M.M. Guignard and Van Tieghem returned to the study of *Gymnocladus*, but began their investigation in the middle of June. They found that no cork is formed at the base of the leaflets. It is not worth while to heal the wound on the leaf-stalk which is itself to fall in a day or so. The suberised layer was formed at the base of the main petiole by the middle of June: then a layer of meristem, the "phellogen" or cork cambium originates below it and the absciss-layer above it, before the end of June. This layer spreads inwards from the epidermis through the cellular tissue of the bast and wood-bundles. It consists not of two, but of three layers of cells of which the middle row is absorbed. The two remaining rows, still living and turgid, swell outwards with rounded surfaces, and so create a strain which snaps the fibres and vessels. These observers also induced leaf-fall artificially at midsummer by placing a cut branch in a box filled with moist air, and they found that after the fall of the leaf the cellular tissue of the vascular bundles whose ends are exposed on the leaf-scar becomes "merismatic," *i.e.*, undergoes cell division, forms cork, and penetrates and fills up the ends of the vessels.

It is well to bear in mind that prolonged drought will induce leaf-fall much as does a frost, and that a layer of cork is formed below the prickles on old stems of rose or bramble, and below twigs in some plants which shed these branches as others shed their leaves. On the other hand, if a branch be broken through early in summer its leaves wither but do not fall, no absciss-layer being formed. Coppiced oaks or the clipped beeches or hornbeams in the hedges of nursery gardens also retain their leaves, as if the energy and material used up in the formation of callus to heal the wounds caused by pruning-knife or shears left none for the formation of the usual absciss-layers. The pollard hornbeams of Epping Forest, which used to retain their withered foliage through the winter, have, since the Forest was taken over by the Corporation of London, and lopping has been stopped, been gradually regaining the deciduous character of "spear" trees.

Everyone must have noticed the successive fall of the leaflets and the leaf-stalks in the ash or horse-chestnut, the thick-ended petioles being aptly known by children as "bones," since they are by no means unlike the leg-bones of birds. There is, however, another interesting little point in connection with leaf-fall which is, perhaps, less familiar, well illustrated in the photographs, by Mr. Johnson, this is the order in which the leaves fall from the twig. In the beech this is *basipetal*, *i.e.*, the younger leaves at the apex of the twigs fall first. In the linden, the poplar, and apparently in the majority of trees the fall takes place *acropetally*, *i.e.*, the older leaves at the base of the twigs fall first.

It is well to notice that here again we have order and not chance: that nature has, as we often find, two or more ways of bringing about the same result; and that even in such an apparently simple matter as the fall of the leaf there is room for a good deal more research.

A Book on Bulbs

A NEW work on bulb culture.* By such a skillful compiler of books as Mr. John Weathers is especially welcome at the present time. The volume is a bulky one (471 pages), it contains 342 illustrations by the author, and is produced in the excellent style that characterises all Mr. Murray's publications. The book proper opens with descriptive chapters on the structure and physiology of bulbs, tubers, and other subterranean storage organs followed by other chapters on the cultivation, propagation, forcing, lifting, storage, &c., of "bulbous" garden plants. The term "bulb" is meant to include not only true bulbs, but tubers, corms, rhizomes, and similar underground structures. The bulk of the book (pages 55 to 458) is devoted to descriptions of all the bulbous plants commonly grown in gardens and arranged in alphabetical order for convenience of reference.

On page 32 is given a list of "bulbous" plants that may be grown in the open garden. It contains about 175 genera; most of these will flourish in any well drained soil if deeply dug or trenched and well manured. Indeed, as the author points out, some, like tuberous sunflowers, dornicums, hemerocallis, &c., will grow in any but the very worst sour and swampy soil, so vigorous is the action of their roots. Advantage may be taken of such coarse or free-growing plants to improve soil that is generally regarded as poor and infertile. They will find not only nourishment in it, but owing to the action of their rapidly spreading roots they bring about a much better condition of the impoverished soil after a season or two of growth. For true bulbous plants anything savouring of wet, heavy, clayey soil is unsuitable. On page 34 is given a list of 114 genera of "bulbous" plants that are usually grown under glass, and each of these also are fully described in the descriptive portion of the work. We can confidently say that this is the most complete work on bulbs from the point of view of the gardener that is at present available to the general reader.

*The "Bulb Book," by John Weathers. London: John Murray, price 15s.

HOLLYHOCKS.

The hollyhock is one of our most stately and picturesque border plants, but unfortunately it is very subject to a peculiar "rust" caused by a parasitic fungus. This disease is the cause of much harm, and seriously interferes with its more general cultivation. Hollyhocks require a rich, deep soil, well drained and cultivated to enable them to form those glorious tall spikes of flowers so familiar to all of us. The usual method of raising hollyhocks is by seeds. These are sown thinly in June or July in drills one foot apart. The seedlings are left until the following spring, when they may be transplanted to their permanent quarters in the border. In cold, wet districts the seeds are sown in pans or boxes, and the seedlings afterwards transferred to pots and wintered in a cold frame until planting-out time. Hollyhocks require attention during growth. The soil must be kept hoed and mulched with half-rotten manure and the plants watered if the season is very dry.

Alpine Plants.

I THINK there is ground to cover before a true definition is reached; the present one (see IRISH GARDENING, p. 129) seems absurd—for instance, *Polygala chamaebuxus* is excluded, while *Aethionema*,

which is much more woody, is included. Why? Then again, if *P. chamaebuxus* is excluded would *P. vayredii* be also shut out? *Anemone nemorosa* is certainly "herbaceous," but is *not* Alpine, as even here in Newry it carpets woods little more than 10 feet above sea level, and from my point of view cannot not be admitted amongst Alpines at all. Then why include *Primula rosea*, which, although it comes from lofty regions, is a true bog plant—almost an aquatic, in fact? Then, for instance, suppose a competing group includes a pan of *Daphne rupestris* as true an alpine as can be found on the earth, would the group be disqualified because the plant is woody? If so, and the group was mine, the judges would get as thorough a talking over as ever they had got or would get. I do not think that any thorough-paced alpinist would be at all likely to include *Alyssum saxatile* in any of its forms, though he might include other *Alyssum* which are much more alpine. If you let in *Primula rosea* why not the other herbaceous plants from lofty regions, those lately received from the Thibetian border, for instance, 13,000 feet up? Surely alpine enough. Hard and fast lines cannot be drawn; the collections are now wide enough to admit of endless selections, and to pretend that any twenty is better than any other twenty is absurd.

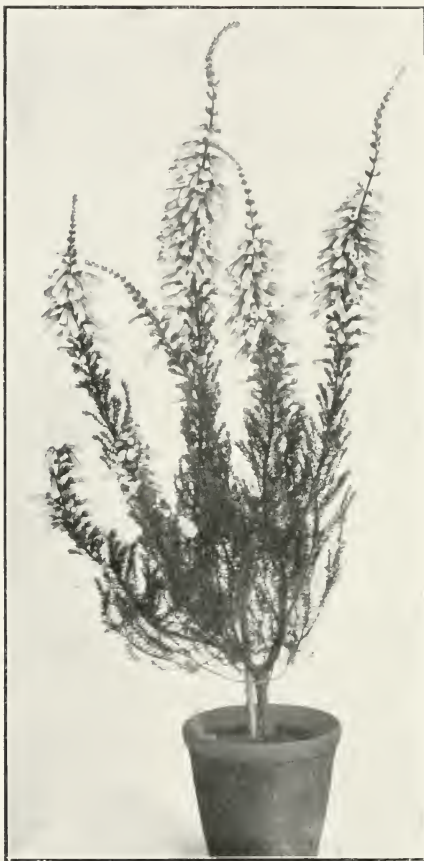
J. SMITH, Newry.

CAPE HEATHS.

THE genus *Erica* is especially well represented in South Africa, and species introduced from "the Cape" used to be very great favourites as greenhouse plants. The principal reason perhaps for their present decline

in popularity lies in the fact that they require special treatment and attention. The soil best suited for them consists of peat and sand, and the greatest care must be exercised in watering the plants. They are most sensitive to extremes of dryness and wetness. Heaths as pot plants make very graceful subjects.

They are evergreen, and when covered with hundreds of delicate pendant bell-shaped flowers they form a delightful ornament to the greenhouse or conservatory. Heaths are propagated by cuttings of the young tips of the shoots in summer inserted in a well-drained pot of sandy peat.



A GOOD SPECIMEN OF HEATH.

Notes.

TRANSPLANTING EVERGREENS.—The best time of the year for transplanting evergreen shrubs is, as a rule, towards the end of September. The soil is still warm and the roots active, so that the shifted plant will be able to adjust itself before the hard weather comes on. The soil should be prepared by deep trenching, if the best results are looked for, and fresh soil added if deemed necessary. After transplanting, the soil should be watered, and, if thought advisable, the foliage syringed.

If the roots are unable to supply the foliage with a sufficiency of water to counteract transpiration, one of two things will happen—either the plant will have sufficient strength to save itself by prematurely cutting off its older leaves, or it will fail to cut them off. If the latter happens, the result will be that the leaves will wither on the twigs, and this is a sure sign of the approaching death of the shrub.

A GOOD ROOM PLANT.—The *Aspidistra* (*A. lurida*) or Parlour Palm as it is called, is one of the most valuable of living-room plants we have in cultivation. It will stand all sorts of ill-usage, such as draughts and neglect in watering. Treated fairly it will always look bright and refreshing to the eye.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Brenanstown, Cabinteely, Co. Dublin.



DURING October we are forceably reminded of the coming winter; the leaves are falling all around, and claim a lot of time and labour in collecting them, and trying to keep our gardens and pleasure grounds tidy. The garden begins to look desolate, the beds and borders which a few weeks ago were full of colour are now wearing a very lonely look. Flowers are few and far between. Dahlias, asters and chrysanthemums are our principal flowering plants just now, and with the first slight frost off goes the dahlias. Therefore we are more than ever called upon to keep our gardens and grounds tidy, so that they may be at all presentable.

The propagating for next year should now be finished, but taking into consideration the drought we have experienced this year I think it has been very difficult to get cuttings, especially of such plants as calceolarias and verbenas. They have been flowering so freely that there is no growth suitable for cuttings; but we may, with every chance of success, put in cuttings of such plants during October, if we can get them, and if rain comes during the first week of the month young soft growths will make better plants than the hard shrivelled pieces we had during August and September. Late put in cuttings with much foliage on will require more attention to guard them against damp.

The inexperienced gardener and amateur may sometimes inquire what plants propagate best at this season. A short list might be useful—Ageratums, antirrhinums, bonabardias, centaureas, cerastiums, cineraria maritima, fuchsia, geraniums, gazanias, helioplasts, lobelias, pansies, penstemon, phloxs, salvias, tropæolums, vincas, roses, &c., and almost every hardy shrub. We now turn our attention to preparing for the spring by planting where they are to flower wallflowers, primroses, aubritias, silenes, myosotis, and the host of bulbs at our command, and the earlier those are got into their allotted space the better they will flower next spring. Narcissus, snowdrops, scillas, &c., should be planted in the grass. They look best if run along the edges of shrubberies or large trees, placing them, if possible, where they may get some shelter from the worst winds. Violets should be got into frames for winter blooming. It is advisable to pick the strongest and best plants, and either pot them or plant them in frames which have been prepared for them by placing about one foot of good hot manure in the bottom and some nice loam and leafmould on the top to the depth of eight inches; the hot manure starts them to grow

immediately and they become established before hard frosts. Schizostyles, which had been singled out and planted last March, if carefully lifted and planted now in frames or pots will yield a lot of flower for cutting during the winter months.

Place pieces of glass over any alpiners which are liable to suffer from damp (especially the androsaces), and pot up pieces of varieties which may be at all tender.

The Fruit Garden.

By G. DOOLAN.

ROOT-PRUNING.—This work, where necessary, should be carried out during the present month while the temperature of the soil is favourable. Thus, the trees operated on will, to a certain extent, recover before the winter really sets in. Some varieties of apples, pears, and plums have a tendency to make too much growth at the expense of fruit, and this is very noticeable if the trees are growing in rich ground. There is no doubt that root-pruning alters the character of the tree, checks exuberant growth, and brings it into a state of fruitfulness. In the case of young trees planted within the last seven or eight years the best plan is to lift and re-plant the trees immediately. Very little use should be made of the knife except to cut back any downward roots. In lifting the trees a fork only should be used, and great care must be taken to preserve the surface roots. Re-plant at the same depth that the tree previously occupied in the ground, and make the soil very firm about the roots. A strong stake driven firmly in the ground should be provided for each tree. This is important, as large trees are subject to be blown about and injured by strong wind. In the spring a mulch of manure should be placed on the surface over the roots, thus providing a cool and moist medium during dry weather. The season following little growth will be made, but a large number of buds will develop into a fruiting condition instead, and these will flower and set fruit in the succeeding season.

TREATMENT OF OLDER TREES.—In the case of large trees that require to be root-pruned, a trench should be made at a distance of six or more feet from the stem, the distance being in proportion to the spread of the branches. The surface roots in this case should also be preserved and a fork used in loosening the soil. A trench two and a half feet deep will be sufficient, the soil should then be undermined and any downward roots cut. To prevent too severe a check on the tree, half the roots only should be treated at one time; the other half may be done in the following autumn. In replacing the soil and surface roots, some fresh loam and lime rubble should be added. This will tend to encourage the growth of new roots.

Many old trees are not worth the trouble of root-pruning. Re-grafting will be found more satisfactory in such cases, but in the case of young, vigorous trees root-pruning undoubtedly hastens fertility.

HOW TO STORE FRUIT.—This question will occupy the attention of many fruit-growers just now. It is not always possible, nor is it advisable, to market the fruit at a certain time. A glut in the market causes a fall in prices, therefore it is advisable, where a large amount of fruit is grown, to have a suitable place for storing

the crop. The fruit-room should be of a cool, uniform temperature. An earthen floor is very good in this respect. Shelves should be placed around the walls, and if these are detached and placed in tiers, allowing a foot between each, it will be an advantage, as they can be withdrawn and replaced as required. No light is necessary in the fruit-room, but after the fruit has been stored a little while a slight current of air may be admitted. A very dry atmosphere, however, must be guarded against. The finest fruit should be placed in single layers on the shelves, while very hard fruit may be placed in several layers. Injured or blemished fruit should be used or sold at any price. The fruit-room should be examined periodically and all decaying fruit be removed. This will tend to keep the room sweet and clean.

The Vegetable Garden.

By J. G. TONER.

EVEN where that portion, be it large or small, set apart for the culture of vegetables is distinct from the flower and fruit quarters, it can be made a place of beauty as well as utility. The word beauty is defined as meaning "a pleasing assemblage of qualities in a person or object," and it may be proper to add, a place. It may be taken then that this "pleasing assemblage of qualities" in a vegetable garden would give it a claim to be called a beautiful place, and that is what it should ever be. Perhaps the more important of these qualities would be cleanliness and order, yes, even before good crops, from the æsthetic point of view. For however high the merits of the different vegetables, their number and variety, all is lost in the eye of the beauty lover if not accompanied by an extreme degree of tidiness. Gardeners, amateur and professional, should bear in mind that their gardens, mixed or otherwise, give as true an indication of their characters as the state of their clothes, the quality of their conversation or their standard of general conduct. Not indeed but most gardeners are neat and tidy, to be sure they are, at the same time these few lines will possibly be read with beneficial results by some few who are not so, and then the heart of the editor will rejoice.

This is a season when attention to small details must ungrudgingly be given if the vegetable ground is to give a handsome appearance. It is now that old cauliflower and cabbage stumps bedecked with half-yellow leaves that perhaps had served as a meal for hungry caterpillars earlier in the year are left languishing, not alone like "The last rose of summer," but in hundreds. These, for instance, should be got rid of and placed in such quarters as would insure their returning to dust in the shortest possible time. And again we see old pea haulm still holding on to the rods, and covered by mildew, giving a neglected and deserted appearance to a garden otherwise admirably managed. Or a batch of lettuce may be seen hastening heavenward to fulfil its natural mission of bearing blossoms and seeds that would have served a more useful purpose if thrown to the pigs a month ago, or fed to pullets that they might lay early eggs and big ones.

Did you ever notice too, dear brethren, how the sow-thistles, the dandelions and the ubiquitous groundsel

near their woolly heads a full eighteen inches high in the more remote portions of the garden before you have even suspected their existence,

Through the rows of broccoli, brussels sprouts, savoy and other strong-growing subjects there are to be found also various specimens of weeds of sufficiently strong constitution as to defy the efforts of the rightful occupiers of the ground to smother them. Attention to these matters goes a long way to make even a vegetable garden not only a place of great utility, but also a place of beauty.

CABBAGES.—While the beautifying process is being carried on by manual labour the thinking portion of the gardener may be profitably employed in arranging other more matter-of-fact tasks. September is the recognised period for getting spring cabbages into their final positions. But as even in small gardens ground is becoming fast vacant, another batch of the strongest plants may be got out in addition. Rarely are there complaints of an over supply of this democratic vegetable in spring time. Should it be so, it is very easily turned into money, more so perhaps than any other garden crop. The human heart or perhaps some other portion of the human anatomy seems to hunger after cabbage green or white early in the year, so let there be as much happiness as possible. Besides it is wise to leave a wide margin for accidents.

LIFTING ROOTS.—In general it will be best to leave parsnips alone, for they continue to increase in size until very late in the year, and are also of much better quality and flavour when dug as required. Carrots however are best lifted and stored. They should be dug out not pulled. Good ones, as a matter of fact, cannot be pulled, that is, when they have fully matured. If a large quantity has to be dealt with there is no better plan than pitting them. Moderate lots might be stored in sand either under cover or in the open, in the latter case in a sheltered warm place and protection provided against rain.

Not only in the culture but in the after treatment many errors are made in dealing with beetroot. In the first place considerable care and patience must be exercised in removing the roots from the soil, for if they are cut or broken they will, on being cooked, bear more resemblance to mangels, which few consider a dainty dish except for the cows. Instead of attempting to dig the roots directly the soil might be dug out to a sufficient depth between the rows to allow for getting quite under them, by this method scarcely a root will be touched, and it takes only a small extra portion of time. In the removal of the leaves two or three inches must be left, and it matters little whether they be cut or wrung off. There is always some danger in practising the latter that some may be pulled from the crown, in which case the roots will be deficient in colour and sap when cooked.

PREPARING GROUND.—Although early in the season opportunity might be taken of preparing ground for onions, parsnips, and carrots for next season. Special treatment is necessary to produce the best of these and the longer beforehand the work is done the better will be the results. Spaces intended for peas might also be got ready, for other months will also bring their own share of work.

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NOTICE—

TO THE READERS OF
"IRISH GARDENING"

The January number commenced the Sixth Volume of "Irish Gardening." A Title-page and Index for Volume Five has been issued, and will be sent free to any Subscriber applying for same.

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2 to 5	<i>Out of Print.</i>	55	The Apple.
6	Charlock (or Preshaugh) Spraying	56	Cultivation of the Root Crop.
7	Fluke in Sheep.	57	Marketing of Fruits.
8	Timothy Meadows.	58	Sprouting Seed Potatoes.
9	The Turnip Fly.	59	The Testing of Farm Seeds.
10	Wireworms.	60	The Packing of Butter.
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21	Diseases of Poultry—Gapes.	71	Forestry: The Management of Plantations.
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IRISH GARDENING

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No. 69


A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

NOVEMBER
1911

The Fruit Growing Industry.*

By PROFESSOR J. R. CAMPBELL, B.Sc.

OBJECT OF CONFERENCE.



HE object of this conference is to afford to all engaged directly or indirectly in the fruit growing industry—experts, growers, salesmen, nurserymen, and manufacturers—an opportunity of stating their views on its present position and prospects, on the methods adopted by the Department for its encouragement, on the progress that has been made, and on such action as in the light of experience may now be considered desirable.

NEED FOR CONFERENCE.

In the beginning the Department's horticultural operations were necessarily conducted on a small scale. It was then possible for their officers to consider and to attempt to deal with the wants of individuals. Now, however, the number of persons engaged in fruit growing is so great and the branches of the work so numerous that this is no longer possible. At best the wants or groups only or of growers' associations can be considered, and hence periodic conferences—district conferences as well as all-Ireland conferences—have become almost a necessity. Meetings of this kind not only assist the Department in gauging the wants of fruit growers and in determining how these can best be supplied, they also provide an

opportunity for fruit growers from various parts of Ireland meeting and comparing notes with one another. Advantage has therefore been taken of the presence in Dublin of exhibitors and others at the great annual fruit show of the Royal Horticultural Society for Ireland to call this meeting. The Department wish to acknowledge the ready help which they have received from the society as well the kindness of the Royal Dublin Society in placing this hall at our disposal.

PROCEDURE.

It has not been considered necessary to submit a formal agenda. This is not due to any lack of subjects. On the contrary, so numerous are the questions for profitable discussion that it would be wholly impossible with the limited time at our disposal to do them justice. Matters of detail or of local importance must be left to district conferences and to local horticultural associations. We can only deal to-day with those affecting the industry as a whole.

Every phase of horticultural activity is so intimately associated with the Department's schemes that I cannot do better than take them as the basis for this opening statement. Your attention will thereby be directed to some educational and other agencies by means of which the Department have sought to encourage fruit growing. These schemes apply to the whole country and they effect all interests. If from this necessarily brief summary there is omitted anything which you deem of sufficient and general importance you need not hesitate to bring it forward.

* Paper read by Prof. Campbell at the Fruit Conference in connection with the Autumn Fruit Show held in Dublin, 18th and 19th October, 1911.

HORTICULTURAL EDUCATION.

In no branch of agricultural development is a well-trained staff of instructors more essential than in that of horticulture. While all those reared on a farm know something about tillage and live stock, they may know next to nothing about fruit culture. Fruit growing is, moreover, a highly technical subject, and years of patient, intelligent work must pass before a full crop can be harvested and before the grower has learnt his business. Realising this and the need for a well-trained staff, the Department in 1902 established at the Albert Agricultural College, Glasnevin, a school of horticulture where young men who already had a fair practical training in gardening could receive systematic instruction in practical and technical horticulture extending over one or two years. Students work in the orchards and gardens, and receive an equivalent of about twenty shillings per week. The course at this college does not aim at the highest scientific training, for which, however, the Department have made provision at the Royal College of Science. Scholarships in horticulture, tenable there for three or four years, and of the annual value of at least £60, are offered.

At the Albert College forty-five men have been trained, and are now engaged in fruit growing under the Department or under county committees of agriculture. At the Royal College of Science, however, only two students have obtained scholarships. Considering the facilities and provided the prospects of employment for competent men the response must be regarded as distinctly disappointing. Either there is a lack of well-educated young gardeners or the provisions of the scholarship scheme are not well known.

HORTICULTURAL INSTRUCTION UNDER COUNTY COMMITTEES.

As is well known each county council sets aside annually out of its rates a sum of money for agricultural development, including horticulture. To this the Department adds a grant varying with the size and the needs of the county. This fund enables each county committee to employ at least one horticultural instructor, whose duties include the advising of farmers and cottagers in the growing of fruit for sale or for home consumption. Information is diffused by means of lectures, by demonstra-

tion plots and by personal instruction in the people's gardens. The selection, purchase and planting of fruit trees receive special attention. Small orders for trees and bushes are collected, tenders are invited and the goods delivered in bulk at convenient centres for distribution. Thus, the trees are got at the lowest price, and the cost of carriage is reduced to a minimum. The trees are inspected by an officer of the Department while they are still growing in the nursery, and are seen again by the instructor after delivery.

Of demonstration plots containing fruit trees there are from eight to fifty in each county, and they are by no means the least important of the Department's educational agencies.

The best evidence of the value of these schemes is that every county authority under the Department has put them in operation, that local interest in them grows annually, and that whenever money can be spared their scope is extended but never curtailed.

COMMERCIAL FRUIT GROWING.

The work of county committees is mainly confined to encouraging fruit growing for local or home consumption. To this, however, there are notable exceptions, particularly in Ulster, where fruit growing is no longer confined to gardens, but is practised in the open fields and regarded as one of the ordinary farm crops. There, it will be readily understood, the county committees and their horticultural advisers have a very different task.

It is worthy of note, as confirming general experience, that no part of the country was more backward in seeking advice than those districts where fruit growing was already an established industry. The ability of an instructor to render any help was doubted by those engaged in fruit cultivation on a large scale. This feeling is now disappearing. The Armagh committee, who had at first no requests for the services of an instructor, now find that two are scarcely sufficient to meet the demands.

Of the achievements of northern farmers in the production of fruit, particularly apples, we cannot speak too highly. From small beginnings at unlikely centres, fruit growing has developed in some cases to a remarkable extent. Open fields have been planted with apples, and, notwithstanding the unpromising appearance of the soil and climatic difficulties,

excellent, and in many cases very profitable, crops are being grown. So great an interest is being taken there that last year, by the end of November, it was practically impossible at local nurseries to purchase fruit trees of the quality and varieties required, so great and so early had been the demand. Indeed, of a total increase of 1,051 acres in the area under fruit in Ireland last year no less than 300 acres were planted in County Armagh.

What has been done by the northern farmers ought to be equalled, if not surpassed, by some districts in the south, where soil and climate are more favourable. In the Suir and Black-water valleys there is, indeed, evidence that apple culture once flourished. It was with the hope of reviving lingering traditions there and elsewhere in the south and west that the Department set themselves in 1904 to make experiments on a commercial scale. Centres were selected in Wexford, Waterford, Kilkenny, Cork, Clare, Galway and Kildare, and later in Londonderry and Antrim. At each of these centres twenty men bound themselves to plant an acre each, while in consideration of the experimental nature of the work, involving as it did tests of kinds and varieties of fruit the value of which was doubtful, the Department agreed to give the plants free on condition that the plot-holders carried out their instructions and supplied them with details of the results. An instructor was assigned for a period of five years to each group of twenty growers to instruct them in planting, culture, packing and marketing. In all 175 acre plots were thus planted. Though in no case are the plots yet fully developed, sufficient has been already learned to enable the Department to state with some degree of confidence that most fruits can be grown to perfection in the south. Existing labour and market conditions, however, are against the cultivation of soft fruits. On the other hand, they do not tell to the same extent against the apple, which, as exhibits at this show demonstrate, can be grown to perfection. For those reasons, therefore, it would seem advisable to direct more attention in future to this branch of fruit growing. Indeed, many of the plot-holders, though they have had a new business to learn, have already been successful in competition with experienced gardeners who are showing the produce of long-established orchards.

In addition to the experimental plots just described, which are in the hands of small working farmers, a somewhat similar scheme, in which Sir Horace Plunkett took a very special interest, was also started. In this case the plot-holders were men mostly in good circumstances, some being large land owners. In this experiment some of the plots were larger and the Department paid only half the cost of the trees. In all about forty acres were planted, but as they were started two years subsequent to the farmers' plots the trees are not old enough to enable any definite opinion to be formulated. I inspected a few of those orchards last summer, and saw in some of them most excellent fruit such as gives promise, when the trees are mature, of as profitable crops as any grown in the country.

OTHER EDUCATIONAL AGENCIES.

A form of instruction which has proved of great value is the visits of organised parties of farmers to districts where fruit growing is well established. There is something always to be learned both from successes and failures. This form of education, which the Department has encouraged, might be developed with advantage, but it can only be done successfully through associations of fruit growers.

The fruit show is another education agency which the Department has fostered. On more than one occasion they themselves have organised fruit shows, but this is work which ought to be done by horticultural societies rather than by a State Department. The value of shows is everywhere recognised. In addition to the financial assistance given to this show the Department have aided county committees of agriculture in giving prizes for fruit at numerous local shows, and judging by the interest these have created there can be no doubt of their educational value.

The encouraging feature of all these shows is the increasing number of exhibits now being sent by farmers. It is interesting to note that out of 150 classes for apples at this show 49 prizes have been won by exhibits from the Department's experimental plots in the hands of farmers, and at Clonmel show the other day 80 prizes out of 120 were awarded to exhibits from these plots.

The Ulster Horticultural Society undertake a special form of competition—viz., the awarding

of prizes for orchards as a whole. The cost of inspection is, however, great; so heavy indeed that it has had to be undertaken by the Department itself. Another activity of our northern friends, and one worthy of the attention of this society, is the competition in commercial packing. The fruit is packed at the orchard, despatched on a journey, and subsequently collected and judged. The Department defray the expenses and provide the prize money.

I have now referred briefly to some of the chief of the educational methods employed by the Department to encourage the growing of fruit. Time does not admit of going into further detail, but enough has been said, I hope, to direct your attention to them and to evoke criticism and suggestions. I need hardly say that any such will be welcomed by the Department and will receive full consideration.

MARKETING.

Let me now turn for a moment to the question of marketing. This is a more difficult problem, and the way is not so clear. There are those who see in railway rates a complete bar to all future progress, and I have no doubt we shall be told that the Department need not further encourage fruit growing unless they can effect a radical change in the cost of carriage. But railway rates are not of the Department's making. We must except them for the present, at all events, and see what else can be done to facilitate marketing. I do not think we can do better than enquire into the system adopted in Ulster, where, despite difficulties, including railway rates, fruit growing is on the increase and the marketing question is being successfully tackled.

Where several classes of fruit are grown, and where no single individual produces a large quantity of any one kind, local markets must be relied upon or farmers must combine for the purpose of sale. There is no other alternative. On this point lessons to be derived from the experimental centres and from the experience of northern fruit growers are, in my opinion, definite. It was found impossible to market economically the small and varied lots of produce from separate acre plots, while substantial profits are made in the north where growers concentrate on a few kinds of fruit, of each of which they consequently have a sufficient bulk

to market at an advantage. Even here growers have found it beneficial to form themselves into a society—the Ulster Fruit Growers' Association—for the purpose of protecting their common interests. They have adopted grading, they appointed agents in large centres, they market their produce with a special label, and they use the Department's standard packages. If growers in other districts will apply the same methods, there is no reason why the same success should not attend their efforts in finding markets and in minimising the difficulties and cost of transit. At any rate, until they do something on these lines only partial good can result from any work of the Department on their behalf.

THE BEST PAYING FRUIT CROP.

As to the class of fruit growing which is likely to be most successful in Ireland we also have the lessons to be derived from the experimental plots and from the experience of the northern growers. From those it appears to me that it is to the cultivation of the apple, and particularly early and late varieties of cooking apples, that attention should be chiefly directed. It is not asserted that other varieties of fruit will not sometimes pay, but that success is more likely to be achieved along these lines. For eating apples there is less scope, and it is only where the land is very good and suitable that they can be profitably cultivated.

It is not sufficient to restrict attention to the apple. We must concentrate upon certain varieties, avoiding those which have to be sold in mid-season when markets are usually overstocked. A few of the best first earlies, such as Early Victoria and Grenadier, and a few of the late varieties, particularly good keeping ones, such as Bramley's Seedling and Lane's Prince Albert, are what experience directs us to aim at. Several English buyers have testified that for cooking there is no apple grown that equals in quality the Irish Bramley. It is very important that the most should be made of those kinds which keep well, as the best prices are got when apples can be held over until markets are depleted.

PACKAGES FOR APPLES.

Packing and the packages for apples are considerations of the very first importance,

The Department have given a great deal of thought to this subject, some results of which are embodied in leaflet No. 57. They recommend the standard barrel and standard box for general use. These have now been adopted by the Ulster Fruit Growers' Association, which comprises most of the successful growers in the north. The standard barrels were only introduced last year, when about 8,000 of them were shipped. This year one exporter has ordered 3,000 such barrels. They have met with marked approval in Great Britain, and have greatly helped to popularise Irish cooking apples.

In addition to a suitable package we need a proper system of grading. This also has been adopted by the Ulster Fruit Growers' Association. In the Department's leaflet full particulars are given of the sizes recommended for the different varieties and the grades into which each should be divided.

The Department are prepared to assist exporters by sending an officer acquainted with the markets in Great Britain to push Irish fruit. But it will be hopeless to attempt to maintain a footing unless the standard packages and grading agreed upon are adhered to.

NEED FOR ASSOCIATIONS.

It is in work of this kind that associations can do so much good. The Ulster Association was only started last year, but its work has already been productive of great good. If such societies are to succeed they must insist upon all their members adhering faithfully to their rules, especially those applying to packing and grading. Any member who fails to conform or whose consignments cannot be relied upon should be severely dealt with by his fellow-members. It is only by such discipline that a hold can be kept of the principal markets. The industry in fact is becoming too extensive to be dealt with except by associations of farmers prepared to safeguard the general interest, even if that entails punishment of the individual. Growers should realise that each year it becomes more and more difficult for the Department to consider any question for improving fruit growing except through such associations.

I have now indicated a few, though some of the most important, considerations that claim the attention of this Conference. There are

many others which, doubtless, will be raised in the course of the discussion. There is, for example, the working of the Destructive Insects and Pests Acts, under which the Department have been compelled to issue an order prohibiting the importation of gooseberry and black currant bushes owing to the prevalence of American gooseberry mildew and black currant mite. These are not so serious in this country as in Great Britain, but undoubtedly they have worked great havoc and caused great loss and inconvenience to growers. Nurserymen, too, have unfortunately been subjected to great annoyance and loss. The Department had hoped to see a great increase in the quantity of gooseberry bushes raised from cuttings in this country to avoid the danger from imported bushes. It is to be regretted that the nurserymen have not been successful in doing this, and the Department are now faced with the question of what steps should be taken to meet the demands of fruit growers. It is impossible to admit the plant without some safeguards. In this country the Department annually inspect all large nurseries, and we know exactly where sound stuff is to be got; but when we come to consider the question of disease in nurseries in Great Britain the difficulties become so great that it is not so easy to know how to proceed. The matter, however, is one which must be re-considered in the near future.

Another point in connection with fruit growing which ought not to be overlooked is the disposal of second class produce, of which there is always bound to be a considerable quantity. Jam making is a well-established industry, and we must acknowledge our indebtedness to the manufacturers, without whom we should find it hard to secure an outlet at all for the second class article.

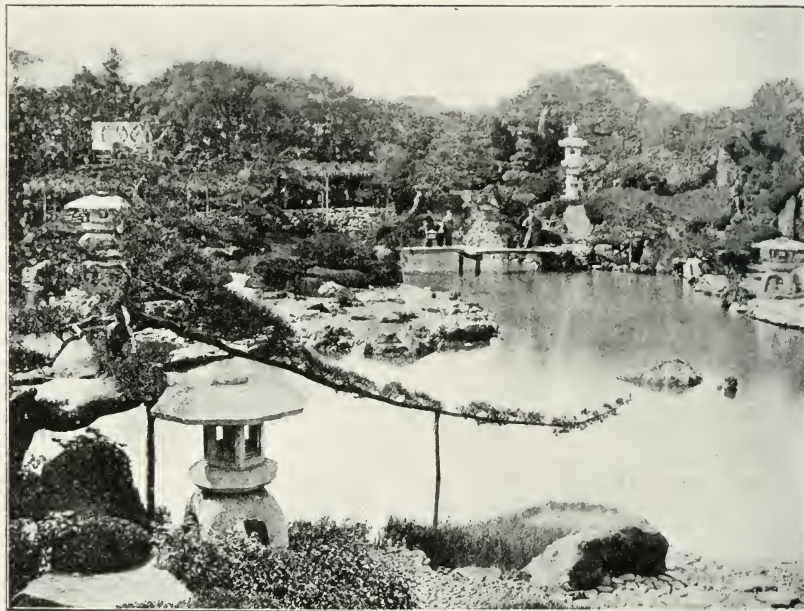
A great deal was done by the Department a few years ago to encourage cider making and fruit bottling. Irish cider at one time had a good reputation, but unfortunately that has declined. One of the difficulties in reviving the industry is to ensure a sufficient quantity of suitable apples. A few makers now manufacture an excellent cider, some of which has recently gained prizes in England. There is also a considerable quantity of cider made in a small way in and about Tipperary. Makers there have been helped by instruction and by the loan of modern cider presses. Their busi-

ness has extended, but is by no means certain that they would not be more successful if they were to combine together for the joint production of a special brand of their own, rather than attempt to sell various qualities.

At the Cork Exhibition in 1902, the Department gave demonstrations in fruit bottling, an industry not then practised in this country. Subsequently two factories were started and

condition can be successfully bottled for home consumption. Some of the counties have provided themselves with an equipment suited to demonstrations of the kind—work which may be commended to those counties which have not so far taken up the subject.

Let me conclude by thanking, on behalf of the Department, all those who have sent exhibits to this show. By growing and sending



GARDENS OF JAPAN.

transferred to private individuals, who are still carrying them on. In developing this class of work, the Department sadly miss the late Mr. James Harper, whose genius for initiating industries of this nature was so universally recognised.

Finally, references must be made to the efforts of county instructors in encouraging small farmers and cottagers to bottle and preserve their small fruit. Enough has been done already in this direction to show that a great deal of the fruit grown in small gardens for which a market cannot be found in its fresh

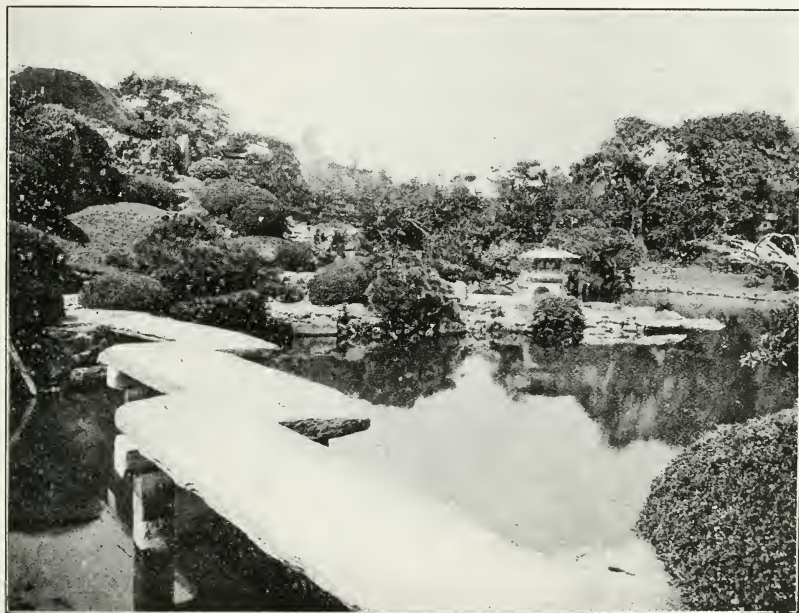
such splendid fruit they have earned the gratitude of all who have at heart the welfare and reputation of this country, and particularly those of us who are striving for the development of fruit growing. No one, I am sure, would be more gratified at the results than Sir Frederick Moore, who has, we all know, done more than any one man to assist in developing the industry. His absence, which is regretted by all to-day, is due to the very reason that brings us here, for he is now returning from a visit to Canada, where he has been collecting information for the Department

regarding the work of our competitors in that country—information which I am sure will be of the greatest value to us.

To the corps of horticultural instructors at work throughout the country the result must be particularly gratifying, and indeed I feel sure that this show will act as a stimulus to help them in surmounting the many difficulties they have to overcome.

of a different design from those of other peoples.

In Japan perhaps this is brought to notice more strongly than elsewhere, owing to the novel forms of ornamentation which they use in giving expression to art in landscape. They have nothing in common with any other style of garden architecture. The forms of gardens seen throughout Europe are but a conglomerate



GARDENS OF JAPAN.

National Gardens.

By W. H. PAINE, F.R.H.S.

I.—JAPAN.

JUST as nations are distinctive in their tongue, using words in different adjustment to give expression to certain ideals, so we find the several nations giving expression to art in various manners. The placing of objects of decoration or the general outline of structure give each an original cast or local colour. And largely from this cause we find our gardens

tion of various national ideas, massed together for quick effect by commercial gardeners, who in the vastness of their work have little time to study art in landscape plans. Ugly terraces, vases, useless steps, very large water tanks dumped down for ducks and fish to swim in, but certainly not as statue of beauty. But in Japan if steps are used it is for landscape effect. They are so placed as to wind out of sight, leading at the same time a tempting way to some glorious point of view, and that point is never missed by the Japanese. For instance, we take steps leading us through

Tiger Lilies; first they are but occasional stepping stones, level with the ground, very slowly rising to a given point, when at last the sightseer is at the top of a miniature landscape mountain, standing beneath one of those quaint Japanese gateways. Looking suddenly upon a vast sea of glowing colour, maybe a land of Iris, so arranged as to give an appearance of a never-ending scape of Iris, colour succeeding colour in such a way that the skyline seems to join hands with the flowers, or maybe instead of this a still stream rolls by overhung with glorious Wisteria reflecting in the water, making believe that the long tails of flowers were actually kissing the water, or again, if at midnight, this might assume an entirely different caste. Just over yonder mountain shines the harvest moon, casting its rays up the silent stream, giving off many glittering gleams of gold, one of those effects so beloved by the Japanese; then, again, if the still waters of lakes are used, they are not extensively covered with aquatics. A lantern, long slabs of stone forming bridges, to give the reflection of persons passing over, and a few Iris may nest against a large rock, or the Lotus may throw its stately flowers up beside a bridge, but the chief use of water is for reflection, and in this the Japanese are pastmasters. A small house with a large roof, a life to the landscape; quaint knarled trees give ghostly visions, and Wisteria, Peach and Azalea give bright reflecting shades across the water, showing the work of a master-hand. The sides of their lakes are in natural style; massive stones, drooping Azalias, weird Pines, and pebbled shores form the water-sides.

The artist in designing a garden, is most careful to select a site in true proportion with his scheme—proportion being the leading rule of the Japanese landscape. Large stones are never used in small gardens and likewise small ones in large gardens. Balance of water and land are most jealously guarded. Colour effect is a secondary consideration; in fact, they make it possible to have beauty in the garden without floral aid, and for that reason the western ideas never quite fit in with the eastern ideals. It may be a bold statement to make, but I fear that there is not a truly Japanese garden within the British Isles, and it is safe to say there never will be, because the local surroundings

are so unmistakably alien to the idea, and however true our conception of Japanese gardens may be some fateful touch of westernism creeps in and casts its damaging influence over the entire scape. For instance, a large tree may overhang our highest mountain, and its imposing influence is at once destroyed; the tree should be planted on the mountain in proportionate scale, knarled and wind-beaten and subservient to the landscape undulation. We often plant trees in our garden valleys which take away the meaning of our hills and dales, but the Japanese would dress and clip his vegetation in accordance to the position which any particular plant holds.

And for the reason of endless laws which govern the garden artist in the East, we in our haste cannot, even if we would, produce a thing of beauty from the Japanese standpoint. The romantic and poetical peace which dwells within the gardens amid reflecting waters and the flowing ripple of streams is not understood by any other people. Even the stones have their meanings and possess some national name, gods are represented, legions portrayed, religious inspiration moulded into a garden, or poems written in stone and foliage; and these things are only understood by the Japanese themselves, which shows how very impossible it is to even attempt their reproduction in Eastern style.

(To be continued.)

Shrubs for Pergolas, Arches and Screens

By J. W. BESANT.

ONE of the most effective ways of using trailing and rambling shrubs is to train them over supports placed in positions where some amount of shade in summer will be found grateful and refreshing—that is to say, in sunny places. Such positions are admirably adapted to the cultivation of many shrubs, and if the necessary supports are suitably arranged an effective screen from the hot sun is readily formed, and the shrubs too can be viewed with greater facility.

A favourite erection in gardens of some size is a pergola. This should be placed in a sunny position, leading, perhaps, from the residence to

some important part of the garden or grounds. The path may be of gravel or grass, and in some instances stone flags are suitable. The structure itself is best formed of wood, the uprights at suitable distances, according to the length of the walk, the top rails and cross pieces securely joined, and the whole made rigid. In the furnishing of pergolas many of the shrubs for walls mentioned in previous issues may be used; in addition, the very important class of rambling roses furnishes excellent material, and magnificent displays are obtained annually from this class alone.

There are now so many varieties of ramblers that it would be easy to furnish a very long pergola with these alone. Most people, however, will prefer a fair number of other shrubs as well to lend additional interest and beauty at seasons when the roses are not in full glory. Fortunately there is plenty of material available. For the assistance of readers whose knowledge of rambling roses is limited, I append a short list of some of the more popular sorts at present in vogue:—Dorothy Perkins, a free-growing variety with clusters of pink flowers;

Lady Gay, somewhat similar, but with larger trusses of cherry-pink flowers; Hiawatha, with clusters of single crimson blooms—all three being evergreen to a considerable degree. Other good sorts are Blush Rambler, with pink flowers; Carmine Pillar, with large rosy carmine flowers; Euphrosine, with carmine red clusters; the Dawson rose, with pale rose blossoms; Leuchstern, flowers pink, with white centres; Psyche, with rosy pink flowers suffused with salmon; Tea Rambler, a very lovely strong grower, producing large clusters of salmon-pink flowers. It is not unusual to find two roses planted at one pillar or upright,

one a strong growing rambler to furnish the top, the other belonging to a type known as pillar roses, examples of which are Ards Pillar, a crimson variety; Una, a single pale yellow; Mons Desir, a deep crimson. Needless to say, there are scores of other varieties, and probably no two persons would select the same kinds. Other excellent shrubs for pergolas and arches are some of the rambling kinds of clematises. *C. Montana* wreathes itself in pure white blossoms every spring, and finds a worthy companion

in the pink variety, *C. Montana reubens*. Through summer there are numerous kinds which make a fine display under suitable conditions, while in late summer and autumn *C. Jackmanni* bears a profusion of purple blossoms, and in October *C. flammula*, an excellent species for a screen, is covered with myriads of small white flowers.

The Wistarias, too, are charming in warm situations, and make beautiful effects when well furnished with racemes of pale blue, pink, or white flowers. Some of the climbing honeysuckles are excellent for pergolas and arches. A fair selection would include *Lonicera Periclymenum*, the com-



CLEMATIS MONTANA.

From a photograph of a plant in Messrs. Watson's Nurseries.

mon woodbine; *L. japonica*, and the variety *Halliani*, *L. brachypoda*, a fine yellow-flowered form, really a variety of *L. japonica* and *L. sempervirens*, the Trumpet Honeysuckle.

Of vines there is a large selection, including *Vitis flexuosa* and variety *Wilsoni*, *V. armata*, *V. Cogneticæ*, *V. heterophylla*, *V. Thomsoni*, *V. quinquefolia*, &c.

Several of the jasmines may be effectively used, notably *J. officinale*, the old-fashioned white-flowered jasmine, and *J. humile*, the yellow-flowered form.

Other useful subjects are the *Actinidias* turning shrubs, with handsome foliage and flowers.

Aristolochia siphon, with enormous leaves and curious flowers, an excellent shrub to cover an arbour; *Celastrus articulatus*, which produces ornamental fruits in autumn; *Menispermum canadense*, a rampant grower, flourishing in damp soil; *Solanum dulcamara variegata*, with prettily-marked leaves and clusters of red fruits in autumn. It is obviously impossible to set any limit to the selection of shrubs suitable for pergolas, &c., so much depends on the locality. In warm districts plants like *Solanum jasminoides* and *S. crispum* would flourish, but would not be suitable in colder places. *Polygonum baldschuanicum* flowers freely when established, and can be used for any of the purposes under notice.

Signs of Autumn

LAST month we drew attention to the process resulting in the natural fall of leaves in deciduous trees. Referring to this subject one of our readers asks why it is that in some years the autumnal tints are more varied and beautiful than in other years, and if in the case of fruit trees the earliness or lateness of the "fall" has any influence upon the fruit crop of the following year?

Let us attempt an answer to these two questions. The chief duty of a leaf is to provide food for the entire tree. This food (mainly starch) is manufactured in the green leaf from water drawn up from the soil and carbonic acid gas taken in directly from the air. The amount of starch made during any particular period will depend on the abundance of moisture in the soil and the intensity of sunlight. Unless the leaves are kept plump and gorged with water the machinery cannot work, while without sunlight of sufficient intensity the machinery fails to run efficiently because of lack of power.

In a normal season the vitality of the leaf, the temperature of the air, the water supply and sunlight gradually wanes so that the work of the leaf is slowly reduced as the year advances towards autumn. The natural process of cutting off the leaf by the formation of a layer of cork contributes further to a gradual checking of the water supply. The conditions thus slowly established induce certain chemical actions to take place within the living cells of the leaf that produce the colour changes so

familiar in the autumnal tints of foliage. From this it will be readily understood how weather exercises such an influence upon the internal colour changes in the leaf. In a cool, wet year the leaves may retain their greenness until the frost comes, and then the process of corking off is done rapidly and with very little resulting beauty of foliage.

There is a popular notion that the abundance or scarcity of berries in any particular autumn is an indication of the character of the approaching winter. If there is a great crop of berries a severe winter is predicted by the average countryman. As a matter of fact, there is no connection whatever between

the two phenomena, but there is a connection between the fruit crop of one year and the weather of the previous summer.

It is in this wise. While it is the special work of the foliage to manufacture sufficient starch to feed the entire tree, it is the first duty of each leaf to feed its own bud nestled at its base. The amount of food it can make in excess of the quantity withdrawn for current growth will largely influence the fate of its own particular bud. If it can lay up a store of reserve food round the immediate vicinity of the base of the very young bud it will tend to excite its development into a flower bud. If



A SPECIES OF SPIREA

[From a photograph taken in Messrs. Watson's Nurseries.]

the reverse condition prevails, then an ordinary shoot bud only is likely to be produced.

It will thus be seen that the weather conditions have a great deal to do with the character of bud development—whether there will be a relatively large or a relatively small number of fruit buds produced during the summer. If the conditions are such that shoot growth is fairly vigorous throughout the season and continued late into the autumn, then comparatively little food can be spared for storage purposes, and not only will fewer flower buds be produced but the wood will not get so thoroughly ripened, and hence the bursting fruit buds of next spring will have a much-diminished food supply to draw upon during the exhausting period of reproductive development.

It must ever be remembered by fruit growers that the vast multitude of blossoms that cover a fruit tree in spring were produced the previous summer, and lay dormant within their tightly-closed buds throughout the winter. That after the summer is over no art of the gardener can possibly induce a single extra blossom to appear next year on his tree over and above those already formed upon it.

In a normal year then the leaf falls when it has finished its work—when it has nourished and sustained its bud and laid up in the stem close by a store of provision for the awakening in spring. The work under such conditions is completed early, and the leaf gradually passes into inactivity, loses its greenness and falls. But if, on the other hand, the general growth of the tree has in its insistent and continuous demands robbed the bud of its rightful inheritance of stored food, the tendency is for the leaf, if the weather conditions at all permit, to carry on the growth later in an effort to complete its task before the frost comes to call a stoppage of work for the year. Hence it will be seen that a late leaf-fall is a bad sign for the next year's crop of fruit.



GROWING POT ROSES.

FOR pot culture, roses on their own roots should only be used. Select a clean, healthy plant, with two or three good shoots and abundance of fibrous roots, cover the drainage hole in pot with an oyster shell (in preference) and place on top of this a layer of bits of charcoal and broken-up boxes. This will make for good drainage. Over this should be put a few lumps of half-rotten turf from a good pasture field. The rest of soil may be composed of heathery loam and well decomposed manure. The potting should be done firmly, but not so as to destroy texture of soil.

The Shrubbery in Autumn and Winter.

By G. O. SHERRARD.

THE very beautiful autumn tints of the trees this season suggest to one the use of coloured foliage to beautify the garden after the summer and early autumn flowers are over. Many shrubs, both dwarf and of large size, assume brilliant colours before losing their leaves and greatly brighten the garden at a time when flowers are becoming few. First among shrubs with brightly-tinted foliage come the maples, which are well known; the Japanese varieties are especially useful. Many species of berberis, and some species of spiræa, vitis, pyrus and cratægus give us good autumn colours, and a list of some of the best of these will be found at the end of the article.

Several shrubs are of value to us in the autumn on account of their showy berries, and some combine beauty of berry and leaf, as in *Euonymus europæus* and its varieties. Amongst the best-berried shrubs are the cotoneasters (*C. horizontalis*, *depressa*, *microphylla*, *Simonsii* are some of the best), the thorns, especially the Fire Thorn (*Cratægus pyracantha*) and the American thorns, *Rosa rugosa*, *Skimmia japonica*, the well-known snowberry and *Aucuba japonica*.

When the leaves and berries are gone we are left with the stems, but let us not despair. Some stems are brightly coloured and produce a fine effect when growing in a mass. In the county of Cavan one sees growing alongside the road or on the tops of banks a willow with vivid orange scarlet stems which glow in winter like a fire. This, if planted in clumps and cut hard back each year, gives a bright effect, and dogwood (*cornus*), with its ruby red stems, should be treated in the same way; there is now a yellow stemmed dogwood which is well worth growing. The green stems of *Lycesteria* and of the brooms are not to be despised in winter and contrast well with stems of other colours.

Evergreen shrubs should be mixed with deciduous varieties or used as a background when the latter have ornamental stems. *Pittosporum Mayii* and *P. Tobira* are too often overlooked when evergreens are planted, and *Garrya elliptica* is valuable on account of its graceful catkins as well as its evergreen foliage. Amongst shrubs which flower in winter we have *Jasminum nudiflorum*, *Chimonanthus fragrans*, *Hamamelis japonica*, and *Rhododendrons parviflorum* and *præcox* early in February.

Shrubs with brightly-coloured autumn foliage:—*Acer palmatum* varieties, *Acer tataricum* *Ginnala*, *Berberis aristata*, *B. Thunbergii*, *B. virescens*, *B. Wilsonæ*, *Cratægus carienii*, *C. rivularis*, *Kœlreuteria paniculata*, *Euonymus alatus*, *Pyrus arbutifolia* and its variety *Brilliant*, *P. melanocarpa*, *Rhus copallina*, *R. Cotinus*, *R. sinica*, *R. typhina*, *Spiræa Margaritæ*, *S. tomentosa*, *S. ulmifolia*, *S. Fortunei*, *Vitis Cognetiæ*, *V. Thunbergii*, *V. armata*, *Rosa rubrifolia*.

Willows with ornamental stems:—*Salix grandiflora moschata* (black), *Salix daphnoides* (grey), *Salix alba britzensis* (scarlet), *Salix fragilis* *Bashfordiana* (red), *Salix alba vitellina* (yellow).

Lilies

LILIES are natives of the northern hemisphere, and are found growing wild throughout a geographical range extending from China and Japan westward through Siberia and Burmah across Europe, Canada, and the United States to Oregon and California.

Quite a large number of lilies are perfectly hardy in this country, and will flourish in any good garden soil that has been dug and enriched with manure. They particularly like, however, a generous loam with a certain amount of grit in its composition.

The present is a good time to plant lilies. They will be able to establish themselves in the soil before the winter period of rest sets in.

The usual plan adopted in planting is to bury the bulb in the soil to a depth of about three times its own height. It is advisable in choosing a site for lilies to select one which will afford protection against biting winds, and yield at least a little shade during the hottest part of a summer's day. A few of the more common kinds of lilies are here given for the instruction of beginners.

L. auratum (2 to 6 feet high) is the "Golden Lily of Japan." The flowers are white, each petal having a bright yellow band down its centre.

L. bulbiferum (2 to 4 feet high). Flowers crimson, spotted with brown.

L. candidum is the Madonna Lily. Its flowers are large and of a spotless white. Soil must not be too rich, and it is better not to disturb the roots if it can be avoided.

L. croceum is the Orange Lily of the European Alps.

L. giganteum is a huge lily (6 to 14 feet high), with long, tubular white flowers. The bulbs are not quite hardy and should be lifted in the autumn.

L. longiflorum. Flowers white and sweet-scented; good subject for forcing.

L. martagon is the Turk's Cap Lily. The flowers are in whorls arranged in tiers. Each petal is curved back towards its base; hence the name.

L. pardalinum is the Californian "Leopard Lily." It has a peculiar creeping root-stock upon which the bulbs are developed. It thrives well in moist places.

L. speciosum (1 to 3 feet high). Flowers white, suffused with rose. Comes from Japan.

L. tigrinum is the "Tiger Lily" (2 to 4 feet high). Is a native of China and Japan. Flowers orange-red, blotched with purple.



THE NARCISSUS FLY.

A CORRESPONDENT sends us a number of daffodil bulbs badly injured by the ravages of the grub of the narcissus fly. We have photographed two of these bulbs in section, and the pictures here reproduced show very clearly the nature of the harm done. The centre of the bulb is entirely eaten out. The fly, a species of the genus *Merodon*, bears a resemblance

to a bee, but has two wings only. It lays its eggs on or near the bulbs in May. The grub hatches out, enters a bulb, and, after destroying it may emerge and at once enter another bulb close to it. They reach maturity during the present month and then crawl out of the bulb and pass into the pupal stage in the soil. Bulbs liable to the



Photo. by]

[T. Price.

NARCISSUS BULBS ATTACKED BY THE GRUBS OF THE NARCISSUS FLY

attacks of this fly ought to be lifted at once and examined. All the attacked bulbs should be destroyed and the ground deeply dug, and the upper spit buried so as to destroy all chance of escape of the insect. The fly is not really a native of Ireland, and is probably imported in bulbs shipped to us from the continent.



APPOINTMENT.

MR. ROBERT HUGH CLARKE, known to our readers as the writer of the monthly Dublin Market Reports appearing in these pages for some time past, has been recently appointed County Horticultural Instructor to the County Antrim Technical Instruction Committee. Mr. Clarke, who received his technical training at the Horticultural School of the Albert Agricultural College, Glasnevin, is a worthy successor to the Rev. Mr. Martin, whose services as Horticultural Instructor and Bee Expert were so universally appreciated throughout the county. We sincerely wish the fullest possible success to Mr. Clarke in his new duties, and hope that we can still retain his services as a contributor to IRISH GARDENING.

Winter Berries

AT this season of the year, when the flower garden has lost its summer beauty and herbaceous perennials have passed into their winter state of rest, the rich colour of the fruiting shrubs form the most striking feature in our borders. The use of winter-fruiting shrubs as decorative plants about the home ought not to be neglected, no matter how small the garden or lawn may be, and whether it is situate in country or suburb. Among the host of subjects that might be planted the following are a few of the commonest and most easily grown species, and taken all round are the most satisfactory to the ordinary amateur:—

1. COTONEASTERS.—

There are several species that may be selected, the best known perhaps being *C. microphylla*, an evergreen Himalayan species that grows from three to four feet high, and is most effective as a covering for rocks and low walls. The flowers, which appear during May, are white, and pass into small crimson berries towards the end of the year.

2. CRATEGUS PYRACANTHA, the Firethorn or

Evergreen thorn of Southern Europe, is excellent for walls. It bears clusters of brilliantly scarlet berries (borne on the branches of the previous year) that often last throughout the whole period of winter.

3. PERNETTYAS, the

common species being *Mucronata*. It is a wiry little evergreen from Magellan, belonging to the heath family, which covers itself all over with clusters of brightly-coloured berries. It loves moist peaty soil, mixed with plenty of sand and leaf-mould.

4. HIPPOPHÆ RHAMNOIDES.—The Sea Buckthorn or Sallowthorn is a native plant that produces a fine display of orange-coloured berries in large clusters, well set off against its charming grey foliage. As the sexes are separate in this shrub, one pollen-bearing plant at least must be grown with the female specimens in order to secure fruits.

5. SKIMMIA, of which there are two well-known forms grown in gardens—*S. japonica* and *S. laureola*, the first named being Japanese and the other Himalayan. *Japonica* is excellent for town gardens. In *laureola* (which is rather tender) the fruits are green and the flowers strongly scented.

6. BERBERIS.—The common barberry makes an excellent and most attractive hedge. *B. Thunbergii*, from Japan, is a straggling shrub, well suited for shrubbery borders. The leaves turn scarlet in late summer, and its berries are orange-red in colour. *B. Darwinii* is well-known, and is a great favourite, as it will grow in almost any garden. *B. or (Mahonia) aquifolium* is North American. Its purple berries are said to make an excellent preserve.

7. ARBUTUS, of which *A. unedo* is the strawberry tree, a native of the west of Ireland and Southern Europe. It is without doubt one of the most handsome of our shrubs. Every one must have observed how in autumn it displays at one and the same time the white flowers of the current year, together with the scarlet fruits of the year previous. The fruits when ripe are edible, but we do not recommend them for use at dessert.

8. THE SNOWBERRY.—

A common garden shrub from N. America. May not be considered as being particularly ornamental by many people, but it is so accommodating as to soil and situation that we have ourselves at least found it a most useful subject. Its waxy-white berries are certainly attractive in early winter.

9. EUONYMUS VULGARIS

is the native Spindle-tree. It loves a chalky soil. Its foliage gets finely coloured in autumn, and its fruits are singularly handsome; they are bright orange set in a pink aril. *E. atropurpureus* is the Burning Bush of North America. It has scarlet fruits.

10. GAULTHERIA is a genus of shrubs chiefly North American. They

belong to the heath family. One, the creeping winter green, is common, but the Shalloon, with its purple berries, is perhaps the most attractive. They love peaty soils.

11. ACCUBA JAPONICA is very commonly grown in gardens, but too often under such crowded conditions as hinder its fair growth and development. In this plant, too, the sexes are separate, and a pollen-bearing bush must be grown in order to secure fertilisation of the female flowers. Failing this, care must be taken to artificially pollenate the flowers if we desire to get the red berries for winter decoration.

12. HOLLIES.—There are quite a number of desirable varieties of the common holly, such as the weeping holly, the Silver Queen (leaves variegated silver), the Golden Queen, the Hedgehog holly (leaves intensely spiny), and the yellow-berried holly.

We give this round dozen of genera as a list to start with.



ROBERT HUGH CLARKE

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USEER, The Gardens, Broomstown, Cabinteely, Co. Dublin.



NOVEMBER is an important month in the gardener's calendar; it is during this month that he is free to make any alterations which he had decided on or which was forced to his notice during the summer and autumn months.

Where alterations have been decided on they should be carried out as soon as possible, while the effects or defects are still fresh in the memory. In the selection of plants, duration of flowering should be the first consideration, for few gardens will afford the time or cost of a changeable flower garden, in which the beds are decorated in early spring with scillas, hepaticas, erythroniums, sanguinarias, and many other choice spring flowering bulbs and plants, to be succeeded by autumn-sown annuals in masses for summer flowering, to be again succeeded by autumnal flowering bulbs—dahlias, hollyhocks, chrysanthemums, &c., which carry us into the winter months. This system of gardening as seen in most of our public parks and noted gardens is very attractive when attended with high keeping, but entails more cost than proprietors

of the ordinary run gardens will incur; therefore the gardener must always have his eye on the cost as well as the effect, and shape his plans accordingly. There is nothing gives better value than the Darwin and May-flowering tulips, which should be planted during the earliest part of the month. Planted in small clumps through the herbaceous borders they look charming, and are seen to great effect amongst the young, fresh shoots of the herbaceous plants during April and May. A nice collection of those may be got up at a small cost.

The herbaceous borders will now require a thorough cleaning. Cut down all the stalks of plants gone out of flower. Any vacancies, changes or additions should now be made good, and the borders thoroughly cleaned. It is important that any labels which may have been displaced or became obliterated should be renewed while the plants are distinguishable. Cuttings in frames should be looked over and additional heat applied where necessary. When storing plants and cuttings away for the winter endeavour to keep those plants together which require similar treatment. Geranium, verbenas, petunias, &c., should be kept on the dry side and as much air as possible given to them, a close damp atmosphere being fatal to those plants.

ROSES.—Planting will now be the order, and where any new beds are to be made it will pay to remove the

old soil to the depth of two feet, and good, strong loam from an old pasture substituted, to which may be added some thoroughly decomposed farmyard manure (not too close to the roots) and some inch bones, and wood ashes if available. It is very important to see that there is no likelihood of any stagnant moisture lying about. If the natural drainage be not good, then there must be artificial drainage constructed. When planting roses do not plant too deep; it is a mistake which is very often made.

Shrubberies should now be thinned out. Any plants which are becoming crowded should be removed to where they will have more space; where a shrubbery has been allowed to get too crowded, and large branches have to be removed, the operation must be performed gradually, and a portion headed down every season until the whole is renovated and covered with young foliage. Nothing looks worse than a mass of tangled, overgrown shrubs with a confused mass of bare, ugly stems.

The lawns will require a good deal of attention to keep them clean. All leaves collected should be carefully stored and turned occasionally to make good leaf-mould. The Pennsylvania people have an excellent leaf-collector on the market, and where a large quantity of leaves have to be collected off smooth lawns it is an excellent help, and very soon repays its cost; it does not pull up or "rough" the grass such as rakes will do.

Pieces of Alpine plants which are liable to be injured by frost or damp taken off last month, and now established in small pots, should be put in a cold frame where they may get all the sunshine possible. A good plan to follow is to fill the frame up with silver or soft sea sand in the form of a raised ridge and the pots plunged therein; this will prevent the need of watering and keep the roots at a more even temperature.

The Fruit Garden.

By G. DOOLAN.

FRUIT GROWING.—During the past few years there has been a great increase in the area under fruit in this country. The figures for last year are particularly striking, especially those for Co. Armagh, where the increase amounted to about 500 acres. This is sufficient testimony to the value of fruit growing as a farm crop. In Armagh this industry is a long-established and profitable one, though the conditions are not by any means so favourable for fruit growing as in some districts in the south of Ireland. Greater interest is now being taken in fruit growing and proper methods of cultivation are practised by many growers. Growers are also beginning to realise that it pays to imitate the foreigner, who grades and places his fruit in a most attractive manner in the British markets. Like Irish eggs, there is no reason why Irish grown fruit should not command a name for quality in the English market. Fruit growers should avail themselves of the services of the itinerant instructors of horticulture, who will, when requested, visit and give advice on the various phases of fruit culture, namely—planting, pruning, spraying, &c. A letter should be addressed to the Secretary of the County Committee of Agriculture, when a visit from

the instructor is desired. Instructors in Horticulture are now appointed to practically all the counties.

SELECTING A SITE FOR ORCHARD.—The best situation is one having a south, south-westerly, or south-easterly aspect, and protected from prevailing winds, which generally blow from the north and east. If shelter is necessary, a belt of Austrian pine, intermixed with spruce, should be planted. After some years the spruce may be cut away to allow the pines to develop. Neither a very high nor low-lying situation are suitable for an orchard. Although the apple will do in a great variety of soils it succeeds best in a rich medium loam. Wet, pebbly or poor sandy soils should not be selected. If rabbits abound in the district wire-netting should be properly fixed around the orchard site previous to planting, otherwise much injury may be done to the trees by rabbits attacking them.

PLANTING OPERATIONS.—This work, if possible, should be commenced during the present month. The soil is now in a more favourable condition than it will be at a later period. Again, better trees are likely to be received when ordered from the nursery early in the season. Planting must not be done when the soil is in a wet state, nor during frosty weather. The trees when unpacked should have their roots placed in trenches, and be well covered with soil. They should not be disturbed until the conditions are favourable for planting. Two-year-old trees are the best for large plantations, but for small gardens, three-year-old trees on the Paradise stock will give quick results. Trees on the Paradise come into bearing almost immediately, and continue so for over twenty years, making little growth, but bearing heavy crops. On the other hand, trees on the Crab are much slower coming into fruit, but they grow to a large size and live to a great age. Trees on the Crab, therefore, require more room than those on the Paradise stock. A good system is to plant the large-growing trees twenty-four feet apart, and to place a dwarf grower between, thus the trees will be twelve feet apart every way. In the course of time, when the large trees require more space, those on the Paradise, which will have borne heavily in the meantime, may be cut away. For large orchards where horse labour is used the rows may be twenty-four feet apart, but the same arrangement of the trees should be adopted, viz.—trees on the Crab and Paradise alternating. The soil should be well prepared and broken up fine for placing in contact with the roots. Avoid deep planting, the best roots are always near the surface, therefore they should be encouraged in this direction. Manure must not be placed near the roots, but applied as a mulch on the surface over the roots. Plant firmly and stake the trees if necessary. Half-standards and some of the taller bush trees will require to be staked. Small trees, especially after being pruned, will not need such support. Grass or weeds should never be allowed to grow about young trees. A space of at least three feet from the tree should be kept perfectly clean. After some years, when the trees have obtained a good size, grass will not matter so much; but even then, if the aim of the growers is to produce first class fruit, the ground beneath the trees must always be kept red.

VARIETIES OF FRUIT.—The following is a general list:—*Dessert Apples:* Beauty of Bath, Lady Sudeley, James Grieve, Worcester Pearmain, Rival, Allington Pippin, Gascoyne's Scarlet, Cox's Orange Pippin, Blenheim Orange Pippin. *Cooking Apples:* Early Victoria, Ecklinville, Grenadier, Lora Derby, Bismarck, Lane's Prince Albert, Bramley Seedling, and Newton Wonder. Large growers should confine themselves to a few varieties. In Armagh, Bramley Seedling and Grenadier are the favourite varieties with growers. At a distance from a good market it is advisable to grow late-keeping apples like the Bramley, Newton Wonder, and Lane's Prince Albert. These three varieties are excellent keepers and travel well. Growers should not plant Cox's Orange Pippin extensively unless it has been tried and found a success in the district.

The Vegetable Garden.

By J. G. TONER.

ONIONS.—Although it is not so very long since the onion crop was lifted and stored, it is quite a time that preparations were made for next season's plants. Those who require really good as well as large bulbs usually put out plants that were raised under glass in heat or otherwise. However carefully that portion of their culture has been attended to, hopes will not be fully realised unless the open quarter intended for them later is made as near perfection as possible. The principal points to be noted are that the position must be in an open place in the garden and in no way shaded by hedges or trees, fruit trees or others. To do them well the ground must be deep, rich but not rank, and the preparatory work done at such a time that it will have regained its natural solidity. When put off until the bustling spring-time the pressure of other tasks often prevents its being really well done, and besides, notwithstanding the tramping or rolling process so often mentioned, the lower stratum of soil still remains loose, the natural consequence being a too free top-growth and ill-matured bulbs. This will also follow the use of green manures. Therefore, while work is comparatively slack in the vegetable garden, let this important task be attended to. Even for ordinary crops the ground requires to be trenched fully two feet deep, or as near that depth as circumstances will allow. Exhibitors take far more pains to secure size and quality, but then, while for ordinary purposes only good ones are expected, they require them extra fine.

SEAKALE.—It must be said that this is a very dainty addition to the white vegetables during winter and spring. For the earliest forcing a number of roots may soon be lifted. Only the very strongest may be used for this purpose. In making them ready all the smaller roots may be cut off, for by this means a larger number can be accommodated, and in addition the portions removed can be used as cuttings. These may be cut square across the top, and a long sloping one made at the bottom, after which they are stored in sand and planted in spring, to be taken up in their turn when sufficiently strong, and forced like their parents. Those

to be forced are planted thickly in any light material that will hold plenty of moisture, and introduced from time to time to forcing quarters in frames or heated houses. Pots of nine-inch size or small handy boxes answer well when they are to be forwarded in small lots. The first produce, of course, will not be of the best quality very likely, but being scarce and early will find a ready acceptance. The outside beds now require cleaning up, and the covering material—ashes, sand, or turf-mould—placed over the crowns. Tree leaves when gathered may be mixed with stable manure, and will add to its bulk, while at the same time giving a milder and more lasting heat—just what is required for outdoor forcing. It is, of course, too soon for such work just now, but few have a surplus of such useful material when required.

CELERY.—Many a fine row of celery is ruined during winter by the action of rain or frost, and particularly when the final touches have not been given to the work of moulding. At the first favourable opportunity the earth might be brought up to as fine a point as possible so that rain may be thrown off and the leaf-stalks brought tightly together. Provision is often made, too, for further protection from heavy frost, especially by leaving convenient rough straw mats, about two feet wide, which are placed like ridge tiles over the top during the prevalence of extra bad weather. Another handy way is to drive into soil along the row light, upright supports at either side. On these boards of any kind, six or nine inches wide, are placed, and form a complete protection. A few stones laid on will secure them. Where the ground is naturally heavy or not thoroughly drained, a trench cut away at the base of the ridge will carry away a quantity of water that proves so injurious during winter. Trenches can now be prepared too, leaving the bottom depth of soil out altogether. Too often it is with this, the subsoil, that the manure is incorporated—a grave mistake.

RHUBARB. Like the seakale, the rhubarb when forced, especially if very early, is appreciated, therefore some roots should be lifted for this purpose. It is by no means a difficult matter to forward rhubarb, for almost any place where a snug temperature is to be found may be availed of. The main crop kinds are not so well fitted as the small growers. Most of the latter, too, possess an uncommonly good colour, which makes a great difference. Large boxes may be planted with the crowns and placed in darkness to encourage length of stem at the expense of the leaf. Plenty of moisture at the root is essential, and complete darkness overhead. Any other place besides a greenhouse where these conditions can be maintained will do nicely for forcing rhubarb. The roots or crowns may be packed as tightly as possible together, but the spaces should be filled up with fine material. The outside plantation will be the better of a loosening of the surface soil and a liberal top-dressing of dung. Here the very rankest may be used with safety, for only leaf and stalk growth is aimed at. As in the case of seakale, hot manure and leaves in abundance will come in handy later for the forcing operations in the open.

Notes.

LOSS OF COLOUR IN FOLIAGE

TREES occasionally suffer from lack of chlorophyll. They lose to a greater or less extent their normal greenness. This particular condition of ill-health is called *chlorosis*, and it influences growth adversely according to the extent of the trouble. The immediate effect is a reduction in the amount of starch manufactured in a given time, and this of course means a partial starvation of buds and rootlets. The failure to produce a sufficiency of green colouring matter is usually associated with too low a percentage of iron salts in the sap. Recent experiments in France have corroborated previous trials with iron sulphate as a medicine to trees suffering in this way. The method of application is by injection. A solution of this salt is injected beneath the bark. It then enters the circulation by soakage or osmosis. It has been found, however, that in order to secure a complete cure each branch must be separately treated.

FEEDING CHRYSANTHEMUMS.

A FRENCH writer records some interesting results obtained in manurial trials with chrysanthemums. Without going into all the details the lesson apparently to be learned from the experiments is that the application of a nitrogenous manure to a soil already containing a normal supply is distinctly harmful to these plants. Care should, therefore, be exercised in our manurial treatments of chrysanthemums, so as not to overdose with nitrogenous food. Treatment with liquid manure may be not only useless but detrimental to their best development. Potash and phosphoric acid, on the other hand, are not only useful but absolutely needful in successful chrysanthemum culture. These foods may be supplied in the form of sulphate of potash and bone meal, applied as a top-dressing not later than the middle of August.

NOVEMBER PROPAGATION OF HARDY PLANTS.

IT is not too late to propagate certain subjects in the open ground. The following are among the many useful plants that may be increased during the present month:—*Vitis* (*Ampelopsis*) *quinquefolia*; *Alnus* is often difficult, but success may be attained by selecting a moist soil for insertion of cutting; *Buxus* (make cuttings short and insert in shady place), *Cornus* species, *Coronilla emerus*, *Eleagnus argentea*, *Euonymus sempervirens*, *Ivy*, *Kerria*, *Privet*, *Honeysuckle*, *Currants*, *Willows*, *Elder*, *Spiræas*, *Staphylea*, *Syringa*, and *Viburnum Opulus*.

In some cases better results are obtained by making the cuttings from previous year's wood; in other cases it is better to use the points of the present year's growth. The cutting may be from nine to twelve inches long, but not more than two buds should appear above the soil level. The propagating soil should be sweet and healthy, rich in vegetable mould and sand. The site selected should be sheltered from cold winds. The cuttings should be firmly inserted.

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NOTICE—

**TO THE READERS OF
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The January number commenced the Sixth Volume of "Irish Gardening." A Title-page and Index for Volume Five has been issued, and will be sent free to any Subscriber applying for same.

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7	Fluke in Sheep.	57	Marketing of Fruits.
8	Timothy Meadows.	58	Sprouting Seed Potatoes.
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A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

DECEMBER
1911

Winter Colour in Shrubs.

BY J. W. BESANT.



TO the lover of shrubs the winter months bring their share of pleasure and enjoyment. Then the varied colours of the shoots of many of the deciduous shrubs and the dark green and bronze of many evergreens replace the brighter hues of summer and the deep rich tones of autumn. So warm and bright are the shoots of some dogwoods and willows that, when judiciously planted, extremely fine winter effects are produced. A background of evergreens acts as a good foil for coloured shoots, and the planter who works thoughtfully season by season will secure good results.

Quite a number of shrubs are attractive in winter by reason of their coloured stems. Several of the deciduous Barberries have beautiful light brown shoots, notably *Berberis Thunbergii*, which, when it has shed its autumn mantle of scarlet leaves, is still attractive in a wealth of warm brown shoots, while *B. vulgaris petiolaris* is worth a place for its strings of coral berries on light-brown stems. Other shrubs with conspicuous brown and light-brown shoots are the *Philadelphuses*, *Deutzias*, some of the bush *Honeysuckles*, *Potentilla fruticosa*, *Forsythia suspensa*, &c. Shrubs with red stems are found among the dogwoods, notable examples being *Cornus alba*, *C. Baileyi*, *C. glabrata*, and *C. stolonifera*. Grown in masses or as single specimens these are highly attractive in winter, and should have some at least of the older shoots thinned out annually to encourage

the production of young growths, these being the most brilliantly coloured. Some of the Japanese maples are so slow-growing as to be practically shrubs, and among the varieties of *Acer japonicum* and *A. palmatum* are some with bright red twiggy shoots, very effective on lawn or rockery. Of shrubs with yellow shoots there are the golden *Osiers*, which are most effective when cut hard back every spring, while there are varieties with orange and red shoots, all making fine winter effects and flourishing best in moist ground. The greenish-yellow stems of *Cornus stolonifera flaviramea* are conspicuous in winter, likewise the lively green shoots of *Kerria japonica*. Other shrubs with green shoots are found among the *Brooms*, notably *Cytisus albus*, *C. præcox*, *C. purgans*, and the Spanish broom, *Spartium junceum*, all of which will flourish in dry places not suitable for many shrubs with evergreen leaves. The white stems of *Rubus biflorus* are conspicuous at this season; and other good brambles are *Rubus leucodermis*, *Rubus lasiostylis*, *R. leucostachys*. Some of the species of *Roses* produce good effects with their ruddy red stems in winter; a few sorts for this purpose are *R. oxyodon*, *R. blanda*, and *Rosa virginiana*, while the prickly shoots of the Scotch roses, some bearing red and others black hips, are by no means unattractive.

Shrubs with persistent leaves become more conspicuous in winter when their deciduous neighbours have shed their summer attire. The various shades of green become more pronounced from the deep dark-green of *rhododendrons* to the yellowish-green of *Griselinia*, and the grey-green of *Olearia Haastii*.

Non-deciduous shrubs with grey or silvery

foliage are particularly valuable for winter effect. An excellent subject for this purpose is *Atriplex halimus*, which makes long, willowy shoots, clothed with glistening, grey leaves, quite beautiful in winter. *Santolina chamaecyparissus*—the "Lavender Cotton"—is a dwarf spreading shrub of great use for the front of a shrubbery or for a bed. Like the last-named, Rosemary and Rue are useful in dry, sunny places, and may be used along with Jerusalem sage, *Phlomis fruticosa*, and grey and green-leaved varieties of rock roses with good effect.

The heaths, too, are effective winter shrubs; already the pink flowers of *Erica mediterranea hybrida* are beginning to show colour, and the spikes of *Erica carnea* are full of hope and promise for a bright new year.

No mention of shrubs for winter effect would be complete without a reference to the bush ivies. These form handsome evergreens at any time, but seem particularly pleasing in winter. Just lately the ivies have been a mass of flowers, quite attractive though less brilliantly coloured than some. Varieties are numerous, some with leaves as large as laurels, others with tiny leaves of various shapes; gold, silver, dark glossy-green, and bronzy-green sorts are procurable, the whole combining to form a set of evergreens, too seldom properly used, especially about towns, where many evergreens are difficult to manage.

Personal.

WITH the issue of this number of IRISH GARDENING the present Editor retires, and Mr. C. F. BALL, of the Royal Botanic Gardens, Glasnevin takes his place in the editorship of the journal. The Editor, in saying "good-bye" to his readers, desires to express his gratitude to all the numerous contributors who, during the past six years, have so generously and whole-heartedly assisted him in the task of establishing in this country a national and representative journal of Irish Horticulture, and he hopes that the new Editor will receive the same help and encouragement from their hands. From the wider and more intimate knowledge of practical gardening possessed by Mr Ball, IRISH GARDENING will, under his care and guidance, increase in interest and usefulness, and become in very reality what it has always striven to be—an important factor in the development of Horticulture in this country.

Fruit Sprays.

By R. M. POTTOCK.

AS spraying has now become one of the essential items in the routine work of all orchards, and also with those who only grow a small quantity of fruit, a few notes on the various sprays, when these should be applied, and the different proportions of the ingredients used, may be a help as well as a reminder to those who aim at first-class fruit.

Below will be found the three important sprays and the various fruit trees on which they can be used—an alternative spray for the winter work and an additional one for leaf-eating insects where they appear during the summer months. These sprays should be applied with a sprayer, but if this is not possible a very fine nozzle syringe may be used. Care should be taken to ensure that all the trees and bushes are thoroughly wetted with the spray, and that the under as well as the upper surface of the leaves are sprayed. When the ingredients are mixed on the premises the proportions must be carefully adhered to.

1. Winter spray for apples or pears where fungoid pests are present, and for scab and spot, use in December a solution of 2 lbs. bluestone to 25 gallons water. When the fruit is set and the leaves are open, spray with the same material, using 1 lb. bluestone only to the 25 gallons water.

For these two sprayings the Bordeaux mixture may be used instead of the bluestone, but at the second spraying, when the leaves are open and the fruit is set, the Bordeaux mixture must be diluted with one-third more water. The bluestone mixture will be found the simplest, as it is more easily prepared. The Bordeaux mixture consists of 2 lbs. copper sulphate (98 per cent.), 1 lb. lime, freshly burnt, to 10 gallons of water. Use a wooden tub, and dissolve in it the copper sulphate in half the quantity of water. When the lime has been slaked to a fine powder mix it with the remaining water and pour into the copper solution. Keep all thoroughly stirred.

2. The cleansing spray, for keeping the trees healthy and the bark clean, to be used early in February, after the pruning, on apples, pears, plums, damsons, cherries, apricots and peaches in the open, gooseberries and red and black currants, in the following proportions:—2 lbs. caustic soda (98 per cent.), ½ lb. soft soap to 10 gallons water. This spray must be used warm.

3. For insects, to be used on all fruit trees where fly of any sort is present—2 lbs. quassia chips, 1 lb. of soft soap to 10 gallons water. To prepare this, boil the quassia chips in one gallon water, strain off the chips and add the soft soap and water, bringing the quantity up to 10 gallons. This spray must also be used warm.

These three sprays are the important ones, and should be regularly applied each year, but in addition to them, and where leaf-eating insects are present on gooseberries and currants during the summer, spray with Swift's Arsenate of Lead, which can be had from D. M. Watson, Horticultural Chemist, 61 South Great George's Street, Dublin. Full directions are given with each bottle. The ingredients for the various sprays given in these notes can also be had from this firm.

Chrysanthemum Madame C. Desgrange.

By J. M. TROUP.

MADAME DESGRANGE (and its yellow sport, *G. Wermig*), when disbudded and grown in 7-inch pots, is one of the finest of the early-flowering chrysanthemums for conservatory or house decoration. The cuttings may be taken off in January or February, when about two inches long, and having appeared at a slight distance from the stem of the plant. The cuttings, having been relieved of their lower leaves, should be placed round the edge of a 4-inch pot, with a little fine moist soil, consisting of loam, sand, and leaf-mould in equal parts, with a dusting of powdered charcoal, making it firm. The pots may then be placed in a box (about one foot deep and about the same breadth), which should contain a few inches of ashes at the bottom, and can be fitted with one or two pieces of glass as a covering. The box should then be placed in a greenhouse. The ashes below the pots should be kept constantly damp, in order to afford the necessary moisture to support the foliage of the cuttings whilst they are forming rootlets; the soil in the pots should not, however, be over-watered, only supplying water when it is fairly dry, or otherwise the cuttings may rot.

The amount of air afforded should be regulated by the length of time the cuttings have been made, increasing it as they form roots, and removing the glass entirely as soon as practicable, for they must not be coddled or allowed to become drawn up and weakly. The little plants, when rooted, should be potted off singly into small pots and placed on a shelf near the glass, transferring them to a cold frame early in March; then they should have plenty of air in mild weather, but should be covered with a mat on frosty nights. When the rootlets reach the hole of the pot, the plants should be shifted into $\frac{1}{2}$ -inch pots, and again in May into their flowering pots. In April the top of each plant should be removed, and six or eight shoots may be allowed for each plant. To have growth which will develop suitable flowers, the soil should be rammed firmly with a blunt stick. In soil of a light character it is hardly possible to pot too firmly; but it is not wise to pot so firmly with heavier soil, as the water will not percolate so freely, and, should the drainage become defective, trouble may ensue through the soil becoming waterlogged.

Careful and free drainage is essential to success; the pots and crocks used should be perfectly clean, and the

latter free from grit. Over the drainage put a layer of the roughest parts of the compost, to prevent the fine soil running down and thus preventing the free egress of water. Over this sprinkle a small quantity of soot, as this prevents to some extent the ingress of worms when the plants are standing out of doors, and the soot also acts as a stimulant. This soil should be firmly rammed down previous to placing the plant thereon. Do not cover the top of the ball of soil too deeply, just adding a little to cover any roots which may have become bare through watering. Leave a depth of $1\frac{1}{2}$ inches to allow space for water and a little top-dressing at a future time. If the soil is moist at potting, no water will be required for three or four days, after which time a good soaking may be given. An occasional wetting of the foliage with the syringe will be found beneficial in the afternoons of fine days. Chrysanthemums need a change of food, therefore those who are in a position to apply stimulants in variety stand a better chance of success. Soot I consider an almost indispensable agent to the growth of chrysanthemums in pots; it gives a dark colour and robustness to the foliage which are pleasing, especially as they indicate thorough health; soot is most easily applied in a liquid state. Sheep manure, when it can be had direct from the fields, makes a capital stimulant when applied in a liquid form. Artificial manures extend over a wide range, are very simple of application, and decidedly efficacious if used according to the direction given with each. Every available means should be taken to maintain the foliage intact right down to the soil, and of a healthy green colour. Suckers or offshoots spring freely from the base of Desgranges, and, if



CHRYSANTHEMUM
MADAME C. DESGRANGE

they were allowed to grow, they would rob the plant of strength which should be utilised in a much better manner until the flowers are produced; after that period no harm is done by allowing the suckers to extend for the production of cuttings.



MR. THEOBOLD has published in the pages of the Journal of the English Board of Agriculture the results of a series of experiments on the grease banding of fruit trees that he has been conducting for a period of over six years. His conclusions briefly stated are—(1) Grease banding should be carried out from October to mid-April. (2) Other injurious insects are caught in addition to winter moth and its allies. (3) All greases except "Tanglefoot" placed directly on the bark are injurious. (4) The bands are best placed not less than 4 feet from the ground. (5) Thick parchment paper, grease-proof, if possible on both sides, is required.

A Method of Winter Gardening

A CORRESPONDENT writes asking if we can offer a suggestion as to the treatment of ordinary herbaceous borders so as to secure a pleasing display of plants during the winter months. He refers to the desolate appearance of the beds after the usual "tidying up" process of late autumn is completed and is exercised in his mind how to proceed in order to carry on a fairly attractive scheme of planting that will bridge over the months leading to the display of bulbous plants in the spring. On reading our correspondent's letter we remembered the reading of a very suggestive paper on this subject by the secretary of the English Royal Horticultural Society (the Rev. W. Wilks) before the members of his society in the January of 1890, and immediately looked up the "Journal." We take the liberty of reproducing extracts from this paper in the belief that they will prove interesting to a large number of our readers:—

"The problem is how, at a small outlay of money, time, and labour—and this is a most important item—to make these borders as pretty and interesting in winter as they have been in summer. The answer to the problem can be stated in four words. *Evergreen plants in pots.* It is easily spoken, but it takes a longish time to work out satisfactorily. Of course, with unlimited funds at your command, it is easy enough to order so many dozen shrubs, set three or four skilled men to prepare the best possible compost, and, hey presto! the thing is done. But I am not intending to address people with ample funds, but that great mass of middle-class folk whose balance at the bankers is, like my own, constantly nearing the edge, and as to which a very little more expenditure upon the garden would soon bring a little note from Coutts's, most courteously expressed, 'drawing your kind attention to the fact'—the horrid fact of 'overdrawn.' For such people, I say, it takes a longish time to get up a good stock of evergreens in pots.

"Someone will say, But why in pots at all? Because the pot system is far more economical in the long run and gives much better results. If evergreen shrubs are moved from the nursery to the garden, and from the garden to the nursery—two movings every year—you must expect every now and again to lose some of the plants—at least that is my own experience; whereas with the pot system I have never known but one to die. Again, evergreen shrubs of any size, moved thus twice a year, in a very short time put on a poor, thin, draggletailed appearance and get leggy, and always remind me of those poor, thin, bent-kneed beggars you see slouching along the streets with torn trouser-ends and ragged coat-tails with bits of the lining hanging down, and their hats brushed three-quarters the wrong way, and out at elbows; whereas with the pot system your plants are feathered down to the very ground, full, robust, and hearty, reminding you of chubby, rosy-faced country urchins, stiff and sturdy, amply fed and amply clothed, and merry from toes to nose. Therefore I say if you want really good plants, plants to be proud of, plants to love, and cannot afford to buy

a fresh stock every three or four years, try the pot plan, which I will now endeavour to unfold.

"And the first question, of course, is *When to begin.* Buy such plants as you must buy in March or in September. These, too, I find the best months for making cuttings of evergreens; the March ones must be put in a dampish place, the September ones in a half-shady spot. Almost all evergreens will grow from cuttings with a little care and persuasion; but if not, there is nothing more interesting than growing them from seed. In two to three years' time they will be pretty little dots, just suited for front places in your borders, and you may grow them thus gradually on for, I fully believe, twenty or thirty years before they will have outgrown your powers of management.

"Next, *What plants to get or raise.* It would almost be easier to say what *not* to get, but I will give you a list of what I have found most suitable. But first let me say, do not begin with too big plants; be content to wait for them to grow big. I have plants now in pots—Laurels 5 feet high and five feet through, Aucubas 4 feet by 5 feet, Lawsonianas 6 and 7 feet high, and so on; but they have all been gradually grown on. If you begin with too big plants, they almost invariably lose their lower branches and get leggy—I don't know why they do so, but they do—whereas if you begin with little fellows, a foot or 18 inches high, you can keep them for, I am confident, twenty, thirty, or, I shouldn't wonder, for even fifty years in pots, and feathered down to the very ground. It wants just a little management and care, but I am sure it can be done.

"Well, the most useful plant I know of for the purpose is Lawson's Cyprus. It is a charming plant, so various that almost every seedling raised is unlike its brethren. Go into any good nursery in mid-August and ask for the Lawsoniana quarter, and you will see rows upon rows of dainty little fellows, 8 inches or a foot high or so, some close-growing, some spreading, some tapering, some few with a golden gleam upon the green, some a dull dead-coloured green, some with a shining brownish almost metallic lustre, and some—the loveliest of all—with a pale bluey white glaucous hue upon the foliage, and with bright red stems. Oh, how I revel in such quarters of plant children! The only drawback is, I always want to carry off far more than my nursery—garden I mean—could possibly contain. Well, you may have your pick of all these little ones at about 5s. or so a dozen, according to their size and age. Do not pick out all the prettiest. No, you want some of the duller ones as contrasts to the bright; some of the plain green to set off the glaucous and the golden ones. Indeed, in all your choosing bear in mind that variety of foliage, form, and habit is what you really want, and not all of the most rare, or even all of the most beautiful.

"Well, get two or three dozen of these varying baby Lawson Cypresses, and you will have made a thoroughly good beginning for making your borders beautiful in winter. Then you will want other common things (but all small to begin with), most of which you can raise yourself; common Laurel—the broad-leaved variety is the best for contrast—common Portugals, common Yews, a few—just one or two—common and variegated Box. Box is not by any means a favourite with me; it

smells, to my mind, abominable, and is very gloomy: still, one or two will make variety. Perhaps the most generally useful plant, after Lawson's Cyprus, is the common female Aucuba. You can hardly have too much of it. It is good in all stages, from the baby with only her six or eight mottled leaves, in the foreground, to the big spreading bush 4 feet high by 5 or 6 feet through, to fill a big gap in the middle of your border. It adapts itself most perfectly to pot culture. Then there are all the Ivies, green, silver, and golden, and some kinds which take on the exquisite crimson and yellow-brown tints more readily than others; all of them are useful, and with care—but mark this well, Ivies do not want care and attention to train them into nice pot-plants—but, with careful training, they make charming specimens. The best, I fancy, is the great heart-shaped leaved one which I know under the name of 'Algerian' Ivy, though I am doubtful whether it is that variety or *dentata*, or Regner's, but all three are good.

"Having thus made up a good stock of these and many other common things which will at once occur to you—*Berberis Aquifolium* and *Retinospora plumosa*, for example—you must begin to think about laying in your gems, the little beauties which are to attract the chief attention in your borders, like the diamonds and amethysts and rubies in a jewel. And first of all you must have one or two specimens of *Retinospora obtusa nana*, a shrub on which the light and shade glints more artistically than on any other plant I know. It is quite perfect, with its soft, flat, spreading branchlets. Then, amongst the other *Retinospas*, there are *plumosa aurea*, *obtusa aurea*, *obtusa gracilis aurea*, and *pisifera aurea*, all with a charming golden hue upon them; *R. ericoides*, with a claret-brown mossy appearance; and *R. leptoclada*, a dark purple green, and one of the most quaint, old-fashioned looking and slow-growing shrubs possible. Amongst the *Cypresses* there is also *pyramidalis alba*, a very pretty feathery and slightly variegated shrub; *Larsoniana aurea*, by far out and away the best golden shrub I have yet met with; *L. nana*, a perfect little ball of vivid green, and of very slow and stunted, but most healthy-looking growth; and *L. argentea*, with a most lovely weeping habit. These I fancy are the best. *Thuopsis compacta* is another charmingly soft-looking, feathery plant, much in the same way as the last named Cypress. I pass on to the Hollies; and amongst the common green many varieties will at once be seen in any nursery plantation raised from seed, varying in colour from bright green to almost black, and some with a bronzy hue upon them, varying also not inconsiderably in the breadth of the individual leaves. Here, again, as with Lawson's Cypress, make a good selection of all sorts. Amongst the variegated Hollies there stand out pre-eminently Golden Queen and Silver Queen, the leaves of which are perfect pictures in themselves, but Waterer's Golden I find of better and more compact growth, though not quite so beautiful; you must have all three. Then there are *Ilex myrtifolia* and *laurifolia*, both with leaves of most vivid, shining green, and Hodgkin's and Shepherd's Hollies, both with magnificently broad and almost black-green leaves; none must be missing. *Osmanthus ilicifolius* must by no means be omitted. It is of slow and compact growth, and some of its

varieties have leaves of a most glorious bronzy purple colour, and shine with a perfectly metallic lustre, like brown steel. The Golden Yew makes a very fine pot plant, and so does the Irish—better, indeed, than the common Yew does. There is one plant which I like very much, but have left till last because I am told that it is not frost proof, and this obviously is a *sine qua non* in winter gardening; but with me it has stood and flourished during five winters, which have sufficed to kill down to the root the common as well as the variegated *Euonymus japonicus*, so that I think you may rely upon its hardiness, south of the Thames at least. It is *Eleagnus japonicus variegatus*; it has lovely olive-green leaves, edged and blotched with a rich cream colour, and the wood part of the shoots is thickly clothed with rich chocolate brown hairs or scales; altogether I think it a delightful plant to have just one or two specimens of. There is no suggestion of disease in its variegation, a fault which, to my mind, utterly ruins so many variegated plants. Time would fail me to tell of *Rhododendrons*, *Andromedas*, and *Kalmias*, *Bays* and *Laurustinus*, the Chinese Juniper *Thuopsis Borealis*, and many others, all of which do excellently for pot culture, and may be had at very little cost.

"Hitherto I have only incidentally remarked that small specimens, especially baby Aucubas and small *Berberis Aquifolium* in tiny pots, do well for the front row; but there are a few excellent things that do permanently for front places. Amongst these the two best plants, by far, I know of (and both are propagated with the greatest ease, the first from layerings, the second from spores) are *Erica herbacea carnea*, with its soft mossy cushions smothered with bright pink flowers in February and March, and the Shield Fern (*Polystichum aculeatum*), with its long graceful leaves swaying with every wind; of these you cannot have too many. One or two of the white variety of *E. herbacea* are very useful for variety, and the flowers are charming in mid-winter. *Gaultheria Shallon* makes a good pot plant for midway between the front and second rows; so, too, do the varieties of *Menziesia polifolia*, or Irish Heath; but the white one is the only one whose flowers I care for, and they are charming, but I am not sure that the plant is always frost-proof. The common Hart's Tongue Fern (*Scolopendrium vulgare*) I use a great deal of for quite the front, but it is not altogether satisfactory, as an early wet frost is apt to take the colour in blotches out of its glorious broad, green leaves. *Arabis albidia*, *Iberis corifolia*, and such like, serve for a pleasant change, and Christmas roses in pots are ever welcome. I do not mention Snowdrops, Crocuses, Daffodils, &c., as they belong more to the subject of spring than of winter gardening.

"And now a word or two as to culture, &c. The plants having been procured are potted into the smallest sized pots they will conveniently go into, and in the end of October when frost has reduced the Dahlias, &c., to pulp they are plunged very carefully in between the *Pæonies*, perennial Sunflowers, Irises, Phloxes, Spiræas, Asters and other herbaceous rootstocks. Great care is taken in plunging; we rather leave a gap than injure in the smallest degree a stool of any good hardy plant; but where the Dahlias, Paris Daisies, Calceolarias, Geraniums and such like come out, and where the

annuals have been there is always room. When the plunging is done the borders are again very carefully forked over, about two inches deep, and all is tidied up 'ere the winter storms begin,' and the result is, I venture to say, as delightful as a winter border as English eye could expect to look upon. In the middle or end of April, according to the season, the borders are again all cleared, the plants being carried straight to the potting shed to be re-potted. In the matter of compost I again as in all else study economy most strictly. I grow a great many chrysanthemums and fruit trees in pots. These, as everyone knows, are obliged to be repotted every year in rich soil full of crushed bones, &c., and are kept during their growing time constantly saturated with liquid manures of various kinds. The soil when they are repotted is very far from being entirely exhausted, and is at once made up into a heap, to be saved for the shrub potting in the spring. In this way the compost for the shrubs costs nothing. It is like the outgrown clothes of the elder children being made up again for the younger, and I can answer for it that the shrubs do excellently in this soil. The plants are taken out of their pots, the pots washed and dried and clean drainage given. The roots are shaken out entirely, as much old soil as possible removed, any long, coarse roots shortened back and then they are repotted, ramming the soil in firmly as you do for fruit trees or chrysanthemums; and very seldom does a plant when once of a fair size require a larger pot than that out of which it came. When the potting is over we go carefully through all the plants and prune them. This, of course, must be done with judgment, but, as a general rule, I remove all long, coarse growth entirely, shorten down the *thin* shoots and head back the leaders, encouraging side and bottom growth as against running up in the head. The pots are then stood back in rows according to size, in some convenient spot not too shady, but not exposed to baking, scorching sun; the chief point, however, is that the place where they are stood shall be within reach of the water hose, and there they stand and go on quietly until October comes again, and then—*ducapo*.

"I ought perhaps to have said that the *Ericas*, *Kalmias*, *Andromedas*, and such like have some of the old waste peat from greenhouse *Azaleas*, *Camellias*, &c., mixed in with their compost. And note that where the Holly maggot abounds (and where does it not?), there you must look your Hollies over most carefully once a week in May and June, or you will soon have no Hollies left. The slight check which the late potting gives them seems to make them less able to resist the maggot, or perhaps makes them sweeter, tenderer, and more juicy to its taste."



BITTER PIP IN APPLES.—This is an obscure disease affecting apples that appears to be getting more common every year. Numbers of small brown spots appear in the flesh of the fruit, some little distance below the rind. So far as present knowledge goes, it seems to be due to some physiological disturbance rather than to the attack of a parasite. An interference in the water supply during the development of the fruit has been suggested as a probable cause.

Profitable Vegetable Culture.

THE extension of small holdings in England, an appreciation of the possibilities of intensive culture, and the organisation of co-operation principles applied to the routine of marketing have created a demand for reliable information on the profitable cultivation of market-gardening crops. Most of the existing books on vegetable culture are written from the point of view of the private grower with a bias towards the production of big, shapely specimens for exhibition purposes, or else they deal with market-gardening on a large scale. In this book* the limited area of the small holder is specially remembered, and in it he will find not only the general details of management described, but every doubtful point likely to arise in the practical management of his holding fully discussed and explained. The author is a man who not only knows his subject thoroughly, but one who takes an intense interest in the social problems that are at present agitating the rural community. Out of his experience as manager of the Fels Fruit Farm and Mayland French Garden, in the County of Essex, Mr. Smith has provided at the cost of six shillings a complete text-book for the use of the holder who through his own labour is actually engaged in making a decent living out of the land.

It is an indisputable fact that the possibilities of the land under intensive culture are far and away beyond the imagination of the ordinary cultivator who blindly follows the old conventions of farming and gardening. Ordinary tillage soil contains vast stores of national wealth locked up in complex chemical compounds that can be gradually released under the intelligent directive labours of the well-informed cultivator. The plant-food is there, and the key to the opening of the larder-door is the gift of the new soil-science of Bacteriology. We must now consider the soil from a standpoint entirely different from the old idea that it was a mass of inert material, the seat of purely physical and chemical changes. The soil is a vast complex community of minute beings of different races, carrying on the same grim struggle for existence as is the visible over-soil population we are all more or less familiar with in our every-day experiences. In the various changes wrought in the soil by these multitudinous germs the vast stores of insoluble food, unavailable to crops because of their insolubility in water, are slowly brought into solution and made ready for the feeding roots. Some of these bacterial races, for example, produce ammonia from organic matter, others from nitrates, while either from direct or indirect action of the vital activities of this microscopical flora phosphates, sulphates and soluble salts of potash, lime and magnesia, are gradually produced, and so the fertility of the land is sustained. The chief essential conditions necessary to encourage all this vital activity in the soil are a sufficiency of moisture and air and a suitable temperature, hence the importance of drainage and thorough tillage, and the advantage of extending the zone of action by deep cultivation and the complete

* "The Profitable Culture of Vegetables." By Thomas Smith. Longmans, Green & Co. 6s. net.

pulverisation of the clod. In intense cultivation the efforts of the natural processes of the soil may be supplemented by the addition of farmyard manure and other fertilisers.

That we do not avail ourselves to the full extent of our resources as to land is illustrated by the fact that if the land of the three kingdoms was, on the average, tilled as the soil of Belgium is at present it would be able to produce, according to the estimate of one authority, sufficient food to feed 37,000,000 people.

The task of feeding ourselves is a matter of supreme importance to us in Ireland. At present our ports are kept busy with the handling of imported food-stuffs that might be easily, and with much profit to ourselves, produced within the confines of our own seas. But to do this we must educate ourselves in the best methods of culture, and co-operate, for business purposes, in order to secure the full advantage of our labours. Mr. Smith gives most excellent advice to the prospective small holder, and after discussing the methods and prospects of market-gardening, rightly observes that after all the most potent factor in success is the man himself. We can confidently recommend this book as a complete and reliable guide to any one seriously engaged in the production of crops for commercial purposes. It is obviously the outcome of the author's own experience, and nothing is included that may be disregarded by the cultivator anxious to get the best results from his holding. The business side is fully treated, such as packing, grading and marketing. There is also a most useful and clearly-written chapter on pests and diseases, with numerous figures of the pests described. Reference tables are also given. The book as a whole is well arranged, clearly written, abundantly illustrated, and handsomely presented by the publishers.

Eryngium Bromeliæfolium

THE plant here illustrated is a fine specimen of the Bromelia-leaved Eryngium growing on the banks of the river Liffey in the grounds of Harristown House, Brannockstown, Co. Kildare, the seat of P. La Touche, Esq., D.L. The plant is a native of Mexico and is half-hardy in most places in the British Isles. The height of the plant, as given by descriptive writers, is usually stated to be about four feet, but the gardener (Mr. Winstanley) gives the height of this specimen when in full bloom as fourteen feet.

The genus Eryngium is found spread throughout the temperate and subtropical regions of South America, and belongs to the order Umbelleferæ or parsnip family. The flowers are arranged in roundish, dense heads, each protected as a rule by spiny bracts forming a cup-like involucre. The ordinary leaves are large and sheathing at the base, and the majority of species form very striking objects when placed in positions suited to their requirements and habit. They love a light, sandy medium for their roots, especially if they can get abundance of water by searching for it in the depths of the soil.

The species here illustrated is provided with long lanceolate radical leaves and large, handsome stem leaves, with parallel veins and margins provided with conspicuous spiny teeth. The flowers are white, and they make their appearance in July.

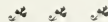


Photo by

(Mr. Winstanley)

ERYNGIUM BROMELIÆFOLIUM

In the grounds of Harristown House, Brannockstown, Co. Kildare.



"Give fools their gold, and knaves their power,
Let fortune's bubbles rise and fall;
Who sows a field, or trains a flower,
Or plants a tree, is more than all."

—Whittier.

Spices and Condiments.

THERE is an enormous trade in these products of the vegetable kingdom. The imports into the British Isles alone exceeds thirty million pounds weight per annum, of which pepper forms in terms of money's worth about half of the whole. The pepper of commerce is obtained by grinding the dried fruits of *Piper nigrum*, a tropical plant, a native of the Straits Settlement, Madras, and Indo-China. The black pepper is the product of the whole berry, while the white is from the berry after the removal of its outer covering. Another species of pepper yields the *Kava* root, which is chewed by the natives of the Society and other islands of the Pacific, in order to induce a flow of saliva which is collected, fermented, and then prepared into a slightly narcotic and intoxicating drink, said to be a great quencher of thirst. *P. nigrum* is a climber twenty or thirty feet long, so that in its cultivation poles must be provided for its support.

CARAWAY "seed" is the half or split fruit of an umbelliferous plant. The common caraway is largely cultivated in Europe, and might well be introduced as a crop in many parts of Ireland. It is grown in Essex and Kent in England. It is not only used to flavour cakes, &c., but is also used as a flavouring for spirits. The distilled oil is extensively used as a scent for toilet soap and also to cover the unpleasant taste of certain medicines. Another species is largely used in India as an ingredient in curries and for other purposes.

CLOVES are the dried flower-buds of *Eugenia caryophyllata*, a small tree of the Myrtle family. It is called "clove" from the latin *clavus*, a nail, in reference to its appearance. It is a native of the Moluccas or Spice Islands, and the Dutch at one time, in order to retain a monopoly in the supply, caused all the trees in the group of islands to be destroyed except in one, but the French in 1770 succeeded in getting stock to grow in their own colonies, and now it is cultivated throughout tropical countries generally, including Grenada in the West Indies. One plant when mature will yield from six to seven lbs. of dry cloves. Its use as a spice is more general in tropical countries than in Europe.

GINGER.—An enormous quantity of ginger is consumed in these islands, the average being about 59,000 cwts. per annum, while in addition to this about 40,000 cwts. of preserved ginger are imported each year, mainly from Hong Kong. The plant yielding the "root" (really an underground stem or rhizome) is cultivated in tropical countries where it is not too hot and not too moist for its requirements. It is propagated by sets as Solomon's Seal might be and liberally supplied with manure. The yield obtained is about 4,000 lbs. of rhizome to the acre. After raising the "root" it is plunged into scalding water for a few minutes and then dried in the sun, or else after scalding, the black skin is scraped off and then laid out in the sun to dry. The former is the "black" ginger and the latter the "white" ginger. The finest scraped ginger comes from Jamaica.

CINNAMON.—There are quite a number of species of trees the bark of which yield cinnamon. They all

belong to the genus *Cinnamomum* of the order Lauracææ. One of the cinnamoms of European commerce is obtained from *C. cassia*, grown in China. It is from the distillate of the leaves of this tree that the "oil of Cassia" is obtained, so extensively used in perfumery and in the manufacture of soap. The true cinnamon of the shops is obtained from *C. zeylanicum*, and is, and has been for centuries, grown only in Ceylon. Every sixth year the plantation is cut down to the ground so as to induce the growth of strong, vigorous shoots, much in the same way as willows are treated. The shoots when cut are stripped of their twigs and leaves and a long slit made through the bark along the length of the twig. The shoot is then rubbed with a smooth piece of wood to enable the worker to slip off the hollow cylinder of bark without breaking. They are then dried and cut into lengths. The United Kingdom imports about £25,000 worth of this spice every year.

The Planting Season.

WE are now in the midst of the planting season. Fruit trees, forest trees, shrubs and herbaceous plants are being lifted in numbers in the nurseries and despatched all over the country to be planted in chosen spots by professional or amateur gardeners.

The success of a plantation depends principally on three factors, the choice of species or variety, the preparation of the ground and the method of planting. The first of these is probably the most important, and must be given very careful consideration; the nature of the soil and the amount of shelter available, as well as the mildness or otherwise of the climate, will influence us in our decision. In the case of forest trees, larch likes a moist but well-drained slope; sitka spruce will tolerate a certain amount of stagnant moisture in the soil, and so can be used for filling hollows. Douglas fir will probably lose its leader in an exposed situation. Austrian pine is a splendid shelter tree, and so on. Points like these must be considered before tree planting is proceeded with. In the case of fruit trees a large amount of information has been accumulated within the last few years as to the behaviour of different varieties all over Ireland. Pears and apples, like Cox's Orange Pippin, seldom succeed without the shelter of a wall in the north of Ireland. Lord Suffield, Ribston Pippin, and Peasgood Nonsuch apples will canker badly except in the most favoured situations. Bismarck is apt to degenerate into a second rate fruit as the tree gets older, and is very liable to scab. There are a few apples that we can safely say will succeed anywhere given good cultivation, and will yield a good return; these are Bramley Seedling, Lane's Prince Albert, Grenadier, and Early Victorian, all of which are cooking varieties, and Beauty of Bath, Worcester Pearmain and Allington Pippin for dessert purposes. Among pears we can always depend on Williams' Bon Chrétien, and of plums Victoria is the most reliable.

The selection of herbaceous plants is not so difficult. The soil may be made to suit all the hardy varieties,

and we can generally find a situation in the garden where the amount of light and shelter favours them. Colour, height, and time of flowering are the principal points to be attended to. The preparation of the ground should be completed well before the time of planting, and in the case of fruit and forest trees holes should be opened beforehand. Before a wood or shelter belt can be planted it is frequently necessary to clear the ground of scrub and brambles. The best preparation for orchard ground is to take off a crop of potatoes the season before to clear the ground of all bad weeds. Ground intended for herbaceous plants or shrubs should be double dug and manured, a light dressing for the shrubs and a heavier one for the herbaceous plants. It is most important to observe correct distances between trees, whether they be forest or fruit trees. For timber production forest trees are planted 4 feet apart, but for shelter a greater distance is allowed. A half standard or standard apple tree on the Crab stock should be 24 feet from its nearest neighbour, but bushes on the Paradise can be planted 18 feet apart. At these distances horse labour can be employed for a number of years to cultivate the ground unless, of course, bush fruit is planted between the rows.

As soon as plants or trees are received from the nurseries they should be unpacked and heeled in a trench until such time as planting can be proceeded with. If, after unpacking, the roots are seen to be very dry they should get a good watering; it is most important that roots should never get dry or be exposed to frost. In planting the roots should be kept near the surface, and the soil should be well firmed around them by treading. Deep planting is a great mistake, for the bulk of the plant food is in the top six inches of soil. It will be necessary to stake standard trees after planting, and in exposed situations half standards will also require support.

G. O. SHERRARD.

Flowering Plants for Forcing.

A CORRESPONDENT asks for the names of a few plants that may be easily forced into early flowering during the winter months of the year. The most useful, in this respect, is undoubtedly the lilac. By placing the plants, grown of course in pots, in a heated greenhouse, the air of which is kept moist so as to imitate as far as may be the natural conditions of spring, the dormant life of the shrub will be called into activity, the mass of flower buds already formed and merely waiting for the right external conditions will duly burst in open flower. The best results are of course obtained from specimens that have fully ripened their wood and are well set with flower buds. The Siberian variety of white lilac seems to be the favourite with at least market growers. If the plants are grown in the open they must be raised and potted, and though commercial growers simply place the dug-up plants together on leaves on the floor of the warmed glass-house without further labour.

Spiræa prunifolia florepleno is another shrub well suited for forcing. It can be raised and potted and otherwise treated as the lilac. The flowers are snowy-white, and are produced profusely. They are excellent for bouquets or for vases.

Deutzia gracilis and *D. scabra* are great favourites. They are best raised in pots if the object is to have

early forced blooms. Market growers seem to prefer little plants, struck from cuttings in spring, and grown in four-inch pots.

Forsythia viridissima is easily forced into early bloom. Its flowers are yellow and very striking. It too is usually grown in the open during the summer and then raised and potted before bringing it into the house. It is propagated by cuttings from half-ripened wood, under hand-glasses.

Weigela rosea and *W. amabilis* are also said to be good subjects for forcing. The potted plants are extremely handsome when in flower. The abundance of bloom along the flowering stems give these plants a distinctive appearance.

We hope that these notes will meet the requirements of our correspondent.

Notes.

HERBACEOUS BORDERS.—In the formation of a hardy plant border, the ground should be trenched to a depth of two feet and a good dressing of farmyard manure worked in. This being done, the planting may be done any time during the winter months. Suggestions and advice as to suitable subjects to plant may be obtained by reference to back numbers of IRISH GARDENING.

LEAF-SPOT IN CELERY.—Mr. F. J. Chittenden ("Contributions from the Wisley Laboratory") has been drawing attention to the increasing prevalence of this disease, especially during the year 1910. In our own garden last year very considerable damage was done through this fungal attack, especially towards the end of the season. It begins with the appearance of tiny dark spots that spread, and eventually reduce the leaf to a dry, more or less papery consistence, and later on to decay. The cause is due to the presence of *Septoria petroselinii* var. *Apii*, and is most difficult to check and impossible to arrest when fully established. The greatest care should be taken to destroy affected plants. Those who have experience of the disease must have noticed that it spreads from the blade of the leaf down the whole length of the stalk, and if the plants are kept for seed purposes the fungus may reach the fruits and fructify there. Seeds may therefore be smitten with the disease before sowing, so that the danger from this source must not be overlooked. Potassium sulphate spray (1 oz. to 3 gals. of water) may be used as a check.

Obituary.

FRANK HUDSON.—It is with deep regret we record the death of Mr. Frank Hudson, Horticultural Instructor, County Waterford. The deceased was one of the early group of gardeners selected by the Department of Agriculture for training at the Albert Agricultural College, Glasnevin, in order to give them the necessary technical experience to enable them to carry on the pioneer work of horticultural instruction in this country. Mr. Hudson was a constant contributor to these pages from the first, his special subject being herbaceous plants. Mr. Hudson was a keen gardener and an enthusiastic teacher. He was kind, gentle, unassuming, lovable, and passing away will be sadly missed by all his many friends.

The Month's Work.

Flower Garden and Pleasure Grounds.

By W. USHER, The Gardens, Brennanstown, Cabinteely, Co. Dublin.



DECEMBER, the last month of our year—

"Sullen and sad with all its rising train
Of vapours, clouds, and storms."

The last, lingering leaf has fallen from the oak, and we may expect to see the earth whitened with frost and snow. Nevertheless a few flowers linger to remind us of the past summer; the Chinese rose *Veronica*, laurestinus, osmanthus, and several berried shrubs help to relieve the sombre bareness of our gardens and pleasure grounds; but there does not seem to be enough to attract the majority of amateurs, who are, as a rule, tempted to desert their gardens. If they would only screw up their courage or resolution to keep on plodding now they would be amply repaid during the spring and summer months, for there is nothing will show neglect so much or as soon as a garden. In many respects the winter work is of more importance than that of summer; it is now that we have got to do the uncongenial plodding work which seldom shows to the unpractised eye. If there happens to be a cold, damp spot in our garden or pleasure grounds now is the

time to make our drains. If a portion of our garden wall is out of repair, and that woodlice and snails have taken up their abode in the crevices, from which to sally forth on our fruit and flowers, now is the time to repair the defects; if there are uneven patches in our lawns we should now carefully lift and relay our turf; any beds or borders which may have lost their youthful shapes or curves should be attended to; if the grass edges of our walks have become irregular this is the best time to cut the edges or move out the turf, as the case may be. A good many gardens are not so attractive as they might be if they had more design and less confusion reigning over them. To get work done well and quickly a good methodical training is necessary for either amateur or professional gardeners.

A good many of our hardiest shrubs may be pruned now, although the majority are best left over until April. In pruning it may be said that there are three leading purposes—namely, to improve the shape, curtail the size, and to induce a greater bloom, or fruitfulness. The first is entirely a matter of taste, the second of space, and the third may be said to be the primary object for which all flowering trees or shrubs are cultivated. One point we must always keep in mind when pruning our shrubberies is to prune so that we keep a tree or bush closely furnished to the bottom.

Attend to carnations and pinks in beds or borders,

and press the soil firmly after frost or after a wind storm; they often get badly shaken and become exposed at the "collar." The same remarks generally apply to pausies.

Should tulips be showing over ground and very severe frost occur it is a good practice to cover over with light, dry leaf-mould.

Dahlias should be carefully stored away in a cool, dry cellar where frost will not penetrate; look over them occasionally, and remove any decaying tubers.

Look over cuttings of summer flowering plants in frames or boxes, and remove any decaying leaves. Water should be sparingly given, but as much air as possible on mild, dry days. Look to Alpine plants that they do not suffer from damp or are eaten by snails and slugs.

The Fruit Garden.

By G. DOOLAN.

BLACK CURRANT MITE.—This pest infects black currant bushes, causing an abnormal development of the buds. It is a very serious disease, and has been a source of much loss to fruit growers in England. Now is a good time to examine the bushes for infected buds, which are easily detected, as they are large and oval-shaped, whereas healthy buds are small and pointed. All bushes showing any sign of infection should be dug up and burned, and fresh lime afterwards applied to the ground. This disease in currants is caused by a tiny mite which can only be discerned under the power of a microscope. Sometimes these pests exist to the number of several hundreds in a single bud.

AMERICAN GOOSEBERRY MILDEW.—This disease, like the preceding one, can only be effectually got rid of by burning. Therefore, all affected bushes should be burnt, and no new bushes must be planted on the site of the old ones for at least two or three years. The disease is now in its dormant, or resting stage, and is not so easily detected as in the active, or summer stage, when it may be found on the berries as well as on the shoots. It will now have a brownish, felted appearance, and will be found on the points of the young growths, particularly those arising from the centre of the bush.

PROPAGATING GOOSEBERRIES AND CURRANTS.—Young plants are easily raised from cuttings, which root readily if put in at the present time. Healthy shoots, about fourteen inches in length, of the past season's growth may be selected, and each cutting should have a horizontal cut made with a sharp knife below the bottom joint. The tips of the shoots are usually weak and are best removed. In the case of gooseberry cuttings the buds on the lower half of the cutting should be rubbed off, otherwise suckers are liable to grow from these underground buds and cause trouble later on. The cuttings root best in light, sandy soil, near a north wall or in a shady situation. The soil should be well broken up, and if it is of a heavy nature some sand or leaf-mould added. Place the cuttings in lines one and a half feet apart, and four inches asunder. Open a cut with the spade about three inches deep and press the

cuttings into this; replace the soil, and press gently with the foot. The after-treatment consists in keeping the ground clean and stirred with the hoe. Great care is necessary to propagate only from healthy bushes.

WINTER SPRAYING.—The caustic alkali wash will be found very effectual in cleansing the bark of fruit trees. In the case of young trees one application will be sufficient, but old trees may require several applications, especially if the moss and lichenous growth is of long standing. To prepare a forty-gallon can of this mixture, four pounds caustic soda, four pounds crude potash, three pounds soft soap, and forty gallons of water are required. The soda should be carefully dissolved in a small amount of water. Dissolve the potash similarly, and add to the soda, stirring thoroughly; then dissolve the soap in boiling water and add to the soda and potash, stirring the mixture all the time. Sufficient water to make forty gallons of mixture should then be added. As the caustic soda is liable to burn the hands, it is advisable to use an old pair of gloves at this work. Spray with an ordinary potato sprayer, to which a bamboo connection should be attached when doing tall trees. A calm day should be selected for the spraying, otherwise much of the material will be blown away.

GENERAL REMARKS.—During suitable weather much of the work recommended for November may be continued. Fruit trees, however, should not be planted in wet or frosty weather; better far to defer such work till the conditions are favourable. Pruning may be done at any time during the winter, except in frosty weather, though a few degrees will not matter. This work has been so often described in the pages of IRISH GARDENING that it is unnecessary to go into details. It should be remembered, however, that newly-planted trees require rather severe pruning, as the object is to get strong growth the season following. Always cut at an out-growing bud, so as to have the centre of the tree open. Trees that have been neglected in the past should be pruned lightly, merely cutting away all weak and crossing branches. To open up such trees the pruning should be continued over a few years. Varieties of apples like Cornish Gilliflower, Early Harvest, or Irish Peach, which bear on the points of the shoots, should have a number of the strongest shoots preserved, and only the weakest cut away.

It is most important to cut out all dead wood, as these harbour fungous diseases. All the prunings, and especially dead refuse, should be gathered and burned on the ground. The careful fruit grower will also gather and burn the fallen leaves, as these often contain the resting spores of scab and other fungous diseases.

The Vegetable Garden.

By J. G. TONER.

LETTUCE AND ENDIVE.—Good white heads or lettuce and endive are quite a treat during the winter and spring. If forward plants are still growing in the open they may with great advantage be transferred to frames or provision made otherwise, according to circumstances, for hastening

maturity and protection. Not only frosts but damp is exceedingly inimical to their well doing; some sort of shelter is therefore needed. When accommodated in frames care must be taken to allow the maximum of ventilation at all favourable periods; on fine days the lights may be entirely removed. The Cos varieties of lettuce are usually tied up for the purpose of blanching the hearts. This should be done in the middle of a fine day, when the plants are dry, otherwise there would be a tendency to rot rather than to whiten owing to the action of the confined moisture on the tender leaves. The same remark applies to endive.

Even in the frameless garden such crops can in a number of ways be protected from the destructive elements. Ordinary wooden boxes of any shape or size may be laid conveniently by, and when the dangerous periods threaten are simply turned over the most forward portion of the crop. And, again, wooden pegs driven into the ground at the sides of the bed, leaving them a foot above the soil; light laths of any kind are then attached to these, and will serve to support mats or other coverings. Pea rods even placed on them and strewn over with straw or bracken will admirably answer the same purpose. To secure crops that are not quite hardy during the distressful season some little pains must be taken.

POTATOES.—It is full soon to be talking of planting potatoes. That is so. But at the same time it is not too soon to make preparation. This must be done early if an early crop is desired. Some time during this month seed intended for culture under glass might be placed ends up in boxes on trays, and well exposed to light. Those that are started early, brought along slowly with short, stout buds are sure later on to give a satisfactory return. Extra early potatoes are, to be sure, regarded more in the way of a novelty rather than for their other qualities. All the same, people like to boast of having already had them, and of their own growing, too. Where room in a suitably heated structure can be found for a few their culture will cost nothing extra in that respect. The usual place given to them when potted is on a top shelf near the glass. They interfere then little with the regular occupants. Mackey's Lightning, Weber's Early, and Ashleaf Kidney are suitable kinds for pots or hotbeds.

FORCING OPERATIONS.—Rhubarb is very much esteemed in its forced state. The bringing along of early sticks is not a very difficult job. It can be done in the open, on hotbeds under glass, in heated greenhouses, and even in a warm room or cellar. Good, strong roots are required, and these may be purchased or raised from the open ground at once. The main things to aim at are to give a comfortable degree of heat, plenty of moisture, and to totally exclude the light. Under these conditions good produce is secured. Boxes and barrels of small dimensions are made use of when the stools to be forced are growing in their permanent bed. They are simply inverted over the selected ones, and a plentiful supply of hot stable manure and leaves mixed heaped over them. This material should, of course, have undergone a course of preparation beforehand, so that the heat may be mild and lasting. The heat will be much prolonged and much trouble saved if a portion,

or indeed all, of the boards forming the bottoms of the boxes or barrels are removed, and placed on them temporarily, so that the sticks may be easily reached without disturbing any appreciable quantity of the heating material.

TOMATOES.—These are always welcome, and the season can be lengthened out very considerably by the artificial ripening of the latest fruits. The flavour and quality of fruit so treated, no doubt, is very inferior to that of naturally matured produce. Want of sufficient light principally defies our efforts to fruit plants during winter; but the time is near when a start must be made to have a crop as early as possible in spring. To this end seeds may be sown soon. A steady heat of from 60° to 70° is required. It will be much better to put them in at regular distances apart rather than scatter them indiscriminately, for when this is done they are bound to be crowded, and consequently weak. In the transferring of the young plants to small pots, which should be done immediately they have made the first pair of perfect leaves; the advantages will be apparent also, for nice balls of soil can be easily lifted with each plant, thus ensuring that no check, a very important

matter at this season, is given. A warm and very light-some position must be theirs, otherwise they will spindle badly. Cuttings are sometimes struck in autumn, but they do not always prove satisfactory, as they lack the constitution of seedlings.

DIGGING AND TRENCHING.—This is sometimes dubbed the slack month as regards work in the vegetable quarters; there is really never any such time. Work there is in abundance if it is only called to mind and done. Onion beds may be prepared now, likewise the positions for peas and carrots and parsnips will be all the better if the ground has been prepared for them long in advance. When the soil is comfortably dry digging and trenching must be seen to. By a regular system of trenching not only are good soils much improved by such deep cultivation, but even bad soils, such as shallow ones resting on clay, can be brought to a much higher standard. In dealing with the latter, coal-ashes worked into the clay, together with the other vegetable refuse, green or decayed, with or without manure, will open it up to a great extent, therefore draining it partially and making it warmer. A dose of lime, too, a handful to the yard, will also prove serviceable.

The Winding Road.

There are many to sing us the doleful song
Of the heart that is heavy with tears;
But who will sing the dauntless song—
A marching measure that swings along—
Of the heart that has no fears?

The joy of life is the forward road
To the heart that is ready to go;
There's a laugh and a jest at the end of the day,
And a sweet calling voice from far away,
Whenever the wild winds blow.

Though what we shall see at the end of the road
Is hidden from you and from me,
Yet with heart that is free of a vain disguise,
And face to the front and fearless eyes,
We will dare whatever we see.

—*Tertius Van Dyke.*

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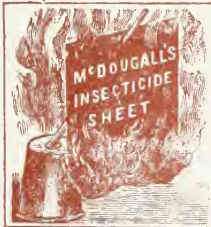
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PRICES: Pints, 1-; Quarts, 2-; Gallon, 3 6; 1 Gallon, 6-3 Gallons, 17-; 5 Gallons, 27 6; 10 Gallons, 54-

IMPORTANT TO
 Gardeners and
 Fruit Growers



"NIQUAS"

(Registered).

The most successful Non-poisonous Insecticide of the day.

ITS ADVANTAGES ARE—

Certain death to all Insect Pests.

No possible injury to the most delicate Plant, Flower or Foliage.

It is by far the cheapest Insecticide known. One pint makes ten to twelve gallons for Thrip, Black and Green Fly, &c., whilst RED SPIDER, Mealy Bug, and Scale can be thoroughly eradicated by using "NIQUAS," about double the strength required for Fly.

It is most successfully used by Orange and other Fruit Growers in the Colonies, &c.

PRICES—Pint, 1-; Quart, 1 9; Half-Gallon, 3-; Gallon 5-; Kegs, each Five Gallons, 22 6; Ten Gallons, 42 6.

LETHORION

Registered Trade Mark

IMPROVED METAL



**VAPOUR CONE
 FUMIGATOR . .**

At Greatly Reduced Prices.

INTRODUCED 1885.

This well-known invention for the entire eradication of all pests infesting vegetation under glass is now manufactured in a more simple and reliable form. The small candle, which will be found packed with each cone, has only to be lighted, and placed on the ground in the centre of the Cone Frame, to produce immediate results. Nothing on the market can equal it for efficacy and cheapness.

Cone No. 3, for a well secured house of cubic 2,000 to 2,500 feet price 1- each. Cone No. 2, for a well secured house of cubic 1,000 to 1,200 feet, price 8d. each. Cone No. 1, for frames cubic 700 to 1,000 feet, price 6d. each. Full directions accompany each Cone.

MANUFACTURED BY

CORRY & CO., Ltd.

13 and 15 Finsbury St., LONDON, E.C.

Notes.

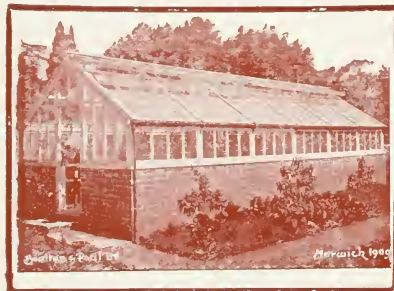
MACKAY'S GARDEN MANUAL for 1911 well sustains the high character of previous issues. It is not only a guide to the selection and culture of vegetables and flowers, but a floral atlas to the garden as well. It is exceedingly well compiled, and young gardeners particularly will find in it a mass of botanical and other information of educational value to them. The type is bold and clear, and the illustrations beautifully reproduced. By the courtesy of the firm we give a specimen of one of the illustrations. (See page 9.)

UNWIN'S SWEET PEA NOVELTIES for 1911.—Unwin's novelties in sweet peas are always looked forward to with interest by specialists in these popular flowers. Of last year's novelties, it may be remembered that the Edna Unwin variety got special commendation from the judges at the last show of the Royal Horticultural Society of Ireland, and that Arthur Unwin, Clara Curtis, and others of last season's introduction have become very popular with growers. We note that there are eight varieties advertised as novelties for 1911. So far their descriptions only are known to us, but we have no doubt they will have something exceptionally striking among them. Mr. Unwin's catalogue may be obtained on application at his nursery, Histon, Cambridge-shire.

A USEFUL DISINFECTANT for cleansing greenhouses in winter and rendering them healthful for plant life is the proprietary preparation introduced by Messrs. Cross & Sons under the name of "Clubicide." The manufacturers claim its efficiency as a remedy against the attacks of such soil vermin as slugs, woodlice, wireworm, &c. It appears to be harmless to plants in the dilution recommended to be used for watering growing crops (tomatoes, &c.); indeed, it is a further claim of the inventor that it actually stimulates growth, but of that we have no personal experience. We have before us, however, copies of numbers of letters received from market growers that speak in glowing terms of Clubicide not only as an excellent disinfectant but as a stimulant as well. We propose testing this preparation during the coming season.

Royal Horticultural Society of Ireland.

THE annual general meeting of the veteran society was held at the Institute of Civil Engineers, 35 Dawson Street, Dublin, on the 20th ult., the chair being taken at 3 p.m. by H. P. Goodbody, Esq. The 81st annual report, commencing with "It is with pleasure your council are able to state that the progress noted in last year's report, has been steadily maintained, and that the number of members is now higher than appears to have been for any other period in the long history of the society," provides practically the keynote to the year's working. True, the summer show in Merrion Square was the wet blanket of the three exhibitions, but as that was preceded by a successful spring show, and succeeded by the bright autumn event in Lord Iveagh's grounds, there was some solace for the soreness of disappointment created by the elements in July. The balance sheet, too, for the year ending December 31st comes out on the right side. The annual report and statement of accounts, as moved for adoption by the chairman and seconded by Mr. James Robertson, were passed *unem. con.* In view of the capriciousness of the elements and of the public taste respecting Dublin shows, the membership list may not inaptly now be regarded as the backbone of the society, and we cannot but think it a healthy sign that it now includes 92 practical members as against 31 two years ago; the total membership, including six affiliated societies, now standing at 475. That this, although the highest membership yet shown in the history of the society, is still, nevertheless, lower in proportion to the support received by similar cross-channel societies, creates the feeling that no effort should be spared both by the council and those interested in its welfare to bring the membership list up to 1,000, which, if great expectations, can scarcely be regarded as an unreasonable estimate. The results of the ballot taken at the meeting were that Mr. E. H. Walpole (new member) and Messrs. Jas. Robertson, Ernest Bewley, D. L. Ramsay, Sir John Ross, Judge Bird, R. T. Harris, and J. L. McKellar, retiring members, were elected on the council. The programme for 1911, besides the two days' spring show in conjunction with the Royal Dublin Society's Cattle Show at



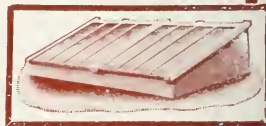
CARNATION HOUSES

(Good Plants for next Season's flowering depend on the care and management for the next few months)

We design and construct **CARNATION** and **MALMAISON HOUSES**
Estimates on application for
CONSERVATORIES, VINERIES
PEACH HOUSES
ORCHID HOUSES, &c.

GARDEN FRAMES

In great variety, always in stock



Illustrated Catalogue Free

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TESTIMONIALS FROM
The Earl of Yarborough, Lord Derby's, and Duke of Montrose's Head Gardeners. Also from "Gardening Illustrated" re the effectiveness of "Nicotidide" Fumigant. Also from Messrs. Dublin & Co., Kothesay, Seedsmen to H.M. The King 25 per cent. Cheaper than other Brands

NICOTIDIDE

(FUMIGANT)

	cu. ft.	each
Half-Gall. Tin contains sufficient for 160,000 ...		60
No. 1 size Tin—1 pint ..	40,000	15
No. 2 size Tin— $\frac{1}{2}$ pint ..	20,000	7 6
No. 3 size Bot.—6 oz. ..	12,000	4 6
No. 4 size Bot.—4 oz. ..	8,000	3
No. 4 $\frac{1}{2}$ size Bot.—2 oz. ..	4,000	1 8
No. 5 size Bot.—1 oz. ..	2,000	10 d.

Carriage Paid

FUMIGATORS, 1s. each, for 5,000 cubic feet

NICOTIDIDE PLANT SPRAY

$\frac{1}{2}$ -pint 1 2, Pint 2, Quart 3 6, $\frac{1}{2}$ -gal. 5 -, Gallon 10 -
(Use 1 part to 40 parts for Greenfly, &c.)
Carriage Forward

GOW'S SLUG AND WIREWORM DESTROYER
Being a Combined Fertilizer

LAWN SAND, DAISY ERADICATOR, TOBACCO POWDER AND QUASSIA EXTRACT

Sold in 6d., 1 and 2 6 tins, also in larger sizes

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Insist on your Seedsmen supplying them

If any difficulty in securing the above we will give you the name of nearest Agent

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"FOUR OAKS" Gold Medal SYRINGES



The only Syringes EVER awarded A GOLD MEDAL.

The Syringe illustrated is No. 9 Undentable Spraying Syringe, $1\frac{1}{2}$ " X 20", 12 6, or with Angle Joint, 18 -

Used and recommended by all leading authorities

We also supply the same syringe with plain barrel under

Give a finer and better spray than any other syringes

No. 50 1 " X 14", 8 6 2 " X 20", 10 6
Bends, 1 6

Made in numerous Patterns and Sizes

INSIST upon having "Four Oaks," others are NOT so good

Send for Catalogue of Syringes and Spraying and Linewashing Machines. All leading Irish Seedsmen, Nurserymen and Ironmongers act as our Agents, but if any difficulty in obtaining, write direct.

Manufactured only by the Inventors and Patentees—

The "Four Oaks" Undentable Syringe and Spraying Machine Co., SUTTON COLDFIELD, BIRMINGHAM

'EUREKA' WEED KILLER.

SAVES WEARY WEEDING.



50 gallons of mixed solution will kill all weeds on 200 square yards of paths, &c.

POWDER.

1/- tin for 12 galls. solution	} Free Tins and Cases.
19 " 25 " "	
6 " 100 " "	

LIQUID. 1-50.

$\frac{1}{2}$ gallon	2 -	drum free
1 "	3 6 -	" gd. extra
2 "	6 6 -	" 1 6 "
5 "	14 -	" 2 6 "
10 "	25 6 -	case 5 -

'EUREKATINE'—The successful fumigant.

'EUREKA' Insecticide, Lawn Sand, Hellebore Powder, Bordeaux Mixture, Worm Killer, Hayward's Summer Shade, &c.

SOLD BY AGENTS.

Full list with booklet, "Chemistry in Garden and Greenhouse," sent post free by makers—

TOMLINSON & HAYWARD, Ltd., LINCOLN.

RELIABLE GARDEN HELPS

ALPHOL

A Manure that destroys Wireworm, Slugs and Grubs in the Soil, and Caterpillars on Plants; Fruit Trees, &c. Prices—1/- and 2/- Tins; 14 lb. Bag, 3/-; 28 lbs., 5/-; 56 lbs., 8/-; 1 cwt., 15/-.

DEMON INSECTICIDE

(Non-Poisonous.) Kills all Insects. Prevents and Cures Mildew. Prices—1 Pint (to make 12 gallons), 1/-; Quart, 2/-; $\frac{1}{2}$ Gallon, 3/-; Gallon, 4/-.

CLIMAX LAWN SAND

Transforms Weedy Lawns. Kills the Daisies, Plantains, &c., and improves the Grass. Prices—Tins, 1/3 and 2/-; 14 lb. Bag, 3/6; 28 lbs., 6/-; 56 lbs., 11/-; 1 cwt., 20/-.

CLIMAX WEED-KILLER

Kills all Weeds on Garden Paths, Walks, &c., and keeps the surface clean and bright for from 12 to 18 months. Prices—No. 1 Tin, 2/-; 2 Tins, 3/6; No. 2 Tin, 6/6; 2 Tins, 12/6.

APTERITE

The great Soil Fumigant.

Kills WIREWORMS and other Soil Pests.

INEXPENSIVE. EASY TO APPLY.

V1 FLUID For Winter use.

Cleanse; and re-invigorates fruit trees. Invaluable in the garden and orchard.

OF AGENTS EVERYWHERE.

Sole Mfrs. **Willm. Cooper & Nephews, Berkhamsted.**

Boundary Chemical Co. Ltd.

27 Cranmer Street, LIVERPOOL

Bainbridge, and an August storm, (bringing a winter) from show. The cause of a winter fruit show, relative to the Irish fruit-growing industry, is generally admitted, but it is owing to the lack of public interest in previous Dublin fruit shows which gives the council more than a little anxiety. As the report states they "feel a serious responsibility in recommending this show, and only do so relying on the cordial support of members of the Royal Horticultural Society of Ireland and others in assisting the prize list.

Lucan, Saggart and Clondalkin Horticultural Society.

The annual meeting of the above society was held at the Spa Hotel, Lucan, on the 13th ult. Captain Vesey, D.L., in the chair. The hon. secretary's report was presented and adopted. It showed that the society was in a flourishing condition with an increasing membership. The schedule for 1911 was discussed, and some attractive prizes were added to its pages, particularly in the classes devoted to sweet peas and vegetables. It is intended to hold the society's next

show (by kind permission of Capt (in Vesey, D.L.) in the Cottage Garden, Lucan Demesne, July 22nd, 1911. Given fine weather one can scarcely imagine a fairer setting for a flower show than Lucan's lovely and historic demesne.

Correspondence.

POISONS AND PHARMACY ACT, 1908.

DEAR SIR,—On Wednesday, the 14th inst., a doubtful point in connection with the above Act was settled by the judges in the divisional court. Their decision was as follows:—"Under the Act of 1868 only a qualified pharmacist could sell poisons, and not an unqualified assistant; it therefore followed that under the amended Act of 1908 only a person licensed by the local authorities could sell poisonous compounds for horticulture and agriculture. Managers and assistants were not entitled to sell unless they held a separate licence." It is to be hoped that nurserymen and seed-men holding licences under this Act will now take special warning from this decision and not allow pharmaceutical spies to trap their assistants in the way they have been doing. It is quite clear that all the pharmaceutical spies who have been able to make purchases were strangers to the employees who sold, and if only known persons had been supplied none of these vexatious and ridiculous prosecutions would have arisen. I am sorry to say that only within the last ten days several agents have been threatened with penalties for not affixing their name and address on the bottles, and here again the purchasers were strangers and certainly should not have been supplied for this reason. The Traders in Poisons Society are now going to approach His Majesty's Privy Council asking for greater facilities for obtaining licences and at less expense, so that assistants can obtain licences to sell (under the head licence) at a very nominal charge.—Yours faithfully,
16th December, 1910. G. H. RICHARDS.

Destroy Wireworms

It is the most deadly of all garden pests. It is the cause of a V-shaped hole in the ground, and is the cause of a V-shaped hole in the ground. A wireworm is a grub which is found in the soil, and is the cause of a V-shaped hole in the ground. It is the most deadly of all garden pests. It is the cause of a V-shaped hole in the ground, and is the cause of a V-shaped hole in the ground. It is the most deadly of all garden pests. It is the cause of a V-shaped hole in the ground, and is the cause of a V-shaped hole in the ground.

VAPORITE

New Volume (1911) IRISH GARDENING

THE new volume will sustain the old standard of excellence as to authoritative articles on both the practical and scientific side of gardening, but new features and new writers will be introduced during the course of the year. Every Irish gardener and every owner of any sized garden in Ireland should obtain "Irish Gardening" (monthly) and read it! and having read it should preserve it for binding—it is worth it.

VOLUME V. (1910) can now be supplied, bound in green cloth, 4 11, post free.

CHEAP GREENHOUSES

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OFFER**SWEET PEAS**FOR
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SPECIAL COLLECTIONS FOR 1911

The seeds in these collections are all carefully hand picked; only plump round seeds sent; all small or doubtful ones are taken out, which we do not think is done by any other firm; eighty to ninety per cent. guaranteed to germinate if treated as instructions sent with each collection.

*, EACH PACKET in Nos. 1 and 2 CONTAINS 50 SELECTED SEEDS. Buyers not wanting any collection complete, may select their own varieties from EITHER COLLECTION at prices mentioned, and have any 3 - worth for 2s.

COLLECTION No. 1 12 useful Grandiflora varieties, 1/3

Agnes Johnston, buff pink; Dainty, white with slight pink edge; Duke of Westminster, rose violet; Hon. Mrs. Kenyon, pale primrose; Janet Scott, pale pink; King Edward VII., rich crimson; Lord Nelson, dark blue; Phenomenal, white with blue picotee edge; Prince of Wales, rich deep rose; Queen of Spain, salmon pink; Romolo Piazzani, medium blue; Triumph, rosy salmon and bluish bicolor.

COLLECTION No. 2—12 best Grandiflora varieties, 1/9

Black Knight, rich dark bronzy chocolate; Dorothy Eckford, best white self; Helen Pierce, pretty marbled blue; James Grieve, good pale primrose; Jeannie Gordon, carmine and buff bicolor; Lady Crisel Hamilton, pale lavender; Mid Blue *syn.* Zoe, rich blue; Miss Willmott, best salmon red; Mrs. Walter Wright, rich rosy maroon; Prima Donna, pale bluish pink; Queen Alexandra, the best crimson scarlet; Saint George, rich orange scarlet bicolor.

Single Packets of any variety in Collections Nos. 1 and 2, 2d. each

COLLECTIONS Nos. 1 and 2 WHEN BOUGHT TOGETHER WILL BE 2s. An 125 seeds each of the four best striped varieties *viz.*: Jessie Cuthbertson, Mrs. J. Chamberlain, Prince Olaf, and Unique, will be added free of charge.

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SPECIAL NOTICE. The price of, and number of seeds of each variety in Collections 3 and 4 vary. The number is stated in figures after each name.

America Spencer (30), bright rose-scarlet flake, 3d.; Apple Blossom Spencer (30), rosy pink and bluish, 4d.; Black Knight Spencer (30), rich dark maroon, 3d.; Chrissie Unwin (30), erise-scarlet, 3d.; Elsie Herbert (30), white, with a perfect edge of pink, 4d.; Flora Norton Spencer (30), pale blue, 3d.; Frank Dolby (50), lavender, 3d.; Gladys Unwin (50), pink, 3d.; Marjorie Willis (30), carmine rose, 4d.; Mrs. C. W. Breadmore (30), primrose, with picotee edge of pink, 4d.; Nora Unwin (50), white, 3d.; Paradise Ivory (40), pale primrose slightly tinged with pink, 3d.

COLLECTION No. 4—12 BEST WAVED VARIETIES, 3/-

Clara Curtis (50), primrose, 3d.; Constance Oliver (25), creamy buff, blushed deep pink, 6d.; Countess Spencer (50), large pink, 3d.; Etta Dyke (50), finest white, 3d.; Evelyn Hemus (40), primrose with picotee edge of pink, 4d.; Helen Lewis (50), orange and rose, 4d.; John Ingman (50), grown from a true stock, carmine and rose, 4d.; Mrs. A. Ireland (30), rose and bluish bicolor, 4d.; Mrs. Charles Foster (30), grown from a perfectly true stock, or Asta Ohn (30), best lavenders, 4d.; Mrs. Henry Bell, or Mrs. Routhahn Spencer (30), pale pink on cream, 4d.; Mrs. Hardcastle Sykes (30), bluish pink, 3d.; Tennant Spencer, or The Marquis (30), large rosy maroon, 4d.

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SPECIAL PRICE for the Four Collections, 6/6

Which, with the added varieties, will be the best collection ever offered for the money.

NEW VARIETIES

These novelties we believe to be fairly true, but they are sold without any guarantee.

Thomas Stevenson, orange scarlet, waved, 10 seeds, 1s., the only for 1911 (stock limited); Maud Holmes, the best of the sun-proof primroses; King Edward Spencers, waved, 25 seeds, 1s. - 10 seeds, 6d.; Helen Grosvenor, a glorified Helen Lewis (10 seeds, 1s.); Amethyst, fine rosy blue waved, 10 seeds, 6d.; Burpee's Ethel Roosevelt, lighter rose flake on cream, waving, waved, 10 seeds, 6d.; Burpee's Florence Nightingale, lavender Spencer, 10 seeds, 6d.; Romani Rauni, pale pink on cream, waved, 10 seeds, 1s.; Seashell, cream pink, waved, stock very limited 6 seeds, 6d.; Dawkins Doris Burt, a grand bright scarlet, shagged, or flushed erise, waved, highly recommended, 12 seeds, 6d.; Burpee's Rose du Barri, unique and distinct, a charming flower of deep rose, shot or overlaid with bright cream, Grandiflora type, very effective under artificial light (20 seeds, 6d.); Zarina, pale coral pink, waved (20 seeds, 4d.); Ruby, an improved St. George, 10 seeds, 6d.; Miriam Beaver, when true very like Sycra Lee, one of the most beautiful Sweet Peas yet raised (10 seeds, 1s.).

Special Price for this complete collection of New Varieties, 7 -

FULL LIST OF FLOWER AND VEGETABLE SEEDS POST FREE ON APPLICATION

The Dublin Wholesale Markets.

WITH the advent of the festive season a very large amount of business was transacted in the markets, the amount of produce disposed of being very large. It would appear as if most of the local growers retained a large percentage of their products for the Christmas markets, and this, combined with the large arrivals of foreign produce, had the effect of lowering prices to a considerable extent.

Fruit from home sources has not arrived in such large quantities as during last month; at present grapes and pears, "considering quality," are selling well. Irish apples were principally represented by Bramley's Seedling, and were selling at what is considered a good paying price. Foreign fruit is abundant, and arriving in splendid condition.

Flowers were plentiful throughout the month, and easily disposed of. Chrysanthemums continue to be marketed in large quantities; the following sorts have been selling well and are popular with buyers, viz., Winter Cheer, Viveas, W. H. Lincoln. Roman hyacinths, narcissi, and various forced flowering plants were arriving in fair quantities. Gillies have not been equal to the demand, and therefore sold well. All classes of greenery arrived in large quantities.

The vegetables marketed during December were poor samples and sold cheaply. All classes of green crops met with a poor demand. Root crops were about the same as last month, while pot-herbs and salads sold well.

The following are the prices:—

	FRUIT		To s. d.
	From s. d.		
Apples, Bramley's Seedling, per barrel	18	0	27 0
Do. Alfreton, do.	15	0	20 0
Do. Blenheim Orange, per doz.	0	6	0 9
Do. Bismarck, per 1/4 bushel	2	9	3 3
Do. Cox's Orange, per doz.	0	7	1 0
Do. Ribstons, do.	0	5	0 10

	FRUIT con.		From		To s. d.
	per lb.	do.	s. d.		
Grapes, Alicante,	per lb.	0	11		1 4
Do. Gros Colman,	do.	0	10		1 2
Pears (best)	per doz.	4	6		7 0
Do. (seconds),	do.	2	0		3 0
FLOWERS					
Chrysanthemums,	per bunch	0	2		0 4
Carnations,	do.	1	9		3 0
Violets,	per doz. bunches	0	0		1 3
Aurum Lilies,	per doz.	4	6		7 0
Hyacinths (Roman),	per doz. bunches	0	4		0 6
Narcissi (Paper White)	do.	0	10		1 6
Histioleto,	per crate	14	0		18 0
Holly,	per bag	5	0		7 0
Smilax,	per doz. bundles	10	0		15 0

VEGETABLES					
Artichokes,	per float	1	0		1 6
Brussels Sprouts,	do.	0	9		1 10
Beet,	per doz.	0	4		0 6
Broccoli,	per flasket,	1	6		3 0
Cabbage, York,	per load	4	6		9 6
Do. Savoy,	do.	7	0		9 0
Do. Red,	per doz.	1	6		2 0
Celery, Pink,	per doz.	1	4		1 10
Do. White,	do.	1	3		2 0
Carrots,	per doz. bunches	0	5		0 7
Leeks,	do. do.	0	3		0 7
Letuce,	per doz.	0	2		0 3
Mint,	per doz. bunches	1	4		1 10
Parsley,	per float	0	6		0 8
Parsnips,	per bag	1	10		2 6
Scallions,	per bunch	0	1		0 2 1/2
Spinach,	per float	0	8		1 3
Turnips (Garden),	per bunch	0	3		0 4
Do. (Swedes),	per cwt.	0	9		0 11
Thyme,	per doz. bunches	1	0		1 10
Tomatoes,	per lb.	0	4		0 7

28th Dec., 1910.

ROBERT HUGH CLARKE.

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Gas Coke, Breeze and Slack

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LADIES' or GENTS' NEAT GARDEN CLOGS
(White Felt Lined)

Only 4 6 Paid ANY SIZE MIND!

10,000 Testimonials can be shown.

Children's sizes up to size 2, only 3 6. As Damp Ground gives Rheumatism and Sciatica, these Fine Quality "Wood Soled" Boots are a sure and perfect cure.

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which excited the admiration of thousands at the Holland Park, Royal Botanic, and Salisbury Shows. Complete Catalogue illustrating the above and the best of the other New Roses, Fruit Trees and Carnations, direct from Photographs, post free

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SUITABLE FOR
Workshops, Stables, Tool Houses,
Bicycle and Poultry Houses,
Greenhouses, Garden Frames, &c.
Strongly made in sections.
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LONG	WIDE	PRICE
10ft.	4ft.	30-
7½	5	40-
8	6	48-

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W. & C. EDGELL, F.R.H.S., RADSTOCK (ESTABLISHED 18 YEARS)

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AUTO-SHREDS IS CERTAIN DEATH to Leaf-mining Maggots, Mealy Bug and all Pests infesting plants under glass, &c. Simple to use, no apparatus required. In Boxes to Fumigate 1,000 cubic feet, 6d.; 20,000 cubic feet, 3s. 6d. each. Obtained of Seedsmen and Florists; if unobtainable apply direct—



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Wholesale Horticultural Sundriesmen,
HACKNEY, LONDON, N.E.
Trade Terms and Catalogue of Sundries upon receipt of business card

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At the Nurseries of Messrs. Watson & Sons, Clontarf, large quantities of shrubs and trees for maritime culture are grown, and the Messrs. Watson's experience in the matter of varieties suitable for various situations is at the disposal of intending planters. They attend personally to their clients' needs by correspondence or otherwise, and those requiring plants for the seaside might at least send a card for a catalogue or run out and see the stock at Clontarf, the Nurseries being but fifteen minutes' tram drive from Nelson's Pillar.

Royal Horticultural Society of Ireland.

THE monthly meeting of the council was held at the society's offices, 5 Molesworth Street, Dublin, on the 13th ult. Present—Messrs. O'Donel Browne, M.D.; J. Wylie Henderson, W. J. Mitchison, W. F. Gunn, R. Anderson, G. Watson, Jas. Robertson, J.P.; Ernest Bewley, T.C.; and F. W. Moore, M.A., with Mr. D. L. Ramsay, J.P., presiding. The council were unanimous in regret on the reading of a letter from Mr. H. P. Goodbody that, owing to difficulties in attending the council meetings and committees, he was unable to accept re-nomination for the chairmanship. Mr. Bewley's motion for re-adjustment of the entry fees for non-members, as exhibitors, was postponed to a future meeting, the suggested alterations embodied in the motion to be sent out with the agenda. On the proposition of Dr. O'Donel Browne, seconded by Mr. Ramsay, Mr. Bewley was unanimously elected chairman for 1911. Mr. D'Olier being re-elected vice-chairman, and Mr. Moore hon. secretary. Messrs. Watson, G. M. Ross, and W. F. Gunn were elected as finance committee, and Messrs. Henderson, Crozier, Anderson and McKellar as the schedule committee. Arrangements were made in connection with the winter fruit show, which was definitely fixed for Wednesday and Thursday, the 18th and 19th of October, and the schedule committee was directed to prepare a schedule for same, also to re-arrange the rose classes for the August show in view of a summer show not being held this year. The secretary reported the receipt of £4 from the Tully Nursery for the general prize fund, various contributions being promised from members of the council for the prize fund of the fruit classes. In

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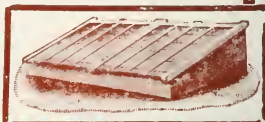
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This Preparation has been most successfully tested under special supervision by practical Growers, and is highly recommended by all Fruit Growers

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Cone No. 3, for a well-secured house of cubic 2,000 to 2,500 feet, price 1/- each. Cone No. 2, for a well-secured house of cubic 1,000 to 1,200 feet, price 8d. each. Cone No. 1, for frames cubic 100 to 600 feet, price 6d. each. Full directions accompany each Cone

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connection with this show a gardeners' prize has been instituted by the practical members of the society, to which gold, silver, and bronze medals will be added by the council, the stipulation being that the cash prizes are retained by the gardeners winning them and the medals by the employers. Mr. Arthur Murtagh, head gardener, Merriou Square, was elected a practical member of the society.

Irish Gardeners' Association.

THE annual general meeting of the above association, to which we may tack on the other half of its well deserved style and title "and benevolent society," came off successfully at the D. B. C. Lower Sackville Street, on the 25th ult.; Mr. W. H. Paine, manager of the Tully Nursery, Kildare, giving a very attractive paper on the flora of the Pyrenean Alps. Paper, we say, but, as a member remarked, "all out of his own head," trolled out in that free and fluent style which carried his audience with him as he sealed the Pyrenees and filled his pockets with such good things as made the stay-at-home hardy plant-lover's mouth water; for

Mr. Paine's graphic description, ranging from grave to gay, from lively to severe, "all out of his own head" left not a few wondering till, climbing higher and waxing warmer on his subject, "the wonder grew one little head could carry all he knew." The financial state—all states, in fact, of our worthy Irish Gardeners' Association—shows steady progress, the hon. secretary's (Mr. J. J. McDonough) report being considered highly satisfactory and, we may add, highly creditable to the hardest worked of the honorary officials, such criticism as was evoked, by one member in particular, showing the keen interest taken in the working. Mr. A. J. Snelair, the retiring president, was cordially thanked for his courteous conduct in the chair over the last year, Mr. E. Knowlton being elected as president for 1911, the vice-presidents being Mr. J. Colgan and Mr. W. S. Hall, with Mr. G. Watson continuing in his important post as treasurer. On a ballot being taken to fill four vacancies on the committee, Messrs. Carroll, Masterson, Simmons and Walker were elected. Needless to say, no change was made in the onerous post of hon. secretary, a post which carries much work and no little anxiety to occupy it, hence Mr. J. J. McDonough retains what is hoped he may long continue to hold.



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**WE TEST FOR GERMINATION : :
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Half Quantities will be supplied at same rates.

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Hardy Border Plants. Complete Catalogue Free.

6 Achilleas, mixed	1 6	12 Coreopsis Grandiflora	2 -	12 Lychnis (Campion), mixed	2 6
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12 Aquilegias, long spurred, mixed	3 -	12 Gaillardias, mixed	2 -	12 Phlox Decussata, distinct	3 -
12 Asters (Michaelmas Daisies) mixed	2 -	6 Helianthus, mixed	1 3	12 Polyanthus, dwarf, giant flowered	1 -
6 Astilbes (Coat's Beard), mixed ..	1 6	12 Helianthus (Sun Flowers), mixed ..	2 6	12 Poleintillas, mixed	3 -
12 Campanulas, mixed	2 6	6 Hemerocallis (Day Lilies), mixed ..	2 -	12 Primulas, hardy mixed	3 -
12 Canterbury Bells, mixed	6d.	6 Heucheras, mixed	3 -	12 Pyrethrums, double, mixed	2 6
12 Giant Cornflowers, perennial	2 6	12 Iris Germanica, all different	1 6	12 Pyrethrums, single, mixed	2 6
12 Chrysanthemum Maximum	2 -	12 Lupins, perennial, mixed	2 6	12 Saxifrages, for Rockeries	3 -
12 Scabiosa Caucasica, blue	3 6	12 Sweet Williams, giant-flowered ..	6d.	12 Veronica, mixed	3 -
12 Scabiosa Caucasica, alba	6 6	12 Tradescantia, mixed	2 6	12 Apples, Pears, Plums from 1 6 up to	3 -
12 Sempervivums, distinct	3 -	12 Trollius, mixed	3 -	Trained Apricots, Peaches and Nectarines,	5 - each
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 Use 1 part to 40 parts for Greenfly, &c.)

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 POWDER AND QUASSIA EXTRACT

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SAVES WEARY WELDING.

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1/2 tin for 12 galls. solution	Free Tins
1 9 " 25 " " "	and
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LIQUID. 1—50.

¼ gallon	2	drum free
1 "	3 6	" 9d. extra
2 "	6 6	" 1 6 "
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Transforms Weedy Lawns. Kills the Daisies,
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Kills all Weeds on Garden Paths, Walks, &c.,
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 from 12 to 18 months. Prices—No. 1 Tin, 2/-;
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Spring Catalogues.

POWER'S CATALOGUE OF "POWERFUL" SEEDS, 1911.—Waterford is running close to Dublin in the matter of catalogue production, as this large and handsome publication demonstrates. Simple and clear arrangement, good printing, and bold illustration, and although the half-tone blocks in the copy before us are not so clean as in the best Dublin work, yet the catalogue looks well. Concerning the matter the lists are full and varieties well selected. We wish continued success to this go-a-head firm, and recommend our readers to secure a copy for perusal. Vegetables and flowers are included, together with hints on culture.

RITCHIE'S CATALOGUE.—This Belfast firm of seedsmen issue a well got up and carefully edited list of seeds of all kinds likely to be required by gardeners. It is abundantly illustrated. Great attention is apparently given to garden peas, sweet peas and potatoes, and gardeners will do well to consult its full pages when making up their spring orders.

EDMONDSON BROS' CATALOGUE for 1911 is, as usual, a tasteful publication, well arranged and nicely illustrated. Cultural notes are given. The firm pay particular attention to the supply of definite collections at popular prices, which must be very convenient to owners of small gardens. The sweet pea collections are known as the "Eblana" collection, and range in price from 1s. 6d. (25 varieties) to the "novelties" collection at 5s. Amateurs desirous of growing sweet

peas successfully, either for simple decorative purposes or for show, will do well to read the excellent article in the present number, written by a lady whose exhibits are the admiration of all visitors at our shows. They will be well advised also to follow her excellent advice as to dealing only with firms of repute. In that way only success lies.

CHRYSANTHEMUM LIST.—Messrs. H. Cannell & Sons, of Swanley, sends us their list for 1911. This firm makes a speciality of "singles," and during the past quarter of a century or more they have devoted great attention to their improvement from a florist's point of view. An extraordinary extensive list of Japanese varieties is given, and altogether the catalogue will be found most useful to all growers who "go in" for the culture of these popular flowers. Messrs. Cannell also send a copy of their Seed Catalogue for 1911.

DRUMMOND'S GARDEN SEEDS is a handsomely produced catalogue, clearly printed in large type, and embellished with a large number of bold illustrations. It covers every department of the garden, and ought to be on the shelf of every gardener.

S. M'GREY & SON, of Portadown, send us their Spring Catalogue of Garden Seeds. This firm's name is so intimately associated with the raising of new roses that many people forget that they are seedsmen as well. The catalogue before us will therefore be interesting to those who only keep in touch with the firm as rose-growers. Messrs. M'Grey have a strong line in peas,

BENTLEY'S

CONCENTRATED ALKALI

The Ideal Winter Spray

For Fruit Trees and Forest Trees of every kind

DESTROYS INSECTS (whether in the active or dormant state, **SPORES OF FUNGI, LICHENS, MOSSES.** Cleanses the Bark from **Vegetable Growths.** Detaches Loose and Decayed Bark, thereby exposing the harboring places of the insects, and having on these a most deadly effect without injuring the trees.

For Apple, Pear and Plum Trees, Bush Fruits and Forest Trees. 1 tin dissolved in 15 gallons of water. For Apricot, Peach, Nectarine and Cherry Trees—1 tin dissolved in 16 gallons of water.
PRICES 1 to 8 tins, 13 each; 8 tins, 12 each; 12 tins, 11 each; 20 tins, 11d. each; 40 tins, 10d. each

BENTLEY'S INSECTICIDE

THIS valuable NON-POISONOUS Plant Wash has for the last thirty years held the highest position in the Horticultural World as a most effectual

Destroyer of all forms of Fifth, including **MEALY BUG, SCALE and THRIP** without risk to the foliage. It also possesses splendid cleansing properties and leaves the foliage clean and bright.

PRICES 6 galls., 7 6 per gall.; 3 galls., 8 - per gall.; 1 gall., 9 -; 1-gall., 5 -; 1 quart, 3 6; 1 pint, 2 -

Carriage Paid on 7 6 orders and upwards to any railway station

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Singles, in separate colours, 21s., 15s., 8s. and 3s. per dozen; in mixed colours, 2s. 6d. per dozen. Splendid for bedding.

For Named Varieties see Illustrated List, post free

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Cannas, Delphiniums, Blue Primroses, Border Carnations (a fine sample dozen for 5s.), **Perpetual-Flowering Carnations, Cyclamen, Polyanthus, Pansies and Violets**, 12 Choice Perpetual-Flowering Carnations, in pots, 6s.

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This Firm has the largest Retail Sweet Pea Trade and Retail Bulb Trade in the United Kingdom. The quality of their SEEDS and BULBS is well known all over the WORLD as being equal to anything in the Market.

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The seeds in these collections are all carefully hand picked; only plump round seeds sent; all small or doubtful ones are taken out, which we do not think is done by any other firm; eighty to ninety per cent. guaranteed to germinate if treated as Instructions sent with each collection.

Each PACKET in Nos. 1 and 2 CONTAINS 50 SELECTED SEEDS. Buyers not wanting any collection complete, may select their own varieties from EITHER COLLECTION at prices mentioned, and have any 3 worth for 2/6.

COLLECTION No. 1—12 useful Grandiflora varieties, 1/3

Agnes Johnston, buff pink; Dainty, white with slight pink edge; Duke of Westminster, rosy violet; Hon. Mrs. Kenyon, pale primrose; Janet Scott, pale pink; King Edward VII., rich crimson; Lord Nelson, dark blue; Phenomenal, white, with blue picotee edge; Prince of Wales, rich deep rose; Queen of Spain, salmon pink; Romolo Piazani, medium blue; Triumph, rosy salmon and bluish bicolor.

COLLECTION No. 2—12 best Grandiflora varieties, 1/3

Black Knight, rich dark bronzy chocolate; Dorothy Eckford, best white self; Helen Pierce, pretty marbled blue; James Grievae, good pale primrose; Jeannie Gordon, carmine and buff bicolor; Lady Crisel Hamilton, pale lavender; Mid Blue 1894, Zoe, rich blue; Miss Willmott, best salmon red; Mrs. Walter Wright, rich rosy mauve; Prima Donna, pale bluish pink; Queen Alexandra, the best crimson scarlet; Saint George, rich orange scarlet bicolor.

Single Packets of any variety in Collections Nos. 1 and 2, 2d. each

COLLECTIONS Nos. 1 and 2 WHEN BOUGHT TOGETHER WILL BE 2/6. And 25 seeds each of the four best striped varieties, viz.: Jessie Cuthbertson, Mrs. J. Chamberlain, Prince Olaf, and Unique, will be added free of charge.

COLLECTION No. 3—12 GOOD WAVED VARIETIES, 2/-

SPECIAL NOTICE. The price of, and number of seeds of each variety in Collections 3 and 4 vary. The number is stated in figures after each name.

America Spencer (30), bright rosy-scarlet flake, 3d.; Apple Blossom Spencer (30), rosy pink and bluish, 4d.; Black Knight Spencer (30), rich dark maroon, 3d.; Chrissie Urwin (30), cerise-scarlet, 3d.; Elsie Herbert (30), white, with picotee edge of pink, 4d.; Flora Norton Spencer (30), pale blue, 4d.; Frank Dolby (50), lavender, 3d.; Gladys Unwin (50), pink, 3d.; Marjorie Willis (30), carmine rose, 4d.; Mrs. C. W. Breamore (30), primrose, with picotee edge of pink, 4d.; Nora Unwin (50), white, 3d.; Paradise Ivory (40), pale primrose slightly tinged with pink, 3d.

COLLECTION No. 4—12 BEST WAVED VARIETIES, 3/-

Clara Curtis (50), primrose, 3d.; Constance Oliver (25), creamy buff, flushed deep pink, 6d.; Countess Spencer (50), large pink, 3d.; Etta Dyke (50), first white, 3d.; Evelyn Hemus (40), primrose with picotee edge of pink, 4d.; Helen Lewis (50), orange and rose, 4d.; John Ingram (50), grown from a true stock, carmine and rose, 4d.; Mrs. A. Ireland (30), rose and bluish bicolor, 4d.; Mrs. Charles Foster (30), grown from a perfectly true stock, or Asta Ohn (30), best lavenders, 4d.; Mrs. Henry Bell, or Mrs. Rutzahn Spencer (30), pale pink on cream, 4d.; Mrs. Harcastle Sykes (30), bluish pink, 3d.; Tennant Spencer, or The Marquis (30), large rosy mauves, 4d.

COLLECTIONS Nos. 3 and 4 MAY BE HAD TOGETHER FOR 4/6, and 100 seeds of the choicest Spencer Seedlings free of charge.

COLLECTIONS Nos. 2 and 4 MAY BE HAD TOGETHER FOR 4/6, and 100 seeds of the choicest Spencer Seedlings free of charge.

SPECIAL PRICE for the Four Collections, 6/6

Which, with the added varieties, will be the best collection ever offered for the money.

NEW VARIETIES

These novelties we believe to be fairly true, but they are sold without any guarantee.

Thomas Stevenson, orange scarlet, waved, 10 seeds, 1/-, the gem for 1911 (stock limited); Maud Holmes, the best of the superb crimson or King Edward Spencers, waved, 25 seeds, 1/-, 10 seeds, 6d.; Helen Grosvenor, a glaucous Helen Lewis, 10 seeds, 1/-; Amethyst, fine rosy lilac waved, 10 seeds, 6d.; Burpee's Ethel Roosevelt, bright rose flake on cream ground, waved, 10 seeds, 6d.; Burpee's Florence Nightingale, lavender Spencer, 10 seeds, 6d.; Romani Rauni, pale pink on cream, waved, 10 seeds, 1/-; Seashell, cream pink, waved, stock very limited, 6 seeds, 6d.; Louise, a good bright scarlet, shaded, on flushed cerise, waved, highly recommended, 12 seeds, 6d.; Burpee's Rose du Barri, unique and distinct, a charming flower of deep rose, shot or overlaid with terra-cotta, grandiflora type, very effective under artificial light, 20 seeds, 6d.; Zarina, pale coral pink, waved, 20 seeds, 4d.; Ruby, an improved St. George, 10 seeds, 6d.; Marion Beaver, when true very like Sylea Lee, one of the most beautiful Sweet Peas yet raised, 10 seeds, 1/-.

Special Price for this complete collection of New Varieties, 7/-

FULL LIST OF FLOWER AND VEGETABLE SEEDS POST FREE ON APPLICATION

both of the ordinary garden type and in sweet peas, but all the usual garden seeds are included in the list. The catalogue is illustrated.

WILLIAM WELLS, the Chrysanthemum Specialist, of Merstham, sends an interesting catalogue dealing with these highly popular flowers. It will be consulted with advantage.

JONES' SELECTED SEEDS is the title of a well arranged and clearly printed catalogue issued from the Kilkenny Nurseries. Gladioli and Sweet Peas are two specialties of these nurseries. Mr. Jones considers them to be "the most valuable articles for the flower-garden from an economical and decorative standpoint," and his lists of both these subjects will be consulted with much interest by gardeners. Excellent cultural notes on Gladioli are given on page 4. A good and comprehensive list of flower seeds are given. We are glad to obtain note that the catalogue is printed in Wexford. It is turned out very neatly, and is a pleasure to handle.

BEGONIAS AND CARNATIONS.—MESSRS. Blackmore & Langdon are specialists in these popular flowers, and their catalogue to hand gives a fine selection to growers. We note that the Superintendent of Phoenix Park praises the varieties "Hilda" and "Gladiator" supplied by this firm for bedding purposes. The booklet is full of lovely illustrations.

THOMAS MCKENZIE & SON'S GARDEN CATALOGUE is its usual very full and complete. There is no attempt to arrest attention by the use of striking illustrations, but it is simply a business list, easy for reference, and containing just such requirements in the way of seeds and sundries as the ordinary working gardener requires.

LITTLE & BALLANTYNE send their Planters' Guide and Catalogue of Garden Seeds—both of which are useful for reference.

WM. FIELDS also sends a beautifully produced Catalogue of Garden Seeds. It is well and abundantly illustrated.

Book Notices.

IRISH MANUFACTURERS' DIRECTORY, 1911.—As we go to press we receive a copy of the tenth annual issue of this useful and important compilation. In addition to the directory proper it contains special articles on Transit and Industries, Irish Investments, Features of the Day from an industrial standpoint; The Woollen Trade, The Irish Press, &c. &c. It is compiled by Kelvin J. Kenny, and published at 58 Middle Abbey-street, Dublin, and sent post free for 1s. 9d. It is a reference book of much value to all business men in Ireland.

MR. S. A. JONES, of the Kilkenny Nurseries, sends us his "Garden Diary" for 1911. The pages are foolscap size, with three days to a page. At the beginning of each month there is a gardening memorandum intended to act as a reminder as to certain important seasonal routine. The issue of such a diary shows considerable enterprise, but most of us know Mr. Jones as a progressive nurseryman, and we welcome such efforts as a further evidence of the modern business spirit of this southern town. We are also particularly pleased to note that the diary was manufactured by a Wexford firm of book manufacturers (John English & Co.), and we congratulate them upon their work.

Notes.

MANURES AND INSECTICIDES. Gardeners will find what they want in the way of quick acting manures in a convenient form and insecticides for every-day use from the following list: *Mannite*.—Canary Guano; Ichthemic Guano; Nitrate of Soda (see page 8); Thompson's Manures. *Use (1) ides*.—Apterite; Concentrated Alkali (Bentley's); Corry's Winter Dressing; Insecticide (Bentley's); Lethorion (Corry); McDougall's "Famer"; Neotride (Hunter and Gow); Niquas; Salva-Fruta Vaporite; Vi-fluid. All seedsman advertising in IRISH GARDENING supply these preparations.

As a striking feature for the herbaceous border there are few plants to equal the *Verbascum Mullein*. They are very easy to grow; any ordinary garden soil will suit them, and once established they will take care of themselves. The common or nettled-leaved mullein, with its fine branching spikes of yellow flowers, is well known, but *Pannosum magnificum*, with its thick silvery foliage and stem, terminating in numerous tall inflorescences, literally smothered in sulphur-coloured blossoms, is certainly one of the best of the genus. If a dwarf species is desired, the species *nigrum* may be used. Its bearded purple stamens show up beautifully against the yellow petal.

FEBRUARY is one of the best months for planting raspberries. The raspberry is really a woodland plant; it loves plenty of organic matter such as leaf mould; a moist but well drained soil, and is tolerant of partial

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shade. In preparing ground for raspberries it ought to be well trenched and generously provided with farm-yard manure. An ideal soil would consist of a rich deep loam with plenty of sand and a fair percentage of lime. After planting, the surface of the soil should be kept mulched with strawy manure, leaves or other litter, so as to conserve the soil moisture, as obtains under natural conditions in wood.

In a recent lecture on the Culture of Malmesbury Carnations to professional gardeners, Mr. Turner declared that the most important point to consider was the preparation of the soil. He said the ideal carnation soil is a fairly heavy yellow fibrous loam, obtained from an old pasture. A very important point is to sterilise this. This is done by baking or charring the turfs over a smother fire in the garden. It should then be broken by the hand and incorporated with flaky leaf mould and sand, road sand being the best, in the proportion of three-fifths loam, one-fifth brick earth, one-fifth leaf mould, and sufficient grit to make it all porous.

LAYERING is commenced in September, and this, Mr. Turner insisted, is best done in the open ground rather than in frames, as is the usual custom. They root in three weeks. The plants, when rooted, should be potted up into 60's, 48's, or 32's pots, according to vigour, one crock and piece of turf being put in the bottom of the pot for drainage. They should then be placed in a light, open frame, on an ash bottom, with soot to keep off slugs, the lights only being put on to keep off heavy rains, in a position where they get all the sun possible. In a fortnight roots will push through the soil, and the plants should be potted on to the next sized pot, using the same soil, with a little soot added. They can then be put in a greenhouse for the winter, giving all the air possible—never keeping close except during foggy weather; a few degrees of frost even will not injure them if they are kept dry. In February they will again require potting into their flowering pots. The principal thing to remember through the winter is to keep them as dry as possible without actually flagging. They will flower in June and July, and it is much easier to get them to flower earlier than it is to retard them when they are wanted for a show in August.

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Nora Unwin, pure white
Phenomenal, white, edged
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Twelve Very Fine Varieties. (The number of seeds and price per packet are indicated after each variety.)
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John Ingman, rosy-pink, shaded carmine (50). 3d.
King Edward VII., rich carmine scarlet (50). 2d.
Mrs. Bleberstedt, deep heliotrope (50). 3d.
Mrs. Routzahn, buff and primrose, edged rose (30). 3d.
Paradise Ivory, creamy yellow, suffused rose (40). 3d.
Purity, pure white (50). 3d.
St. George, cherry-red and rose-purple (50). 2d.
 Collections 17 and 18 together for 2s. 3d., with one packet of Paradise Blue Flake, 3d., gratis.

COLLECTION No. 19. Price 2s. 9d.

Twelve Extra Fine Varieties. (The number of seeds and price per packet are indicated after each variety.)
Clara Curtis, creamy-yellow (50). 3d.
Constance Oliver, rose-red on creamy ground (25). 6d.
Flores Herbert, white, edged and suffused rose-pink (25). 3d.
Floira Hardcastle, sprig, acanthus-blue (40). 3d.
Florence Wright, pure white (25). 6d.
Helen Lewis, madder-lake (50). 3d.
King Edward Spencer, crimson waved (40). 4d.
Marjorie Willis, carmine and rose-red (25). 3d.
Mrs. Wilcox, white, striped crimson (20). 3d.
Oliver Ruffell, cream, suffused rose (40). 3d.
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The Dublin Wholesale Markets.

AS is customary, a reaction has set in after the brisk trade which characterised the markets during the closing weeks of December. At the present time an improvement is showing itself in the various stalls, and a much better demand exists.

Irish apples, though scarce, were selling well. Fruit growers would be well advised by retaining as many late apples as possible, and thus obtain the fine prices to be had at the present time. Foreign apples have not arrived in such large consignments. Grapes for season were plentiful, and sold well.

Flowers are now commencing to brighten the somewhat gloomy appearance of the markets. The flowers at present selling are mostly forced and of a bulbous nature, such as narcissi (in quantity), aurum lilies, tulips, hyacinths, freesias, &c. Violets were in very large quantities, and brought fair prices considering demand.

Small flowering shrubs in seven-inch pots sell very well at this time of the year, and are bought in preference to soft wood plants, such as dielytra, cineraria, &c.

The vegetables, though in large quantities, were in many instances very inferior, and presented such an unattractive appearance that in many cases they remained unsold, or else were disposed of at a very low figure.

Since the beginning of January forced vegetables have been arriving in large quantities, the seakale and rhubarb being especially good.

Asparagus, though somewhat thin, is fetching a fair price.

Root crops are improving as the season advances. Parsnips have become very popular with the working class, therefore a fine demand exists. The same might be said of leeks. Cabbage and leeks have not been equal to the demand, with the result that prices are going up.

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	FRUIT	
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Do. Russets, per doz.	0 0	1 1

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	From s. d.	To s. d.
Apples Derby, per barrel	20 0	23 0
Do. Lane's Prince Albert do.	18 0	22 0
Pears (Californian) per basket	2 0	2 4
Grapes, Alicante's, per lb.	1 7	2 1
Do. Gros Colman, do.	1 4	1 11

FLOWERS

Carnations, per bunch	1 0	3 0
Violets, per doz. bunches	0 6	1 1
Aurum Lilies, per doz.	2 6	3 2
Hyacinths, per doz. bunches	0 5	0 8
Narcissi, do.	1 4	1 8
Lily of the Valley, do.	3 0	3 6
Smilax, per bundle	0 7	0 10

VEGETABLES

Artichokes, per float	1 11	1 7
Brussels Sprouts, do.	1 4	1 9
Broccoli, per flasket,	3 6	5 6
Beet, per doz.	0 4	0 6
Cabbage, York, per load	12 0	16 0
Do. Savoy, do.	9 0	14 0
Celery, per doz.	0 8	1 0
Carrots, do.	0 4	0 8
Leeks, do.	0 2	0 5
Lettuce, do.	0 5	0 8
Mint, per doz. bunches	1 2	1 8
Parsley, per tray	0 7	0 11
Parsnips, per doz.	1 6	2 0
Scallions, per bunch	0 1	0 1½
Turnips, White, do.	0 4	0 6
Do. Swede, per cwt.	0 11½	1 0
Spinach, per float	0 4	0 6
Seakale, per bundle	1 0	1 6
Rhubarb, per doz.	1 2	1 6
Asparagus, per bunch	1 6	3 0
Thyme, per doz. bunches	1 5	1 8

ROBERT HUGH CLARKE.

27th Jan., 1911.



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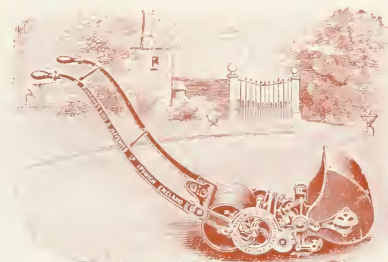
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The old dingy shades of autumnal Phloxes have passed away, and their successors create a glow of rich colour in solid masses from July to October. A few of the best are—Mme. Paul Dufrie, soft Cattleypink; Dr. Charcot, Parma-violet colour; General Van Heutsz, brilliant salmon-scarlet; Elizabeth Campbell, a splendid new shade of salmon, changing to pink; Aurora, richest salmon-scarlet; Coquelicot, the favourite fiery orange-scarlet.

New Michaelmas Daisies include Beauty of Colwall, the first doubled-flowered kind, lavender-blue; Chastity, a pure white form of Hon. Edith Gibbs; Keston Blue, the richest blue of all, very starry flowers; Climax, clear light blue, two inches across. Moonstone, unique grey-white with large yellow centre. Comparatively new and indispensable kinds embrace Lil Fardell, a magnificent pink; Mrs. S. T. Wright, giant flowers of rosy purple; Thirza, creamy yellow, overlaid with pale pink; Wm. Marshall, large clear mauve; and several splendid hybrids of the *amellus* type.

Pyrethrums, both single and double, are wisely described as "the earliest *free-flowering* garden plants for cutting"; and some lovely new shades are found in Yvonne Cayeux, Lord Rosebery, Lady Kildare, General French and Jubilee, though, indeed, among singles it is hard to beat James Kelway for brilliance.

The foregoing are just a few of the good things to be found in the new "Garden Flowers" publication of Messrs. Watson & Sons, Clontarf Nurseries, Dublin, and the up-to-date collections of perennials offered in this nicely illustrated catalogue show that planters need go no further afield for a supply of the best.

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ANTIRRHINUMS (popularly known as snapdragons) are in the hands of a discriminating gardener extremely useful as simple aids in obtaining strikingly decorative effects. The wild species *A. majus*, from which all the cultivated forms are derived, is a common alien, found growing on old walls in many parts of the British Isles.

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So says Newman of the snapdragon, using it as an emblem flower of "lowly thought and cheerful pains." But it was the wild snapdragon of walls "near the pale recluse's cell" that the Cardinal had only in mind when he wrote his well-known poem, and certainly not the flaunting garden forms that give such daring dashes of colour to our beds, borders, and rockeries through out the summer. These thoughts came into one's mind on receiving a little penny booklet on Antirrhinums, by Mr. F. W. Harvey, Editor of *The Garden*, and published by the A. & H. A., Ltd. (One and All), of London. And what an interesting little book, too, in which the gardening history of the flower is freshly told, and useful information given as to its propagation by seeds and cuttings, and its general culture in beds, borders, and window-boxes. To establish the plants on walls nothing is easier. One has only, with a cold chisel, to dig out a little mortar and replace it with some good well-rammed down soil, bury the seed in it (about August or September), and leave the rest to nature. Amateurs will find Mr. Harvey a pleasant and sympathetic teacher.

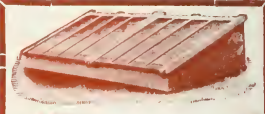
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Royal Horticultural Society of Ireland.

A SPECIAL meeting of the council was held at the society's offices on the 3rd ult., the chief business being a final revision of the Winter Fruit and Flower Show Schedule. As amended this schedule now comprises over 100 classes, which, with an unusually liberal prize list, appears to be the best programme yet formulated by the society for a winter show, in which hardy fruits will be found the dominant feature. The full programme for the year, which has unavoidably been somewhat delayed pending matters concerning the winter show, is now being pushed forward by the printers, and it is hoped to have copies posted to all members by the middle of the month. Mrs. Jas. F. Roberts, 33 Leeson Park, Dublin, was elected a member, and Mr. J. Dawson, The Chief Secretary's Gardens, Phoenix Park, a practical member of the society.

Note.

WE understand that Messrs. George Hammond & Sons, Ltd., of Spitalfields Market, have purchased the whole produce of the valuable orchards of Felix Coyne, Esq., of Moy, and that the price paid was highly satisfactory to the grower. Well grown Irish apples will always command the best market.

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IN these days—the keen struggle to supply to the market by some thing different from anything previously possessed by his neighbours. We have no objection to this. On the contrary, it is a business to be proud of the best and best—Things in plants and seed, from all parts of the world. A perusal of our New Seed Catalogue, which occupies 100 pages of descriptions of available, will reveal many choice things to be found in any other list. Latest novelties in Sweet Peas, hardy perennials, annuals, and miscellaneous seeds. These will mostly be found priced lower than in any other first class house (especially the Sweet Peas, of which we are large growers).

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Hardy Border Plants. Complete Catalogue Free.

- | | | |
|---|--|--|
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| 12 Aconitums, mixed 2 6 | 12 Digitalis (Fogflovcs) mixed 6d. | 12 Oriental Poppies, Giant, mixed .. 2 6 |
| 12 Anemones, mixed 3 - | 12 Eryngiums (Sea Molly) 3 - | 12 Double Chinese Paeonies, distinct .. 6 - |
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| 12 Asters (Michaelmas Daisies) mixed .. 2 - | 6 Heleniums, mixed 1 3 | 12 Polyanthus, dwarf, giant flowered .. 1 - |
| 6 Astilbes (Coat's Beard), mixed 1 6 | 12 Helianthus (Sun Flowers), mixed .. 2 6 | 12 Potentillas, mixed 3 - |
| 12 Campanulas, mixed 2 6 | 6 Hemerocallis (Day Lilies), mixed .. 2 - | 12 Primulas, hardy, mixed 3 - |
| 12 Canterbury Bells, mixed 6d. | 12 Heucheras, mixed 3 - | 12 Pyrethrums, double, mixed 2 6 |
| 12 Giant Cornflowers, perennial 2 6 | 12 Iris Germanica, all different 1 6 | 12 Pyrethrums, single, mixed 2 6 |
| 12 Chrysanthemum Maximum 2 - | 12 Lupins, perennial, mixed 2 6 | 12 Saxifrages, for Rockeries 3 - |
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| 12 Scabiosa Caucasicas, alba 6 6 | 12 Tradescantia, mixed 2 6 | Apples, Pears, Plums from 1 6 upwards |
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	cubic ft.	each
Half-Gall. Tin contains sufficient for 160,000 ...	60-	15-
No. 1 size Tin—1 pint	40,000 ...	7 6
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No. 3 size Bot.—6 oz.	12,000 ...	3 -
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Carriage Paid

FUMIGATORS, 1s. each, for 5,000 cubic feet

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(Use 1 part to 40 parts for Greenfly, &c.)

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1 9 " 25 " " } and
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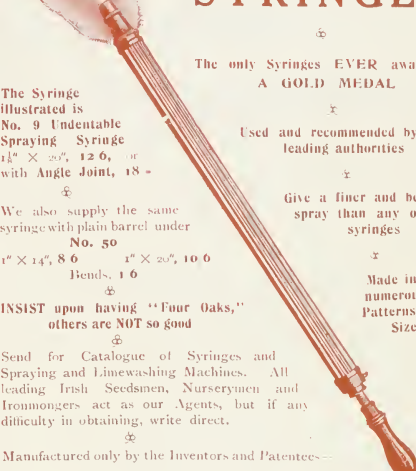
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"ALPHOL" Kills Slugs, wireworms, &c., and improves growth of plants	2 -	3 -	5 -	8 6	15 -
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Agnes Johnston, buff pink; Dainty, white with slight pink edge; Duke of Westminster, rosy violet; Non. Mrs. Kenyon, pale primrose; Janet Scott, pale pink; King Edward VII., rich crimson; Lord Nelson, dark blue; Phenomenal, white, with blue piceote edge; Prince of Wales, rich deep rose; Queen of Spain, salmon pink; Romolo Piazani, medium blue; Triumph, rosy salmon and bluish bicolor.

COLLECTION No. 2—12 best Grandiflora varieties, 1/9

Black Knight, rich dark bronzy chocolate; Dorothy Eckford, best white self; Helen Pierce, pretty marbled blue; James Grieve, good pale primrose; Jeannie Gordon, carmine and buff bicolor; Lady Crisel Hamilton, pale lavender; Mid Blue *spn.*, rich blue; Miss Willmott, best salmon red; Mrs. Walter Wright, rich rosy mauve; Prima Donna, pale bluish pink; Queen Alexandra, the best crimson scarlet; Saint George, rich orange scarlet bicolor.

Single Packets of any variety in Collections Nos. 1 and 2, 2d. each

COLLECTIONS Nos. 1 and 2 WHEN BOUGHT TOGETHER WILL BE 2 5. And 25 seeds each of the four best striped varieties viz.: Jessie Guthbertson, Mrs. J. Chamberlain, Prince Olaf, and Unique, will be added free of charge.

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COLLECTION No. 4—12 BEST WAVED VARIETIES, 3/-

Clara Curtis (50), primrose, 3d.; Constance Oliver (25), creamy buff, flushed deep pink, 6d.; Countess Spencer (50), large pink, 3d.; Etta Dyke (50), fluted white, 3d.; Evelyn Hemus (40), primrose with piceote edge of pink, 4d.; Helen Lewis (50), orange and rose, 4d.; John Ingman (50), grown from a true stock, carmine and rose, 4d.; Mrs. A. Ireland (30), rose and bluish bicolor, 4d.; Mrs. Charles Foster (30), grown from a perfectly true stock, or Asta Ohn (30), best lavender, 4d.; Mrs. Henry Bell, or Mrs. Rutzahn Spencer (30), pale pink on cream, 4d.; Mrs. Hardcastle Sykes (30), bluish pink, 3d.; Tennant Spencer, or The Marquis (30), large rosy mauve, 4d.

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These novelties we believe to be fairly true, but they are sold without any guarantee.

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Vegetables, though inferior, were much better than the ones sold last year, the heavy rains during autumn producing good results. Notwithstanding this the supplies have been very limited, with the result that prices have been good, and in some instances exceptional. Celery suffered very much from the heavy rains, and with many the crop has been a failure.

Pot herbs were in demand and sold well. Broccoli, if judged by the samples marketed, is indeed a poor crop. Another essential of the cooks, "parsley," has been very scarce. Forced and foreign rhubarb were being marketed in large quantities. Sea-kale and asparagus were equal to demand. Roots much the same as last month.

Flowers were marketed in much larger quantities, and now at the end of the month we have a wide range to select our cut flowers from. Narcissi were marketed

West's Patent Garden Sun Dries have been invented during 25 years of practical experience. By better cultivation and preservation by which

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VILLA (C) COLLECTION

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For full list of Special Novelties see next month's issue

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SENATOR	
MAINCROP	1 6
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 PER QUART, 1/6

SEEDS

in large consignments, Emperor, Golden Spur and Princeps being particularly good. Snowdrops, hyacinths, violets and tulips, though cheap, were easily disposed of.

Pot plants such as spiraeas, ferns, &c., were plentiful and not in demand therefore remained unsold.

Fruits from home sources were entirely confined to apples, and those were limited and spotty. Fruits from abroad were present in varied and large quantities, and were easily disposed of at good prices. It would appear that each year home producers find new rivals that contest for the supremacy of the markets, and the foreign grower usually wins. This year rhubarb from Canada and plums from South Africa were a feature of the markets.

The following are the prices:—

FOREIGN PRODUCE.		From	To
		s. d.	s. d.
Apples, Californian,	per barrel	10 6	24 6
Apples, Main,	do.	8 3	10 6
Grapes, Alicantes,	per lb.	1 6	2 2
Plums, African,	per box	6 0	6 6
Rhubarb, Canadian,	per doz.	1 2	1 5
HOME PRODUCE.			
FRUIT.			
Apples, Lord Derby,	per barrel	16 0	23 0
Do. Bramley's,	do.	17 0	25 0
Do. Winter Greening,	do.	16 0	21 0
Do. Newtown Wonder,	do.	18 0	26 6
FLOWERS.			
Narcissi, Foreign,	per doz. bunches	1 7	1 10
Snowdrops,	do.	0 6	0 8
Tulips,	do.	2 2	2 10

FLOWERS—continued.		From	To
		s. d.	s. d.
Violets,	per doz. bunches	1 0	1 7
Carnations,	per doz. blooms	1 0	3 0
Aurum Lilies,	per doz.	2 6	3 0
Hyacinths,	per doz. bunches	1 2	1 9
Lily of the Valley,	do.	2 3	3 0
Asparagus, Plumosus,	per bundle	1 3	2 0
Smilax,	do.	0 8	1 2

VEGETABLES.

Artichokes,	per float	2 2	3 0
Brussels Sprouts,	do.	1 0	1 8
Broccoli,	per flasket,	3 0	5 0
Beet,	per doz.	0 4	0 5
Cabbage, York,	per load	15 0	18 0
Do. Savoy,	do.	12 0	16 0
Celery,	per doz.	1 2	1 8
Carrots,	per doz. bunches	0 5	0 7
Leeks,	per doz.	0 3	0 4½
Lettuce,	do.	0 7	1 1
Mint,	per doz. bunches	1 0	1 5
Parsley,	per float	1 2	2 4
Parsnips,	per doz.	0 6	0 8
Scallions,	per bunch	0 1	0 2
Turnips, White,	per doz. bunches	0 5	0 7
Do. Swede,	per cwt.	0 8	0 11
Spinach,	per float	0 4	0 9
Seakale,	per bunch	1 5	1 10
Rhubarb,	per doz.	1 0	1 6
Asparagus,	per bunch	1 5	2 2
Thyme,	per doz. bunches	1 2	2 0
Sage,	per bunch	0 2	0 3
Onions,	per bag	5 0	6 3
Mushrooms,	per box	0 10	1 8

Feb. 24, 1911.

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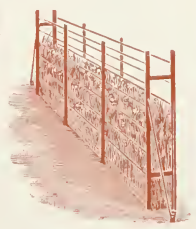
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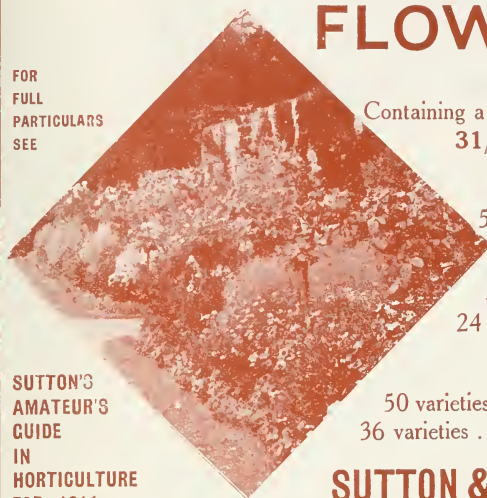


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Recent novelties in the early or garden chrysanthemums have given us some splendid true pink shades, and we will confine ourselves to a few of the very best, Normandie, soft flesh pink, and Provence, coral pink, with gold points in centre, both grand in every way; James Bateman, large flowers of a charming rose-pink; Anita, pearl pink, and Patricia, mauve pink, are all splendid, forming compact bushy plants 2 to 2½ feet high, and a mass of flowers on erect stems from early in September onwards. Amongst the single-flowered pink early chrysanthemums it is difficult to beat Pink Gem, Kitty Riches, and Brazier's Beauty, which flower in lovely sprays without any disbudbing.

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For cutting early in the season and again in late autumn the single pyrethrums are capital, the best of our colour being Agnes Mary Kelway and Triumphant. Michaelmas daisies now embrace quite a number of lovely pink varieties, the most charming of which are Lil Fardell, rich clear pink flowers two inches across; St. Egwin, a delightful soft pink of dwarf habit; Mrs. Huson Morris, delicate clear pink; Elsie Perry, large glistening pink flowers, and Rycroft Pink.

All the pink flowers here mentioned and many others will be found in the newly published catalogue of "Garden Flowers," by Messrs. Watson & Sons, Clonrath Nurseries, Dublin, and may be had free from the firm by any reader of IRISH GARDENING.

Royal Horticultural Society of Ireland.

At the monthly meeting of the council, March 10th, the further revised schedule of the Winter Fruit and Flower Show, to be held at the Royal Dublin Society's premises, Ballsbridge, on October 18th and 19th, was considered and approved, best thanks being accorded to the Department of Agriculture and Technical Instruction for Ireland for co-operation by a grant of £60 in prizes for apples and pears, and also to the Royal Dublin Society for prizes in the apple classes. For this particular show substantial prizes have also been contributed by the vice presidents, council, and practical members of the Royal Horticultural Society of Ireland, Messrs. Thomas Rivers & Sons, and Messrs. Wm. Thomson & Sons, making altogether probably the best fruit programme yet promulgated by the society. On a discussion respecting entry fees for the winter show it was resolved that an extraordinary general meeting should be called for Friday, April 14th, at 3.30 o'clock, to sanction a recommendation of the council that Rule IX., relative to entry fees payable by non-members, be changed into a bye-law by which the matter could be then dealt with by the council as might be deemed expedient. Judges were nominated for the spring show. Particulars of this show are in the advertising columns. Mr. J. H. Mahood was elected a member, the thanks of the council being accorded to Messrs. Charles Ramsay & Sons for daffodils and tulips sent to the meeting from Royal Nurseries, Ballsbridge.

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Cone No. 3, for a well-secured house of cubic 2,000 to 2,500 feet,
price 1/- each. Cone No. 2, for a well-secured house of cubic 1,000
to 1,200 feet, price, 8d. each. Cone No. 1, for frames cubic 1,000
to 600 feet, price 6d. each. Full directions accompany each Cone.

Ask for a List of Testimonials, of which some hundreds have been
received from the leading gardeners in the Kingdom.

Registered No. 14629.

FOR

All Glass Structures THAT REQUIRE OUTSIDE SHADING

The only Genuine, Original, and
Improved Article. It has been in
general use for **over 30 years**

Be sure to ask for SUMMER CLOUD SHADING

And see that you get it!

Sold by all Dealers in Horticultural
Sundries throughout the Kingdom,
in Packets containing 8 ozs., for 100 feet of glass, 1/-; 24 ozs., 2/6;
and in Bags of 7 lbs., 10/6; 14 lbs., 20/-.

MANUFACTURED BY

CORRY & CO., Ltd.
13 and 15 Finsbury St., LONDON, E.C.

BENTLEY'S WEED DESTROYERS

Effetly annihilate Weeds, Moss, Dandelions, and all other weeds
on Garden Walks, Carriage Drives, &c.

Have the largest sale in the United Kingdom!
Are the most powerful manufactured!
Are the most permanent in effect!

LIQUID (Poison)		DOUBLE STRENGTH (1 to 50)	
6 Gallons, to make	156 Gallons	...	£0 10 0
12 "	306 Gallons	...	0 18 0
20 "	412 Gallons	...	1 13 0
20 "	1,020 Gallons	...	2 7 6
40 "	2,040 Gallons	...	4 12 6
SPECIAL CONCENTRATED STRENGTH (1 to 80)			
3 Gallons, to make	243 Gallons	...	£0 14 6
12 "	496 Gallons	...	1 7 0
12 "	972 Gallons	...	2 6 0
24 "	1,944 Gallons	...	4 10 0

BENTLEY'S DAISY KILLER (LAWN SAND)

Completely eradicates Daisies, Moss, and other weeds which
infest Lawns, Tennis Courts, Croquet Grounds, Bowling
Greens, Golf Courses, &c., and afterwards improves the tone
and colour of the sward.

1 ton, £19; 10 Cwt., £9 15s.; 5 Cwt., £5; 1 Cwt., £1 1s.;
56 lbs., 12s.; Tins, 5s., 2s. 6d., and 1s. each

Carriage Paid on 7 6 orders and upwards

WHOLESALE MANUFACTURERS . . .

JOS. BENTLEY, Ltd.
CHEMICAL WORKS BARROW-ON-HUMBER, HULL

Notes.

MARCH has brought with it the first number of *The Irish Review*, a sixpenny monthly magazine of Irish Literature, Art and Science. It is a magazine of all the talents, and what first strikes a contemporary is the many mindedness of its many authors. For the writer of the notes and the sacred nine whose names appear on the cover speak out loud and bold, and individually, Mr. John Eglington, in his excellent article on "Irish Books," refers to "the impossible claims of the Gaelic language." Mr. P. H. Pearse begins his "Specimens from an Irish Anthology" with an excellent Gaelic poem, accompanied by translation and note, which would seem sufficient of itself to justify any claim. The writer of the Notes, who looks forward hopefully to the future of the country, treats of certain problems, and refers with sympathy to those who advocate a revival of Irish tillage. In an article further on we read—"The cry 'Back to the land' is heard continually, but for one who returns a thousand go away. The life which offers most, which seems most intense and most alluring, wins; and small holdings acts, peasant proprietorships, and like remedial measures touch only the fringe of the problem." This diversity of outlook and opinion is good and full of promise. It proves and illustrates the sincerity of the opening note of the Review—"The

Irish Review will strive to speak for Ireland rather than for any party or coterie in Ireland. Emancipated from the tyranny of his party and lifted above the flattery of his coterie, the Irishman of action, study or letters may utter himself here for the benefit of his people and of such others as may care to give attention." Of special interest to all concerned with economics and agriculture will be the series of articles contributed by Mr. George W. Russell on "The Problem of Rural Life," from the first of which we have quoted above. Fiction is represented by George Moore, with an excellent short story; criticism by Miss M. C. Maguire, who contributes a most original article on the works of Synge. The art plate is a reproduction of an impish, puzzling, characteristic picture by William Orpen, R.H.A. The poets of the number, in verse and prose, are Messrs. Colum, Stephens and MacDonagh, and Lord Dunsany. They introduce us to Mad Patsy, an Afghan poet, a Roman poet, and "Alone the Immortals." We have availed ourselves of three of the introductions to pay frequent visits to certain pages. *The Irish Review* is a magazine to buy and keep.

A GOOD MANURIAL DRESSING FOR A LAWN.—It will be in most cases advisable, at this season of the year, to give a stimulating dressing to lawns and tennis courts. The following mixture is recommended:—Superphosphate of lime, 3 lbs.; bone meal, 1½ lbs.;



TRIPLE TESTED

SEEDS

—OFFERED IN PROFITABLE PENNY PACKETS.—

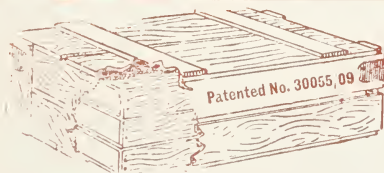
WE TEST FOR GERMINATION : :
 WE TEST FOR GROWTH : :
 WE TEST FOR PURITY OF STRAIN

144 Page Catalogue Gratis and Post Free

Leading House for New, Rare and
 other Hardy Herbaceous and
 Alpine Plants

NEW PRIMULAS A SPECIALITY. Herbaceous Catalogue,
 with beautiful coloured plate, and numerous illustrations free

BEES Ltd., 177d MILL STREET, LIVERPOOL



USE DAY'S FRUIT TRAYS AND CRATES

No more damaged fruit. If properly packed it is impossible for it to get damaged. The trays hold about 3lb. of Strawberries, Gooseberries or Cherries, and are non-returnable, price 2d. each. The Crates are 1 G each, and may be returned to the growers for renewals. Trade only, C.W.O. They are strongly made, and growers speak very highly of them.

A large grower in Early Strawberries in the South of Ireland is using this Crate, and finds it far and away the most satisfactory package he has ever seen or used.

Full particulars from

R. d'E. DAY, The Nursery,
 SUTTON SCOTNEY, Hants.

SPRAYING!

HUDKIN Brand Lime-Sulphur Solution

48 gallon Barrel	. . .	43 0
5 gallon Drum	. . .	10 6
2 gallon Can	. . .	5 0

Mix 1 gallon fluid to 11 gallons water in Winter
 Mix 1 gallon fluid to 20 gallons water in Summer

It is an Insecticide and Fungicide, and has a remarkably invigorating effect upon the growth of trees and plants. Use it on everything.

HUDSON & MISKIN, CHART SUTTON Maidstone
 AND AT SUFFOLK HOUSE, CANNON STREET, LONDON, E.C.



TESTIMONIALS FROM
The Earl of Yarborough, Lord Derby's,
and Duke of Montrose's Head Gardeners.
Also from "Gardening Illustrated" re
the effectiveness of "Nicoticide" Fumi-
gant. Also from Messrs. Dehlie & Co.,
Rothsay, Seedsmen to H.M. The King
25 per cent. Cheaper than other
Brands

NICOTICIDE

(FUMIGANT)

	cube ft.	each
Half-Gall. Tin contains sufficient for	160,000	60
No. 1 size Tin—1 pint	40,000	15
No. 2 size Tin— $\frac{1}{2}$ pint	20,000	7 6
No. 3 size Bot.—6 oz.	12,000	4 6
No. 4 size Bot.—4 oz.	8,000	3
No. $\frac{1}{2}$ size Bot.—2 oz.	4,000	1 8
No. 5 size Bot.—1 oz.	2,000	10 d.

Carriage Paid

FUMIGANTS, 1s. each, for 5,000 cubic feet

NICOTICIDE PLANT SPRAY

$\frac{1}{2}$ -pint 1 2, Pint 2, Quart 3 6, $\frac{1}{2}$ -gal. 5, Gallon 10
(Use 1 part to 40 parts for Greenfly, &c.)

Carriage Paid

GOW'S SLUG AND WIREWORM DESTROYER

Being a Combined Fertilizer

LAWN SAND, DAISY ERADICATOR, TOBACCO

POWDER AND QUASSIA EXTRACT

Sold in 6d., 1, and 2 6 tins, also in larger sizes

Carriage Forward

Insist on your Seedsmen supplying them

If any difficulty in securing the above we will give you
the name of nearest Agent

HUNTER & GOW, 42 Thomas Street
LIVERPOOL

'EUREKA' WEED KILLER.

SAVES WEARY WEEDING.

50 gallons of mixed solution will kill all
weeds on 200 square yards of paths, &c.

POWDER.

1/- tin for 12 galls. solution	Free Tin
1 9	and
0 -	Cases.

LIQUID.

1 - 50.	drum free
$\frac{1}{2}$ gallon	2 -
1 "	3 -
2 "	6 6
5 "	14 -
10 "	25 6



'EUREKATINE'—The successful fumigant.

'EUREKA' Insecticide, Lawn Sand, Heliober Powder, Bordeaux
Mixture, Worm Killer, Hayward's Summer Shade, &c.

SOLE BY AGENTS.

Full list with booklet, "Chemistry in Garden and Greenhouse," sent
post free by inakers -

TOMLINSON & HAYWARD, Ltd., LINCOLN.

APTERITE

The Great Soil Fumigant.

Kills WIREWORMS and other Soil Pests.

INEXPENSIVE. EASY TO APPLY.

V2 FLUID

For

Summer Use

Kills APHIS, PSYLLA and SCALE.

OF AGENTS EVERYWHERE.

Sole Manufacturers.

Willm. Cooper & Nephews, Berkhamsted.

THAT £1000 PRIZE! HOW DISAPPOINTING

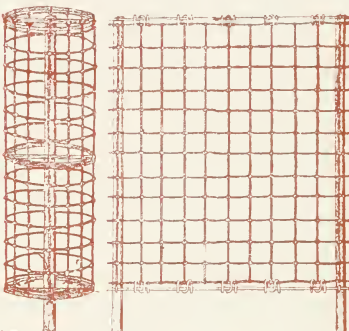
If you are unable to compete or fail to win it because after
all your efforts your best blooms have been spoiled by wire
* * * or other inferior supports * * *

'SIMPLICITAS' PEA . . . NETTING

the ideal support, is cheap and lasting, it is made specially
for the purpose from strong cord, tanned and rot proof

PEAS CLING TO IT AND ARE NOT

DAMAGED BY THE SOFT MATERIAL



Prices (Carr. paid)—6-ft. widths, 7d. per yd. 3-ft. widths,
3d. per yd. Circles, 16 each.

All who tried it last season were delighted with it. The
following is only one of many:

"I have given you Tannet Sweet Pea Netting a trial this year, and am
more than pleased with the result. I am surprised to find that the tendril-
hook to it more readily than to sticks. I found also that in a sale of wind
the flowers on the vines supported by it were scarcely damaged, whilst those
on the sticks were very much battered by constantly banging against the
sticks. For the last two years I have suffered a great deal from Tits biting
the flower buds when in quite a small state. I noticed, however, that the
peas on your netting were not touched, and I can only account for this by
the birds being averse to alighting in the string. I shall, in future, use
nothing but it for a support for my peas.

R. R. ANDERSON, Esq., The Grange, Blinington, Birkenhead.

Sweet Pea Competition

In connection with the above we are holding a Sweet Pea
* * * Photographs Competition, and are offering * * *

£25 in Prizes

First Prize of £5, Five Prizes of £4 each, Five Prizes of £3 each, and Ten
Prizes of 2s. each for a photograph of a clump or row of Sweet Peas grown
on a "Sweet Pea" Peg Circle, or a length of Sixards' Peas, Peg Netting. The
Prizes will be awarded to the photographer that, in the Judges' opinion,
represent the best clump or row.

In addition we are offering **Eleven Prizes**—First Prize of £5, and Ten
Prizes of £3 each, for a photograph of early Peas, runner Peas, or any
other climbing plant that can be grown on "Sixards' Pegs," Circles or Netting.
As this latter competition embraces several subjects including Sweet Peas,
the advantage will go to the competitor sending the greatest number of pho-
tographs of different subjects, and photographs for this competition must be
marked "Universal Use Competition."

The Judges appointed will be well-known men who will not have any interest
whatever in the sale of the Netting. The Judges' decision to be final. All
photographs to be sent on properly.

Competitors must notify us of their intention to compete not later than
June 30th, but the competition will not take place before September 1st, so
that growers in all parts of the United Kingdom may be able to photograph
their plants when in the best condition.

In the first competition only one photograph must be sent in. All pho-
tographs must be secured in plain writing on the back, with the full postal
address of the competitor or who must be the actual grower of the plants, and
forwarded to our address in Liverpool, together with the receipt showing
where the Netting was purchased. To ensure an absolutely impartial competi-
tion, members or employees of the firm will not be allowed to compete, and
the back of each photograph will be covered with brown paper (previously
being submitted to the Judges).

THE BOUNDARY CHEMICAL CO., Ltd.
CRANMER STREET, LIVERPOOL

sulphate of ammonia, 1 lb. If these quantities be mixed with about 1½ bushels of fine, dry soil free from weed seeds, and scattered over the sward, it will have a very beneficial effect upon the character of the herbage. The quantity given will be sufficient for about thirty square yards. A good raking previous to application of the mixture is advisable. Some gardeners have great faith in Peruvian guano (mixed with salt) for lawns, and without doubt it is an excellent thing to use.

INSTEAD OF STAKES FOR SWEET PEAS the Boundary Chemical Co., Ltd., has sent us a specimen of a very useful yet very simple invention to take the place of stakes in growing sweet peas. It is illustrated (as an advertisement) in our present issue. We intend to try it. It seems all right, and the cord is said to be rot-proof, so that the netting may be used year after year. In connection with this pea netting introduction, the company are holding a photographic competition and are offering a series of prizes from £5 down to 5s., total £25. For full particulars we must refer our readers to our advertisement columns.

SOME USEFUL INVENTIONS.—Messrs. West have sent us quite a little collection of their useful garden sundries for inspection and trial. We are particularly pleased with their olive-green aluminium label tags. They are exceedingly handy and require no wire or string; they are self-fastening. Another most ingenious contrivance is their patent wall-tree fastener. Special round-headed nails are driven into the wall on each

side of a branch. The fasteners are provided with valved slots through which the head of the nail is pushed. The raised valve is then pushed back and all is secured. A still third item is a substitute for crocks in potting. It is simplicity in itself—a convex disk of copper gauze bound in a brass ring. All the gardener has to do is to place the little contrivance, concave side undermost, over the hole in the bottom of the pot and go a head. It is neat, effectual, and time-saving.

INSECT PESTS AND FUNGUS DISEASES.—This is the title of an interesting and really useful little book issued by Mr. M. Herrod of Wisbech. Mr. Herrod is a trained scientific man who has applied his special knowledge to the successful building up of a business devoted to the manufacture of insecticides and fungicides. The book before us gives abundant evidence of the good results obtained when science is associated with a manufacturing industry. The maker of a wash for fruit-growers must bring into his business a knowledge of chemistry and of biology if he is to have a chance at all in the competitive struggle for supremacy in these progressive times. This little book contains within its eighty-four pages an account of the life-histories of the more common insect pests, illustrated by truthful figures of the pests in various stages of development. After each description comes the remedy, with the *why* and the *how* as to time and method. It is true that a goodly number of pages are devoted to copies of the

Tuberous Begonias

A GREAT SPECIALITY

AWARDED 24 GOLD MEDALS

☞ **Seeds saved from our Choice Exhibition Plants**

Double, 2s. 6d. and 5s.; **Single and Crested Single**, 1s., 2s. 6d. and 5s. per packet. Also **Friiled Single**, a most beautiful novelty, 1s., 2s. 6d. and 5s. per packet. Also in 6 separate colours, 5s. for 6 packets.

☞ **Splendid Large Tubers for Pot Culture or Bedding**

Doubles, in separate colours, 30s., 21s., 12s. 6d. and 4s. per dozen; in mixed colours, 3s. per dozen. Splendid for bedding.

Singles, in separate colours, 21s., 15s., 8s. and 3s. per dozen; in mixed colours, 2s. 6d. per dozen. Splendid for bedding.

For Named Varieties see Illustrated List, post free

OTHER SPECIALITIES . . .

Cannas, Delphiniums, Blue Primroses, Border Carnations (a fine sample dozen for 5s.), **Perpetual-Flowering Carnations, Cyclamen, Polyanthus, Pansies and Violets**, 12 Choice Perpetual-Flowering Carnations, in pots, 6s.

BLACKMORE & LANGDON
Twerton Hill Nursery—BATH

—RUBBISH— DESTRUCTORS



For Dealing with —
Garden and
Domestic
Rubbish
by FIRE

The ONLY
Sanitary Method

The Horsfall Destructor Co.
LIMITED

Station Foundry, PERSHORE, and
17 Victoria St., Westminster, S.W.

To win the **£1,000** for **A Bunch of Sweet Peas**
 ("Daily Mail," February 20th)

COMMENCE WITH . .

EDMONDSON'S EBLANA COLLECTIONS

NEW

SWEET

PEAS

25 Varieties, 40 seeds each—1,000 seeds for 1s. 6d.

25 Varieties, 80 seeds each—2,000 seeds for 2s. 6d.

The "Minor Eblana" Collection, 12 choice sorts, 1s.

The "Novelties" Collection,———12 novelties, 5s.

EDMONDSON BROTHERS, Seedsmen
 10 Dame Street,———DUBLIN



DEATH TO WIREWORMS—

and therefore great improvement in
 your plants—results from using . . .

Vaporite, the ORIGINAL SOIL INSECTICIDE

in your garden or greenhouse. Dig
 it in at the rate of 1 lb. to 8 sq. yds.
 Easy to use—non-poisonous, economi-
 cal—Insist on having Vaporite, many
 imitations are not only worthless but
 actually injurious to plants.

Prices—Tins, 1 1/2s. 9d.,
 7 lbs. 2 -, 14 lbs. 3 -, 28
 lbs. 4 6 of all Seedsmen
 Casks, 7 6 | cwt., 11 6
 cwt. Carr. paid from
 your Seedsmen or the
 Company.

Send for illustrated des-
 criptive Broch. No. 48 free
 from the
**VAPORITE-STRAWSON
 CO., LTD.,** (Dep. 11)
**SPENCER HOUSE,
 SOUTH PLACE,
 LONDON, E.C.**

VAPORITE

growers reports on to efficiency of the various washes, but this is to be expected in what after all is a trade publication issued for the purpose of securing customers. So far as the scientific portions are concerned, we can honestly recommend this book to our readers. No price is stated, so we presume that it may be had for the asking. We advise you to ask!

ROYAL APPOINTMENT. Messrs. Ransomes, Sims & Jefferies, Limited, Orwell Works, Ipswich, have had the honour of being appointed, by Royal Warrant, Purveyors of Agricultural and Horticultural Machinery to His Majesty King George V.

SNOWFLOWERS.—These gigantic annuals give distinction to shrubberies, wild gardens and broad borders. Their large flowers are extremely showy, especially if the plants are grown in clumps or masses. The dwarf varieties are most suitable for mixed borders.

POPPIES.—The ordinary corn poppy we all know. The Shirley poppy, too, is now one of the best known annuals in gardens. But there are several types of perennial poppies that give arresting colour to borders and rockeries throughout the summer. Of such are the Alpine poppy, the Iceland poppy, with its rich translucent petals, and the Oriental poppy, with its great flaunting flowers matchless for brilliancy and effect.

NASTURTIUM.—One of the most useful annuals for getting striking colour effects easily, cheaply and surely is the nasturtium. It will grow on any poor soil, indeed the poorer the soil the greater the number of flowers produced. Nasturtiums revel in a dry, poor soil well mixed with mortar rubbish. There are two races, the dwarf and the tall. They may be had in a variety of colours.



THE FOUR OAKS SPRAYING MACHINES ON TRIAL.

Shows.

STILLORGAN AND FOXROCK HORTICULTURAL SOCIETY.—The third annual show will be held in the grounds of the Convalescent Home, Stillorgan, on the 20th of July next. There is an excellent schedule and a generous prize list. We heartily wish all success to this progressive local society in their good work in connection with gardening. All information and a copy of the schedule may be obtained from the hon. secretary, Mr. T. F. Crozier, Avonmore, Stillorgan.

THE KILLARNEY SWEET PEA SOCIETY holds its first annual show at Killarney on the 4th of August next. There are twenty five classes, some of which are open only to amateurs, to "ladies or maids," and to cottagers. Professional gardeners have a challenge cup for competition. The hon. secretary is Miss Godfrey, Aghadoc Cottage, Killarney.

Catalogue.

WATSON'S NEW CATALOGUE. Messrs. Watson of the Clontarf Nurseries send us a copy of their new catalogue dealing with all the popular races of herbaceous and other plants. Villa gardeners in the Dublin districts will find at these nurseries an endless variety to choose from when making their spring purchases. Now is the time to plant in order to secure a good display in the summer and autumn months. A copy of this descriptive catalogue will be found very helpful to amateurs.

Spraying of Fruit Trees.

THE spraying of fruit trees is recognised as being one of the necessary operations in good culture; but the employment of a good machine is not so commonly appreciated. It is most essential to have a fine spray projected with sufficient force to secure penetration to every nook and cranny of the tree. The Four Oaks Machines apparently fulfil all these requirements.

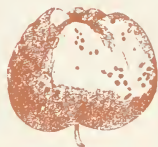
The Four Oaks Spraying Machines must be well known to many of our fruit-growers. Indeed, they are now well known and used everywhere, and one reason for this is that those responsible for their production are ever ready to enter into friendly competition for superiority with other similar machines in the market. A practical trial is the best test. The illustration we here reproduce is a reduction from a large photograph showing the Four Oaks Spraying Machines on their trial. The result of this particular experiment was an easy first.

IMPORTANT TO IRISH FRUIT GROWERS

The Greatest Triumph of the 20th Century

HERROD'S APPLE AND PEAR SCAB BROWN ROT AND CATERPILLAR PASTE

Never before in the History of Horticulture has such advancement been made in Fruit Tree Spraying



APPLE SCAB



CATERPILLAR



BROWN ROT

This is absolutely the Greatest Labour Saving Insecticide and FUNGICIDE ever placed upon the market

This paste will command on account of its many advantages the greatest sale of any Insecticide or Fungicide in Great Britain and Ireland during the present Spring

A Wash that destroys Caterpillars of every description, and at the same time Scab and Brown Rot, saving at least one-half of your labour bill

COMPARATIVE RESULTS

What is the difference you obtain between using the above and Arsenate of Lead? In the case of Arsenate of Lead you have a wash that simply destroys the Caterpillars, it does not in any way remove the Spot or Scab on the fruit that renders it only fit for Bag Apples, and also the most important thing to remember is that where Scab is found the fruit does not grow half its normal size. One grower told me the actual difference my Scab and Caterpillar Paste made this Season

IT IS NO TROUBLE TO MIX—SIMPLY ADDED TO COLD WATER

in the price he obtained, the case in question was one of Worcester Pearmain (this variety being very subject to Scab). Half his crop was sprayed with my Paste, spraying the remaining portion with Arsenate of Lead. He harvested twice the weight of Apples from the trees where my Apple and Pear Scab, Brown Rot, and Caterpillar Paste was used; but this is not all, when sold realising over £10 per ton more in price for this fruit than for those that were sprayed with the Arsenate of Lead

IMPORTANT TO ALL IRISH FRUIT GROWERS

I will be pleased to send my latest volume, just published, 84 pages, which is crowded with most useful information for Fruit Growers, giving a description of almost every pest injurious to Fruit.

POST FREE WRITE TO-DAY FOR ONE

Also a pamphlet containing a full description of

prices, &c., of above paste, with Coloured Illustrations of Fruit sent to me last Season by Growers who had used it. Also Growers' reports upon its efficiency.

P.S.—I have published 7,000 of my new volume, but over 5,000 have already been applied for, and to ensure getting one please write at once.

M. HERROD, M.P.S., F.R.H.S., WISBECH

Telegrams: "HERROD, WISBECH"

Telephone: Nat. 32

The Dublin Wholesale Markets.

RIGHT through March, as during February, a distinct improvement can be noticed in the markets. Produce of every description continues to arrive in large quantities both from home and foreign sources.

As regards fruit, the markets continue to depend on foreign countries for the greater part of their supplies. Grapes were no cheaper considering that they are now past their best and lacking in plumpness. Strawberries in small quantities, very unattractive and forced-looking, were occasionally put up for sale, and I fear that they hardly paid for the trouble necessary to have them so early. From the 1st of March [and even earlier] when apples are mentioned in the markets it may be understood that they were Bramley's Seedling. This splendid keeping variety has been the only kind marketed for some time, and the fine prices obtained for it is another strong recommendation for the planting of such a reliable sort.

Flowers were sent to market in large quantities from home parts. The foreign consignments were equally large, and in most cases superior, except in the case of violets and hot-house flowers; in both these cases home growers can hold their own. All the flowers mentioned last month were equally plentiful this month. Scarlet anemones, wallflowers, and many common spring flowers were changing hands at a low figure. Pot plants have not been so easily disposed of, probably owing to the reduced price of cut flowers. During the early portion of March a large trade was carried on in shamrock of various sorts, a goodly portion being very nice clover.

Nothing special in the vegetable class; everything has been much the same. Cabbage is now becoming dear and scarce. Savoy cabbage is hardly appreciated enough. It is surprising what a fine load of ripe Savoy can be had for in comparison to a load of immature York. Cucumbers and the choicer vegetables were in constant demand at a good price for sellers.

The following are the prices:—

HOME PRODUCE.		From	To
FRUIT.		s. d.	s. d.
Apples, Bramley's Seedling,	per barrel	22 6	26 6
Do. Seconds,	per float	2 6	3 6
Grapes, Alicantes,	per lb.	1 4	2 2
Do. Gros Colmans	do.	1 2	1 8
FLOWERS.			
Lily of the Valley,	per doz. bunches	1 8	2 6
Bermuda Lily,	per doz.	2 6	3 0
Carnations,	do.	1 6	2 6
Violets,	per doz. bunches	0 4	0 8
Hyacinths,	do.	0 8	1 6

FLOWERS—Continued		From	To
		s. d.	s. d.
Asparagus,	per bundle	1 0	1 6
Smilax,	do.	0 6	1 0
Shamrock,	per tray	1 0	2 6
Narcissi, Poets	per doz. bunches	1 6	1 0
Do. Trumpet	do.	1 4	2 0
VEGETABLES.			
Asparagus,	per bundle	5 0	6 0
Artichokes,	per float	1 8	2 0
Brussels Sprouts,	do.	1 0	1 4
Broccoli,	per basket,	2 6	4 6
Beet,	per doz.	0 3	0 4
Cabbage, York,	per load	10 0	15 0
Do. Savoy,	do.	8 0	13 0
Cucumbers	per doz.	10 0	12 0
Celery,	per doz.	1 4	2 6
Carrots,	do.	0 5	0 8
Leeks,	do.	0 2	0 3
Lettuce,	do.	0 6	1 0
Parsley,	per float	0 10	1 0
Parsnips,	per doz.	0 5	0 7
Turnips, Garden,	per bunch	0 3	0 6
Spinach,	per float	0 10	1 4
Seakale,	per bundle	1 5	1 9
Rhubarb,	per doz. bunches	1 2	2 4
Thyme,	do.	1 0	1 4
Sage,	do.	1 0	1 2
Onions,	per stone	0 11	1 1

FOREIGN PRODUCE.

American Apples,	per barrel	22 0	27 0
African Pears	per box	4 6	5 6
Do. Plums	do.	5 0	6 0
Do. Peaches	do.	7 0	8 0
Canary Tomatoes	per lb.	0 4	0 6

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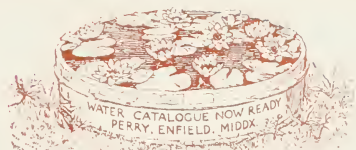


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Our issue of October last contained an article on the best varieties as seen by the Editor in the nurseries of Messrs. Watson & Sons, Clontarf. Our readers cannot do better than consult the new catalogue of this firm which makes a speciality of these plants and lists only a choice collection of those which they have proved from their own experience to be of undoubted merit. The new Single-flowered Outdoor varieties are coming to the fore. It is all important to obtain sturdy, established plants, and Messrs. Watson do theirs in small pots, thereby ensuring results which cannot be obtained from the planting out of rooted cuttings without a ball of soil.

Royal Horticultural Society of Ireland.

THE above society held their Annual Spring Show on the 10th and 11th April, in the Art Industries Hall, Ballsbridge, in connection with the Spring Show of the Royal Dublin Society. Taking everything into consideration, it was undoubtedly the best show of recent years, not only in quantity and quality of exhibits, but also in the increase in the number of visitors and the interest taken in the show in general. The chief features of the show were the magnificent specimens of various narcissi and the large and varied exhibits of different Alpine plants. Their Excellencies the Lord Lieutenant and Countess of Aberdeen visited the show in the afternoon on the opening day, being conducted around the show by Mr. F. W. Moore, Hon. Sec.

The cup given for the best collection of fifty varieties of narcissi was won by Mr. L. Studholme, Ballyveighan, Birr, King's Co. (gardener, Mr. Hynes). This exhibit contained some very fine seedlings, also good specimens of Weardale Perfection, Madame de Graaff, Glory of Leiden, King Alfred, Mrs. Butterfield, Brigadier, Madame Plomp, with Firebrand, Lucifer and Glitter as the best of the red cups. Second was won by Mr. C. M. Doyne, D.L., Gorey, Wexford, who showed good flowers of Countess Cadogan, White Lady, Glory of Noordwijk, King Alfred, Horsefieldi, Flamingo, Lady Arnott, and Albatross. Third, Capt. O'Callaghan, Swords, Co. Dublin, who had good flowers of Lady Gore-Booth, King Alfred, Lady M. Boscawen, Glory

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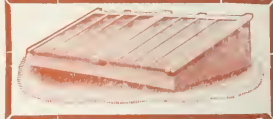
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of Leiden, and Weardale Perfection. The chief prize-winners in the smaller classes were Capt O'Callaghan, Mrs. Hely Hutchinson, Mr. Parr Parkstown, Ballivor, Co. Meath; Lady Redmond, Goutmore, Dundrum; C. K. Douglas, Moyvalley, Co. Meath; C. M. Doyne, Mr. R. T. Harris, and Mr. Davies, Obelisk Park, Blackrock. There was a very good display of hyacinths and tulips, Mr. Davies and Mr. Bewley, Danum, Rathgar (gardener, Mr. Cave), being the chief prize winners.

Roses in pots were exceedingly well shown, made a very good display, and were much admired by the visitors, the president's cup being won by Mr. H. S. Guinness, Burton Hill, Stillorgan, with well-grown plants of Mrs. W. J. Grant, Caroline Testout, Frau Karl Druschki, and others. The flowers on these plants were scarcely far enough developed to be at their best. Second went to Mr. Davies, who had also very good plants. Third, Mr. H. Dudgeon. The chief winners for cut roses were Mr. Bewley and Mr. E. D'Olier, who also showed a very fine stand of *Marchal Niel*.

For three exotic ferns, Mr. W. Robertson, Hermitage, Dundrum (gardener, Mr. Green), was an easy first with excellent specimens of *Polypodium subarticulatum*, *Adiantum Williamsii* and *Nephrobium hirta cristata*. In this class Sir E. Cochrane (gardener, Mr. Colgan) had a very fine plant of *Nephrolepis Todoides*.

Deutzias were a striking feature, and very large well-flowered plants won first prize for Mr. Westby (gardener, Mr. Simmons), Mr. Fitzadam Millar, Windsor House, Monkstown (gardener, Mr. Colohan), being second, and Miss O'Meara, Clonskea (gardener, Mr. Harte), being third.

Cinerarias were also very well-grown plants, especially the *Stellata* form, in which Mr. Robertson secured first prize, second going to Mr. Millar, and third to Mr. Mitchell, Sandford Lodge, Ranelagh (gardener, Mr. Keenan).

For six pots of tree carnations the exhibits were of a very high standard, Mr. Richardson, Springfield, Lisburn, being first with plants of Mikado, Enchantress, Rose Dare, Marmion, Mr. M. Burnett, and Snowball; Mr. Davies was second, and Mr. Beaumont Nesbitt third.

Mr. E. Bewley was first for six pots of *Amaryllis* with well-grown plants, Mr. Westby being second.

Azaleas were well shown, Mrs. McCann, Simmonscourt, having well-flowered plants for first prize, Sir E. Cochrane, Bart., St. Michael's, Aylesbury Road (gardener Mr. Colgan), being second. In the class for six plants these two exhibitors were beaten by Lady Redmond, who showed well-flowered plants for first prize. In the *Mollis* section first prize was won by Sir E. Cochrane, Bart., second Mrs. McCann, and third Mr. Davies.

For three pots of *Mignonette* Mrs. Meade Coffey, Ardmeek, Blackrock, was again first with exceedingly well-grown and well-flowered specimens, Mr. Soden, Lakelands, Sandymount, being second, and Mr. Dudgeon, The Priory, Stillorgan, third.

The first prize batch of *Gloxinias* of Mrs. McCann were bright and clean-flowered and well-grown. Second being Mr. Westby, who had also good plants.

For the table of six foliage plants Mr. E. Bewley was

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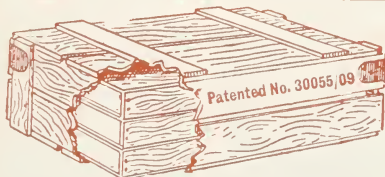
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No. 3	size	Bot.	— 6 oz.	"	12,000	4 0 0
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first, Mr. H. S. Guinness being a good second, and Mr. Davies third with smaller plants.

There was strong competition in the table plants class, Mr. Bewley being placed first with a well arranged table, staging good plants of Crotons, Amaryllis, Gloxynias, Odontoglossum Pescatorea, and Dendrobium Crassimide, the whole being nicely edged with *Panicum Variegatum*. Second was won by Mr. Robertson with a nice table of Ferns in variety, Dracaenas, Crotons, and contained four well grown and well flowered plants of *Gloire de Séaux Begonia*. Third being Miss O'Meara with a table too heavily decorated. It contained good plants of *Caladiums*, *Begonias* and *Crotons*, *Schizanthus* and some well flowered plants of *Veronica Heliconia*.

The table of Alpines was won by Mrs. G. Mitchell. Ardhu, Blackrock (gardener, Mr. Baker). It included a nice collection of *Primula Rosa*, *P. Farinosa*, *P. Cashmeriana*, and *P. Maliscarides*, also various *Sedums* and other Alpines. It was very well arranged. Second went to Lady Redmond, who had a nice collection of larger plants. Third, Mr. E. Lee, The Grange, Stillorgan.

For the best decorated table Miss Ross, Summerfield, Dalkey, was first, using very fine flowers of *Wistaria Sinensis*, with a little *Asparagus Sprengeri* and a little white *Spirea Alstilbe*. Mrs. Butler, Priestown House, Co. Meath, being second, using primroses.

Messrs. Watson & Sons, Florists, Nassau St., Dublin were first for a Bride's Bouquet, it being composed chiefly of *Odontoglossum Crispum*, well arranged with a little *Asparagus Plumosa* and *Lily of the Valley*.

For the best collection of twenty-four hardy cut flowers Capt. Lewis Riall, D.L., Old Coura, Bray, was first, Mr. Doyne second, and Miss Osbourne third. For twelve varieties Mrs. Butler was first, Lady Redmond second, and Col. Poe, C.B., third.

FRUIT.—The best dish of pears (*Uvedale's St. Germain*) was shown by Mr. Bewley, Mr. Doyne being second with *Catillac*; third, Mr. Dudgeon. For a dish of dessert apples, Sir E. Cochrane was first, with Newton Pippin, Mr. Dudgeon being third with King of the Pippins. For cooking apples, Mr. O'lier showed nice fruits of Bramley Seedling, second going to Mr. Bewley for a dish of Newton Wonder, Mr. Lee being third. The best dish of strawberries was one of Leader, exhibited by Colonel Poe, C.B., Heywood, Queen's Co. (gardener, Mr. H. Cook); second, Major Henry, Firmount (gardener, Mr. Taylor), with nice fruits of Royal Sovereign; third, Mr. Westby.

Exhibitors in this class in future should note that according to Rules of the R. H. S., a dish of strawberries consists of twenty fruits.

VEGETABLES.—Though there was only one exhibit for two cucumbers, those staged by Mr. Bewley would have won in strong competition. Broccoli was fairly well represented, Mr. Robertson being first for four heads; Capt. Lewis Riall, D.L., second, and Mrs. Meade Coffey third. Cabbages were well to the fore considering the past season, and good heads were shown by Mr. Soden, Mrs. Meade Coffey being second, and Capt. Lewis Riall third.

Lettuces were a good lot, Mr. Soden being again first, Mrs. Meade Coffey second, and Sir E. Cochrane, Bart., third.

The collection of six distinct kinds of vegetables brought only two exhibitors, Col. Poe, C.B., being first, having good seekale, potatoes, French beans, tomatoes, and cauliflowers, his cucumbers being very poor, Mrs. Beaumont Nesbitt, Tubberdaly, King's County, being second.

The vegetables and fruits were not such a strong feature as they ought to have been, and I think it would be well to have more valuable prizes offered for fruit and vegetables at this show in future to induce more competitors to come forward, as good spring vegetables are not so easily grown as are the autumn varieties.

It augurs well for the success of a show to see so many trade exhibits. I feel certain it was very gratifying to the committee to see so many of them coming forward, and I hope they will find it remunerative in the end.

A gold medal was awarded to the Tully Nurseries, Kildare, for an excellent collection of Alpine plants, many of which, especially the primulas, are rare at present. It was one of the features of the show. A gold medal was awarded to Messrs. Chas. Ramsay & Sons, Ballsbridge, who had a magnificent display of various flowering plants and floral designs. Sir Jocelyn Gore Booth, Lissadell, Sligo, was also awarded a gold medal for a grand collection of narcissi, many of which being very fine seedlings, and of which I feel certain more will be heard.

Silver medals were awarded to Messrs. Alex. Dickson & Sons, Dawson Street, Dublin, for a collection of flowering plants, which included a nice lot of carnations. To Messrs. W. B. Hartland & Sons, Cork, for a fine collection of orchids and narcissi, which were well arranged. To Messrs. Hogg and Robertson, Mary



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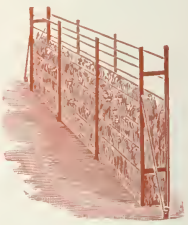
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Street, Dublin, for an excellent collection of narcissi grown on their Bulb Farm at Rush, Co. Dublin. This contained some very fine blooms of the best varieties, also some good seedlings. A silver medal was also awarded to Messrs. Baker, Wolverhampton, for a collection of rare Alpine plants.

Bronze medals were awarded to Messrs. Browett, Kingstown, for a good collection of palms, ferns and flowering plants. To Messrs. Watson & Sons, Clontarf, for flowering plants, floral designs, and a collection of the new varieties of Nephrolepis. Mr. V. de C. Hughes, Kilcullen Nurseries, Kildare, was very highly commended for a nice collection of plants and floral designs. Messrs. Pennick, Delgany Nurseries, were highly commended for a very nice group of hardy shrubs. IRISH GARDENING, Ltd., staged a nice collection of Dendrobiums, Amaryllis, Gloxinias and other stove plants, for which a vote of thanks was accorded.

Other non-competitive exhibits were some pot strawberries of "Leader" from Col. Poe, C.B., which were very highly commended, and some new "Coleus" from Mrs. Beaumont Nesbitt, Tubberdaly, King's Co., which were commended.

The following kindly acted as judges:—Narcissi, Mr. Bowles, of the Royal Horticultural Society of England; Roses, Mr. C. K. Douglas; Bouquets, &c., Lady Albreda Bourke and Mrs. Greer; Alpines and Hardy Flowers, Mr. R. Beamish; and Fruit and Vegetables, Mr. W. S. Irving.

VISITOR.

Irish Forestry Society.

THE Executive Committee met at the offices, 12 College Green, Dublin, on Tuesday evening last, 26th April, 1911, at 5 o'clock p.m., the members present being Mr. William Dick (in the Chair), O. H. Braddell, I.S.O., A. E. Moeran, W. F. Bunn, Mr. Charles Dawson (Joint Hon. Secretary), and A. H. Walkey, Secretary.

The Secretary read the following resolution received from the Ballymena Rural District Council:—"That this Rural Council consider that the Irish Forestry Society ought to have a bye-law to enable an auxiliary branch of that Society to be established in each county in Ireland.

"That each County Council should appoint a sub-committee of their Agricultural Committee to take action and give advice on all matters concerning the duties and powers of the Council in relation to the acquisition of land for afforestation or tree-planting." The questions raised are under the careful consideration of the Committee. Various correspondence was also dealt with.

In view of the large number of persons who, although they have no practical knowledge of forestry or silviculture, take considerable interest in the objects and aims of the Society, the rules and bye-laws have been amended by providing for a class of "Associate" Members (ladies or gentlemen) at a subscription of 5s. per annum.

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TO THE EDITOR OF IRISH GARDENING.

SIR,—In order to get the fact known, kindly allow me to ask for a small amount of your space to state that another challenge cup has been presented to the Royal Horticultural Society of Ireland for Alpine plants. The cup came into existence through an argument that the Tully Cup competition was not the severest test to good culture in Alpines, and I was asked which in my opinion would. To which I replied that twelve or twenty-four pans not exceeding ten inches of well-flowered Alpines would be the severest test to their culture, and as a result I collected money for a five guinea cup, and a guinea for first prize presented by "Five Lovers of Alpines." If any of your readers would like particulars I shall be pleased to send them on full details, and if you will allow in your next issue I will publish a list from which intending competitors can select.—Yours very truly, W. H. PAINE.

The Dublin Wholesale Markets.

APRIL is slowly passing on, and, though somewhat harsh and cold, has left behind large quantities of choice flowers and dainty vegetables to decorate the vegetable markets of Ireland's capital. To those interested in market gardening and to all lovers of vegetables (cooked) may I cordially invite them to visit the Dublin Wholesale Markets and to see for themselves the spacious and well-appointed buildings, and gaze with awe and admiration at the results of what science and the study of hygienism have done—may they then go home and be vegetarians for ever more?

The supplies of the various kinds of fruit have been very scanty, practically none arriving from home parts. The arrival of Australian and African apples, &c., were very much below average; even American apples have rapidly dwindled down during the last few weeks to a vanishing stage.

The principal feature of the markets during April was the enormous quantities of cut flowers and pot plants being sold. Narcissi arrived in large consignments from all parts. Barrii conspicuus and Maximus selling well. All classes of outdoor spring flowers were easily disposed of, though at prices which would hardly pay to grow them for market purposes. The pot plants consisted of lilacs, geraniums, azaleas and genistas, and other sorts in smaller quantities, some very fine plants being obtainable at a reasonable figure.

Vegetables were plentiful, especially broccoli and cabbage, the latter having improved very much. Herbs continue to be dear. Many of the forced vegetables can be had out of doors now, such as rhubarb, seakale,

asparagus, &c., and therefore sell at a much reduced price.

The following were the prices:—

VEGETABLES.	From		To		
	s.	d.	s.	d.	
Asparagus,	per bundle	1	2	2	4
Artichokes,	per float	1	10	2	0
Brussels Sprouts,	do.	2	6	3	0
Beet,	per doz.	0	3	0	4
Broccoli,	per flasket,	2	6	4	6
Cabbage, York,	per load	8	6	12	6
Do. Savoy,	do.	3	9	7	0
Carrots,	doz. bunches	0	4	0	7
Celery,	per doz.	1	6	2	2
Cucumbers,	do.	3	6	4	0
Lettuce,	do.	0	3	0	5
Leeks,	do.	0	2	0	3
Mint,	per bunch	0	2	0	3
Parsley,	per tray	0	4	0	8
Parsnips,	per doz.	0	4	0	5
Rhubarb,	per doz. bunches	1	0	2	6
Seakale,	per bundle	1	0	2	0
Sage,	per doz. bunches	2	6	3	0
Turnips, Garden,	per float	0	5	0	8
Do. Swedes,	per cwt.	1	0	1	2
Mushrooms	punnet	0	9	1	6
Thyme,	per doz. bunches	1	9	3	6

FLOWERS.					
Aurum Lilies,	per doz.	1	9	2	9
Anemones,	per doz. bunches	0	4	0	6
Tulips,	do.	0	5	1	0
Violets,	per doz.	0	6	1	6
Roses, White,	per bunch	0	7	1	6
Roses, Red,	do.	0	6	1	2
Narcissi,	per doz. bunches	0	3	1	3
Carnations,	per doz.	1	9	2	6
Azaleas, in pots,	each	1	3	1	10
Geraniums, do.	do.	0	7	0	10
Genistas do.	do.	0	5	1	1
Lilacs, Large	do.	2	0	3	0

HOME FRUITS.					
Apples, Irish,	per barrel	24	0	27	0
Strawberries,	per lb.	2	0	10	0

FOREIGN PRODUCE.					
Apples, Australian.	per box	18	0	19	0
Do. American	per barrel	20	0	27	0
Plums, African,	per box	3	6	5	0
Pears, do.	do.	2	6	4	6
Lettuce, French,	per crate	2	6	5	0
Onions, Egyptian.	per cwt.	9	0	10	0
Potatoes, Canary,	do.	14	0		

28th April, 1911.

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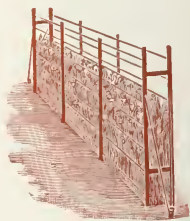
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The months of May and June are the best for using weed killer, so as to keep walks clean for remainder of the season.

There is a loose leaflet in this issue of IRISH GARDENING giving particulars of Smith's "perfect" weed killer, which is the original and still the premier preparation of its kind. The Irish agent is Mr. D. M. Watson, horticultural chemist, 61 South Great George's Street, who will be glad to give all further particulars on application.

Shows

ROYAL HORTICULTURAL SOCIETY OF IRELAND.

At a meeting of the council on the 12th ult. correspondence dealing with a new class for Alpines was dealt with, and a challenge cup offered by "Five Lovers of Alpines" was accepted with the thanks of the council. The wording of this class for competition at the Spring Show, 1912, is as follows, viz. :—

"Alpine plants in flower, twelve pans, pans not to exceed twelve inches or to be under eight inches in diameter (outside measurement), each pan to contain a different species, or only one variety of a species. The word Alpine, as understood in this competition, includes diminutive, deciduous, and evergreen hardy plants, such as are generally cultivated in modern Alpine gardening. The surface may be decorated with stone between the plants, but no moss or other plants for furnishing purposes. A challenge cup value five guineas, and first prize presented by "Five Lovers of Alpines," the cup to be won three times before becoming the property of the winner, the money prizes to be the property of the gardener—1st prize, 21s. ; 2nd prize, 15s. ; 3rd prize, 10s. A nice display of flowers was contributed to the meeting, a cultural certificate being awarded to Mrs. Butler, Priestown, Meath, for a collection of fine seedling, St. Brigid Anemones, who also sent in seedling aubrietias and seedling Alpine auriculas. A vote of thanks was accorded to Messrs Pennick, & Co., Delgany Nurseries, for a nice lot of hardy flowering shrubs, a vote of thanks and highly commended to Messrs. Chas. Ramsay and Sons for eighteen bunches of regal pelargoniums in eighteen varieties, from the Royal Nurseries, Ballsbridge. Four new members were elected, and arrangements were made for the schedule committee to draw up the spring show programme for 1912 for confirmation of the council, the next meeting of which will be on the 9th inst.

NATIVE IRISH ALPINES

GENTIANA VERNA
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SHOWS (Continued).

KILKENNY HORTICULTURAL SOCIETY.

The seventh annual exhibition of this society will be held in Kilkenny on August 31st. It will include fruit, flowers, vegetables, and honey. A silver challenge cup, value six guineas, is presented by Nurseryman Jones, of Kilkenny, for the best collection of vegetables, as well as another silver challenge cup for sweet peas. There is a special class for cottagers, and one of the rules is that the gardens of intending exhibitors must be open to possible inspection by members of committee both before and after the show. Entries for the show close on August 24th. The Marquis of Ormonde, K.P., is the president, and S. A. Jones, of Gowran, is the hon. secretary.

IRISH ROSE AND FLORAL SOCIETY.

The first annual show of the Irish Rose and Floral Society will be held in the Botanic Park, Belfast, on Friday, the 28th of July. This new organisation starts with all the vitality and promise of youth, and we wish it good speed and the fullest measure of success in its useful career. It has a strong committee, with Col. R. G. Sharman Crawford, D.L., as its president, and J. A. Stewart and H. P. Pinkerton as joint secretaries. In the forthcoming show generous prizes are offered in each of the forty classes, and in addition silver medals for the best rose blooms in the show. The classes

include cut blooms of roses, sweet peas, hardy plants, annuals, biennials, carnations, begonias, and pelargoniums.

THE TEMPLE SHOW.

The Temple Flower Show of the Royal Horticultural Society of England was held in London from the 23rd to 25th May. It was a fine display, embracing almost all departments of gardening, but was of course particularly rich in flowering plants. If such shows indicate in any way the trend of fashion in English gardening the interest in Alpine plants is certainly increasing from year to year; the present display surpassed in extent and interest any similar exhibits of recent years. Hardy plants also were particularly well represented by charming collections, among which stood out Messrs. Reamsbottom & Co.'s striking display of St. Brigid anemones from Geashill Nurseries, the only Irish exhibitor in this section. Sweet peas were well represented, and many novelties were shown by raisers of new varieties. The class devoted to carnations was well filled with effective groups of these charming plants. One group with a background of pale-green silk and dark-foliaged palms was particularly striking. Included in the attractive display of tulips were two fine exhibits from Ireland—one by Alexander Dickson & Sons that obtained a silver cup, and another by Hogg & Robertson for which a silver Banksian medal was

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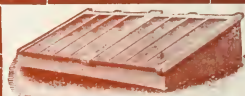
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Kegs, each Five Gallons, 22/6; Ten Gallons, 42/6.

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ground in the centre of the Cone Frame, to produce immediate
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Cone No. 3, for a well-secured house of cubic 2,000 to 2,500 feet,
price 1/4 each. Cone No. 2, for a well-secured house of cubic 1,000
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13 and 15 Finsbury St., LONDON, E.C.

awarded. Among the varieties shown in the former were Clara Butt, Dom Pedro and Sunset.

Roses, as usual, formed a prominent feature of the show. Messrs. Alexander Dickson & Sons staging a fine collection, including Alexander Hill Grey, Duchess of Westminster, Mabel Drew, and other similarly beautiful forms. Rambling roses were quite a feature in this class. Charming clematis plants in pots had many enthusiastic admirers. The orchid show, taken as a whole, were said to be the best collection ever brought together at this show. It is impossible to give any idea of the wealth and quantity of the blooms, and they gave the large tent in which they were temporarily housed a truly magnificent appearance. All the great nurserymen dealing in these plants were well represented. One gorgeous specimen of *Coleogyne Sayana* had 15 long drooping sprays furnished with upwards of 500 flowers.

Other features of the exhibition were handsome groups of stove and greenhouse plants—many of which bore very showy foliage—and collections of most interesting miscellaneous plants. Azaleas and rhododendrons, heavily flowered and brilliantly coloured, forced one's attention, and then there were begonias, pelargoniums, calceolarias and gloxinias, together with magnificent groups of ferns in such abundance that even to barely catalogue them all would take many pages of this magazine. The weather was bright and fine, and the number of visitors enormous.

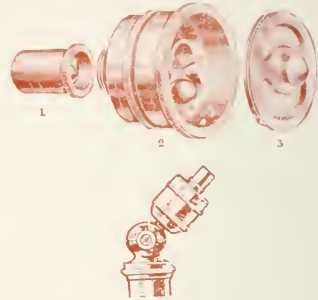
KINGSTOWN HORTICULTURAL SOCIETY.

The third annual exhibition of this society is fixed for the 2nd of August. It will be held in the People's Park, Kingstown, and will comprise exhibits of flowers, fruits, and vegetables. The prize list is a long one, and ought to attract a large number of exhibitors. The Irish Peasantry Society offers numbers of prizes for cottagers. This society is one of the youngest in Ireland, and during its two odd years of existence has shown remarkable activity. It has lectures and debates during the autumn and winter months, and organises a remarkably good show in the summer. The success of the society is no doubt largely due to the existence of the Municipal Technical School as a rallying centre, and in which the lectures are held. It has also the further advantage of having the services of the Principal of the School, Mr. R. MacDonald, M.A., B.Sc., as its organising secretary. The efforts of the Technical School Committee, in the interests of local horticulture, ought not to be forgotten. The principles of botany

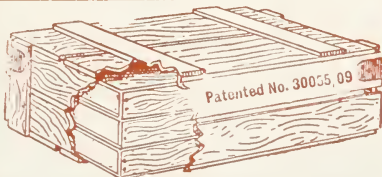
and horticulture are taught at the school, and classes in practical gardening are held in the school garden belonging thereto. We look forward to seeing this season's exhibition, and expect when the time comes not to be disappointed.

A GOOD SPRAYER.

We have received from Messrs. Robertson Bros., Ltd., of West Bromwich, a specimen of their patent pine spray syringe for trial and report. We have tried it, and can report most favourably upon it. In fact it is the most efficient piece of apparatus of its kind that we have ever used. It holds a good charge of spraying fluid for a hand syringe, it is strongly made with an



easy working action and sends with much force a spray of exceeding fineness. By means of an ingenious contrivance the character of the spray can be changed to a discharge resembling that of a fine rose in an ordinary watering pot. The introduction of a universal joint enables the operator to control the exact direction of the spray, a matter of some importance in all spraying work. It is a matter of great importance to attend regularly to the spraying of plants, as all gardens are more or less infested with different kinds of insect and fungal pests. By means of this handy machine a great deal of useful work can be done and done easily and effectually. Even in large gardens it would be a great time-saver, as it is as simple to use as an ordinary syringe, and will do the same kind of work, only of course not so quickly as a knapsack apparatus.



USE DAY'S FRUIT TRAYS AND CRATES

No more damaged fruit. If properly packed it is impossible for it to get damaged. The trays hold about 3 lb. of Strawberries, Gooseberries or Cherries, and are non-returnable, price 2d. each. The Crates are 1/6 each, and may be returned to the growers for renewals. Trade only, C.W.D. They are strongly made, and growers speak very highly of them.

A large grower in Early Strawberries in the South of Ireland is using this Crate, and finds it far and away the most satisfactory package he has ever seen or used. Full particulars from

R. d'E. DAY, The Nursery, SUTTON SCOTNEY, Hants.

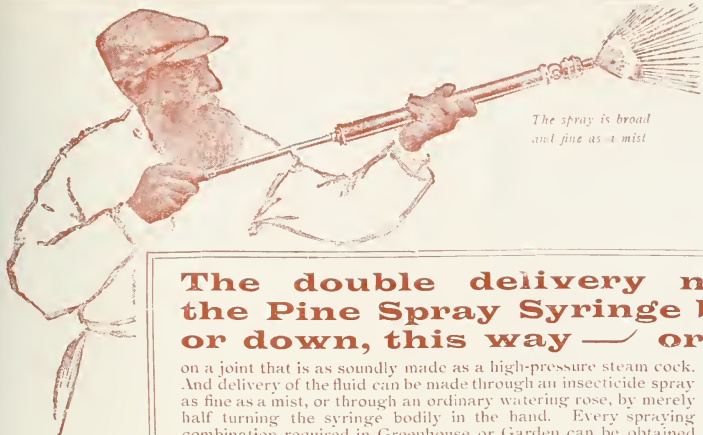
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GREENHOUSES

.. AND ..

—HEATING—
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BY ..

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The spray is broad and fine as a mist

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23-4 1911
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Rev. P. J. J. F.

The double delivery nozzle of the Pine Spray Syringe bends up or down, this way — or that —

on a joint that is as soundly made as a high-pressure steam cock. And delivery of the fluid can be made through an insecticide spray as fine as a mist, or through an ordinary watering rose, by merely half turning the syringe bodily in the hand. Every spraying combination required in Greenhouse or Garden can be obtained instantly without the removal or addition of a single fitment

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By writing to us, your ironmonger or seedsman can obtain a syringe for your inspection. Neither he nor you are under any obligation to buy if you are not satisfied that it is the most convenient, effective, and best made syringe you have ever seen

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GUARANTEED

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Every syringe is tested and adjusted by the Inventor

Each syringe is individually numbered and guaranteed against inferior workmanship, faulty material, and breakage

Size, 24" x 1 1/4"

'EUREKA' WEED KILLER.
SAVES WEARY WEEDING.

50 gallons of mixed solution will kill all weeds on 200 square yards of paths, &c.

POWDER.

1/- tin for 12 galls. solution } Free Tins
10 " 25 " " and
6 " 100 " " Cases.

LIQUID. 1-50.

1/2 gallon - 2/- drum free
1 " - 3/6 - " 3d. extra
3 " - 6/6 - " 1/6 "
5 " - 14/- - " 2/6 "
10 " - 25/6 - cash 5/- "

'EUREKATINE'—The successful fumigant.

'EUREKA' Insecticide, Lawn Sand, Heliolebe Powder, Bordeaux Mixture, Worm Killer, Hayward's Summer Shade, &c.

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RELIABLE GARDEN HELPS
DURING
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They enable you to get the best results from your garden

We can confidently recommend the undermentioned articles; they are the outcome of years of careful experiments by practical Horticulturists, and annually give satisfaction to thousands of users

ARTICLE	Prices Carriage Paid				
	7 lbs.	14 lbs.	28 lbs.	56 lbs.	1 cwt.
"CLIMAX" LAWN SAND Kills weeds on Lawns, &c., and improves the grass ..	2-	3/6	6/-	11-	20-
"CLIMAX" WEED KILLER Keeps paths clear of weeds for from 12 to 18 months ..	No. 1 1/2 lbs. (12 Galls.)	2-	3/6	7/6	14-
	No. 2 2 1/2 lbs. (25 " for 2-3 months)	2-	3/6	7/6	14-
	No. 3 3 1/2 lbs. (50 " use.)	2-	3/6	7/6	14-
	Tins and Drums Free				
"ALPHOL" Kills slugs, wireworms, &c., and improves growth of plants ..	2-	3/-	5/-	8/6	15/-
"DEMON" INSECTICIDE Kills red spider, green and black fly, thrip, in many bug, &c.	On rt. 2-	3/6	7/6	14-	20-
	gall., 4/6; 2 galls., 8/6; 4 galls., 15-				
"PREMIER" ROSE MANURE A perfect rose stimulant ..	2-	3/6	5/-	11-	20-
"PREMIER" GARDEN MANURE	2-	3/-	5/-	8/-	15-
"PREMIER" PLANT FERTILISER	2-	3/6	6/-	11-	20-
"PREMIER" LAWN MANURE	1/6	2/6	4/6	8/-	14/-
"SIMPLICITAS" PEA NETTING Tanned and rot-proof; absolutely the best support for culinary and sweet peas, 3 and 6 feet wide ..	3d. per square foot				

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Kills WIREWORMS and other Soil Pests.

INEXPENSIVE. EASY TO APPLY.

V2 FLUID For Summer Use

Kills APHIS, PSYLLA and SCALE.

OF AGENTS EVERYWHERE.

Sole Manufacturers,

Willm. Cooper & Nephews, Berkhamsted.

Notes

Two Good New Roses.

THE *Garden* of date 27th May has the following note under above title:—The modern rose enthusiast must possess a good stock of patience, for he may see a grand novelty exhibited, but he will of necessity have to wait perhaps one or two years before he can possess it. Last autumn Messrs. S. McGredy & Son exhibited a rose which I venture to predict will be in every garden within a year or two after it is distributed. This variety was Mrs. Muir Mackean. In my opinion there is nothing like it among all our numerous Hybrid Teas. There is a combination, as it were, of the exquisite shades of *Farbenkönigin* and *George C. Waud*; and even though we may know these two roses this can give no adequate idea of the marvellous colouring of Mrs. Muir Mackean. I am certain it will take a high position among our show roses. It is one of those roses that arrest attention, even though surrounded by ever so many beauties, the more so as it carries its blooms on good stout stems, and as they are borne mostly singly, no disbudding is needed. It is such roses as this that we want nowadays. There are far too many introduced that have a close resemblance to some variety already in commerce, and even though such roses may be a slight improvement upon the older rose, this latter is not readily ousted from popular favour. In Mrs. Muir Mackean we have a rose so wonderfully distinct that its popularity is assured.

Another beauty from the same raisers is Mrs. Amy Hammond. I am delighted to learn of its distribution in June next. Those who love that charming variety, *Lady Roberts* (and who does not?) will want this novelty, which received the gold medal last season at Salisbury. To obtain such a grandly built flower of this lovely amber and apricot colouring is surely a triumph for a firm that has in such a short time obtained most remarkable successes. To win eight gold medals in three years out of the fifteen awarded speaks volumes for the strain of seedlings at Portadown, and I shall watch with lively interest the further introductions of Messrs. S. McGredy & Son, for their novelties possess not only a splendour of bloom, but the vigorous growth is so remarkable.

THE DAHLIA.—Amongst florists flowers none maintain their popularity more perhaps than the dahlia, and it is certainly worth the high esteem in which it is held. The dahlia is a native of Mexico, and was brought to England in September, 1786, by the Marchioness of Bute, who brought it from Spain. When it was introduced from its native habitation it is difficult to say. Some credit the German named Dahl, a botanist. The dahlia delights in rich and abundant feeding, coupled with a bed of deep, rather light soil, properly drained. Rotten turf is the best of soils for the dahlia, adding, of course, a sufficiency of manure to make it rich. The ground should be now finally raked over, after applying to the surface a light covering of well-rotten cow manure. The last week in this month, or first in June, planting out may be done, the plants being placed about five feet apart, care being taken to preserve the balls entire in planting. After planting give each plant a good watering, which should be repeated twice a week. Afterwards, should dry weather succeed the planting, syringe overhead in the evening after hot days. Support each leader by an upright stake, and tie as the shoot advances, and subsequently, when side branches are produced, select four of the strongest that are at convenient distances from each other to form a uniform plant. Put a stout stake to each of these, and cut the remaining shoots away. When superior flowers are the object, pinch out all the lateral shoots which appear on the permanent growths, and then the flower buds less or more according to the habit of the variety. Some are more rampant than others in their growth, and more prolific in flowering, and they should be thinned accordingly. As soon as summer heat sets in, all the beds should be covered to the depth of three or four inches with rich cow manure, which can be raked into the soil, and as the flowers advance in size and formation let the plants have plenty of moderately strong liquid manure once a week.—*Fruit, Flower and Vegetable Trades' Journal.*

Has any reader ever tried *Campanula pyramidalis* in tubs or vases? If not, and such decorations are desired, we advise a trial of this handsome plant. The soil used should be rich, and when planting the soil should be made firm. In planting it should be so arranged that when fully grown the foliage of the plant should hide the top of the vessel.

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Novelty in the Flower Garden

IN these days the keen amateur is always on the look-out for something different from anything possessed by his neighbours. We have no objection to that. On the contrary, it is our business to hunt up all the best and newest things in plants and seeds from all parts of the world. A perusal of our New Seed Catalogue, which contains 12 pages of descriptions of novelties, will reveal many choice things not to be found in any other list. Latest novelties in Sweet Peas, hardy perennials, annuals, and miscellaneous seeds. These will mostly be found priced lower than by any other first-class house, especially the Sweet Peas, of which we are large growers.

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The Original Sulfur Insecticide. Kills Wire-worms, Leather-jackets, and all other soil pests. Send a P.C. for illustrated descriptive Booklet No. 48, post free from the Vaporite Strawson Co., Ltd., Dept. H., Spencer House, South Place, London, E.C.

"VAPORITE."—A correspondent enquires as to the action of vaporite in the soil. As is well known it is used as a soil insecticide. While it seems to exercise a killing influence upon animal life, it leaves vegetable life unharmed, hence its use in the garden. There are several well known substances that differentiate in this way—chloroform and ether are examples. In certain quantities they kill the more active breathing animals, while plants submitted to the same action merely pass into a sleep or dormant condition. If continued long enough, however, the plant may cease to live. The safety in their use lies in the fact that they are volatile substances. Vaporite, as its name implies, passes off in the gaseous state into the air after killing off whatever insect life there may be in the soil.

Correspondence.

TO THE EDITOR OF IRISH GARDENING.

SIR, —Re Alpine Cup. The matter is not yet settled by the Royal Horticultural Society, so I am delaying my list of plants till next issue. W. H. PAINE.

The Tully Nurseries,
Kildare, Ireland.

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The ONLY
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want a GOOD and CHEAP HOSE, SYRINGE, or UNION THAT WILL NOT SLIP OFF THE TAP when you are at the other end of the garden? If so, IT WILL PAY you to write to 78 Springbank Road, London, S.E. for SHIPWRIGHTS GARDEN LIST

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(FUMIGANT)

No.	size	Tin—1 pt. contains sufficient for	cubic ft. each—	d.
No. 1	size Tin—1 pt.	40,000	15	0
No. 2	size Tin—1/2 pint	20,000	7	6
No. 3	size Bot.—6 oz.	12,000	4	6
No. 4	size Bot.—4 oz.	8,000	3	0
No. 4 1/2	size Bot.—2 oz., new size	4,000	1	8
No. 5	size Bot.—1 oz., "sample"	2,000	0	10

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Fumigating Lamps
1s. each, for 5,000 cubic feet

Nicoticide Plant Spray
1/2-pint 1/2 Pint 2/-
Quart 3/6 1-gal. 5/-
Gallon 10/- Carriage Paid



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28 lbs. (to dress 100 square yds.) 6/6.
1/2-cwt. 11/-, 1 cwt. keg 21/-

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1 gallon, to make 51 gallons, in solution . . . 3/6
5 " " 255 " " " " " " 16/-
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28 lbs. 5/- 1/2-cwt. 7/6 1 cwt. 14/6
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Utterly annihilate Weeds, Moss, Dandelions, and all other weeds on Garden Walks, Carriage Drives, &c.

Have the largest sale in the United Kingdom!
Are the most powerful manufactured!

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LIQUID (Poison)		DOUBLE STRENGTH (1 to 50)	
3	Gallons, to make 150 Gallons	...	£0 10 0
6	" " " 300 Gallons	...	0 18 0
12	" " " 612 Gallons	...	1 13 0
20	" " " 1,020 Gallons	...	2 7 6
40	" " " 2,040 Gallons	...	4 12 6
SPECIAL CONCENTRATED STRENGTH (1 to 80)			
3	Gallons, to make 243 Gallons	...	£0 14 6
6	" " " 486 Gallons	...	1 7 0
12	" " " 972 Gallons	...	2 6 0
24	" " " 1,944 Gallons	...	4 10 0

BENTLEY'S Compound Liquid QUASSIA EXTRACT

(THE ORIGINAL).

The deadliest foe of Green, Black and White Fly. The insecticide of insecticides for roses, chrysanthemums, tomatoes, wall and bush fruits, and other trees.

Safe to use anywhere and everywhere.

20 galls., 3/6 per gall.; 10 galls., 3/7 per gall.; 5 galls., 3/8 per gall.; 1 gall., 4/2; 1/2 gall., 2/6; 1 quart, 1/6; 1 pint, 1/-

Carriage Paid on 7/6 orders and upwards

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CHEMICAL WORKS BARROW-ON-HUMBER, HULL

The Dublin Wholesale Markets.

THE exceptionally beautiful weather which has prevailed during May has had a most exhilarating influence on the markets. With such favourable conditions for plant growth one cannot wonder at the abundant supplies of all classes of garden produce sent to market. Fruits of various kinds were marketed in small quantities. Forced strawberries have improved very much and are cheaper. Gooseberries, though small early in the month, have now reached a fair size, and fetch a good price. The first consignment of home-grown peaches reached the market near the end of the month; they were slightly damaged, which prevented them realising their full value. Home-grown melons of handsome appearance can now be obtained at a fair price. Foreign apples, especially those from Australia, continue to arrive in fair quantities and in splendid condition. Amongst them many of our own better known varieties were to be seen, including Warner's King, Cox's Orange, &c. Plums and pears from the Cape were really beautiful and high-class fruits.

Flowers of the common out-door class and those of flowering shrubs arrived in such large quantities that the word profit need not be mentioned. Flowers of the choicer plants, like lilliums, carnations, gladioli, &c., were scarce and dear. At this time of the year holders of surplus bedding-out stuff might find it profitable to market it. In sending such stuff to market they should be neatly tied in small bundles with, if possible, a few flowers on each plant. Pot plants vary from week to week as regards price. At the present time really fine pots (6in.) of ivy-leaved geraniums bring one shilling.

As regards vegetables, we are now at the period when almost all the winter and most of the early spring vegetables are practically over for this season. Salad ingredients (lettuce, tomatoes, cucumbers, scallions, &c.) were quickly bought up, although the supplies were large. The quantity of cabbages marketed during May was enormous, and the prices obtained exceedingly low.

The following were the prices:—

HOME FRUITS.		From	To
		s. d.	s. d.
Strawberries,	per lb.	. 3 6	7 6
Gooseberries,	per quart.	. 0 3½	0 6

		From	To
		s. d.	s. d.
Apples,	per barrel	22 0	26 0
Peaches,	per doz.	8 6	12 0
Melons,	each	2 6	3 6

VEGETABLES.

Artichokes,	per float	. 1 4	2 0
Asparagus,	per bundle	. 0 9	1 2
Broccoli,	per flasket,	. 2 9	5 0
Beet,	per doz.	. 0 2	0 4
Cabbage,	per load	. 3 6	9 0
Cucumbers,	per doz.	. 2 6	3 0
Carrots,	doz. bunches	. 0 4	0 7
Celery, small,	per doz.	. 0 3	0 4
Lettuce,	do.	. 0 3	0 6
Leeks,	do.	. 0 2	0 4
Mint,	doz. bunches	. 1 0	1 9
Mushrooms,	per tray	. 1 0	1 3
Parsley,	do.	. 0 4	0 7
Parsnips,	per doz.	. 0 2	0 4
Potatoes,	per lb.	. 0 2	0 3
Sage,	per doz. bunches	1 4	1 8
Scallions,	per large bunch	0 3	0 5
Seakale,	per box	. 2 0	2 6
Thyme,	per doz. bunches	1 6	2 0
Turnips, Swedes,	per cwt.	. 1 2	1 4
Do. Garden,	per bundle	. 0 3	0 4

FLOWERS.

Anemones, St. Brigid,	per doz. bunches	0 3	0 6
Carnations, Malmaison,	per doz.	. 4 6	6 0
Lily of the Valley,	per doz. bunches	0 7	1 2
Narcissi, Poets,	do.	. 1 0	1 4
Gladioli, The Bride,	do.	. 0 10	1 7
Violets,	do.	. 0 8	1 0
Tulips, all colours,	do.	. 0 4	1 4
Roses, various,	do.	. 0 6	1 6
Violas, Plants,	per box	1 0	1 7
Iris, Spanish,	per doz. bunches	0 6	1 2
Geraniums, in pots,	per doz.	. 0 5	1 0
Petunia, in pots,	do.	. 2 4	5 0

FOREIGN PRODUCE.

Apples, Newton Pippin,	per box	. 15 6	16 6
Do. Cox's Orange,	do.	. 11 6	14 6
Do. Ribston,	do.	. 10 6	12 6
Do. Alfreton,	do.	. 15 0	17 0
Cherries, French,	per punnet	. 0 5	0 6
Plums, African,	per box	. 3 0	4 6
Pears, do.	do.	. 2 6	4 0
Tomatoes, Canary,	per lb.	. 0 8	1 0
Kidney Beans,	per packet	. 0 3	0 6

27th May, 1911.

ROBERT HUGH CLARKE.



Skilfully, quickly, and cheaply, for any purpose requiring illustrations, but, as we have been blockmakers to "Irish Gardening" since its first issue, we are in a very good position to handle all Horticultural subjects, for Seedsmen's Catalogues and Advertisements.

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PERPETUAL PLANTS NOW
FLOWERING READY
CARNATIONS

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West's Patent Garden Sundries have been invented during 25 years of practical experience. By better cultivation and pleasure by which

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gardens are kept in order, their expense is doubly repaid. Samples and Illustrated Catalogue free. C. E. WEST, Higham Hill, London, N.E.

IF YOU HAVE A GLASS ROOF THAT LEAKS, a Conservatory to repair, or any kind of glazing work to be done, CARSON'S PLASTINE will save money, time, worry and annoyance consequent on the use of ordinary putty, which cracks, crumbles, and decays. It saves the expense of constant renewals. Carson's Wood Preservative in green and brown, for Palings, Trellis Work, &c. The best paint for Greenhouses is "Vitrolite." Write for Catalogue. CARSON'S, 22 Bachelor's Walk, Dublin.

AUTO-SHREDS IS CERTAIN DEATH to Leaf-mining Maggots, Mealy Bug and all Pests infesting plants under glass, &c. Simple to use, no apparatus required. In Boxes to fumigate 1,000 cubic feet, 6d.; 10,000 cubic feet, 3s. 6d. each. Obtained of Seedsmen and Florists; if unobtainable apply direct—

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Banbridge Flower Show

Thursday, August 10th, 1911

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TENTS Army Bell. Best selected. 40 ft. in circumference. Complete with mallet, pole and pegs, 35/-. Garden Tents, 29/-. Lists Free.

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PROTECT YOUR GARDENS.—Garden Netting of good, strong, small mesh, oiled and dressed, 100 yds. by 1 yd., 4s.; by 2 yds., 8s.; by 3 yds. wide, 12s., and so on to any width or length supplied. Carriage paid on all orders over 5s.—H. J. GASSON, Net Works, RYE.

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WATERPROOF COVERS, same material and pliable as railway sheets; 12 ft. by 9ft., 12s.; 15ft. by 9 ft., 15s.; and so on to any size at 1s. per sq. yard, with lashes. Superior stout rot-proof Green Canvas, 1s. 6d. sq. yd. with lashes. Horses' strong canvas Loin Cloths, lined with Army Rugging, 46in. by 38in., 3s. All Leather Head Stalls, any size, 2s. 6d. each. Neck Collars, any size, 6s. 6d. each. Quantity large pieces Tarpaulin, 25s. cwt.; odd pieces, suitable for roofing, at 8s. cwt.—H. J. GASSON, Government Contractor, RYE

MILITARY KNEE BOOTS, smart appearance, 7s. 6d. pair. Naval Knee Boots, very strong, 5s. 6d. per pair. Bluchers, 5s. 6d. per pair. Any size. Carriage paid. Cash returned if not approved of.—H. J. GASSON, Government Contractor, RYE.

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(AFFILIATED WITH THE ROYAL HORTICULTURAL SOCIETY OF IRELAND)

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TO BE HELD IN THE

Grounds of the Convalescent Home, Stillorgan
(ADJOINING STILLORGAN STATION)

On Thursday, 20th July, 1911

Challenge Cups and Valuable Prizes in Classes for Flowers, Fruit and Vegetables

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The Hon. Secretary
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SHOW OF FLOWERS, VEGETABLES, FRUIT — AND HOME INDUSTRIES —

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AT CARTON, MAYNOOTH

On Wednesday, 26th July, 1911

All Exhibits must reach Show Ground by 10 a.m.

Gates open 1 o'clock, p.m. Exhibition closes 6 p.m.

Admission, 6d. Children, 3d.

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SPORTS, DONKEY RACES, &c. DANCING COMPETITIONS

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Entrance Fee, 6d. (Entries, which close Day before Show, received by Mr. Edward Kelly, Celbridge)

	1st Prize	2nd Prize
IRISH JIG . . .	10 -	5 -
IRISH REEL . . .	10 -	5 -
HORNPIPE . . .	10 -	5 -

Refreshments on Grounds

Leixlip Station about One Mile from Show Ground

Irish Rose and Floral Society

FIRST ANNUAL SHOW

WILL BE HELD IN THE

BOTANIC GARDENS PARK, BELFAST

On Friday, 28th July, 1911

Seven Silver Challenge Cups and other Valuable Prizes

On page 9 of Prize Schedule the references to Judging and Classification under the National Sweet Pea Society's Rules have been deleted * * *

Entries close 21st July



SCHEDULES ON APPLICATION TO

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H. P. PINKERTON

Joint, Hon. Secs.

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BELFAST . . .

Fingal Horticultural Society

THE ANNUAL SHOW will be held at MALAHIDE on Saturday, 22nd July, 1911

For Schedule and Entry Forms apply to the Hon. Secretary, MISS PLUNKETT, Portmarnock House, Baldoyle. Entries close 15th July, 1911 . . .

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Destroys all Garden Pests such as Slugs, Maggot, Wireworm, Caterpillar, Green Fly, &c.

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PEOPLE'S PARK

WEDNESDAY, 2nd AUGUST, 1911

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Kingstown Horticultural Society
Technical School
KINGSTOWN

Co. Clare Horticultural Society

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WILL BE HELD IN THE

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On 2nd AUGUST, 1911

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H. BILL, Hon. Sec., LIFFORD, ENNIS

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Emigration Climate and Race.	DR. GERALD MCCARTHY
A Note on Standish O'Grady.	"GAEL"
Poem: A Munster Skirmish.	HON. EMILY LAWLESS, LITT.D.
The Problem of Rural Life.	GEORGE W. RUSSELL
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Royal Horticultural Society of Ireland

At the monthly meeting of the council, held June 9th, a letter was read from Lord Iveagh granting the use of the gardens and grounds at 80 Stephen's Green, Dublin, for the Autumn Show, Tuesday, August 22nd, the best thanks of the council being accorded to Lord Iveagh for the privilege. The spring show schedule (1912), as drafted, was approved of, and will be circulated at an early date; this includes the new Alpine competition, the wording of which may here be given in the interest of prospective competitors, and is as follows:—

Class 4 (Spring Show, 1912):—"Alpine plants in flower. Twelve pans. Pans not to exceed twelve inches or be under eight inches diameter (outside measurement). Each pan to contain a different species or only one variety of a species. The word Alpine as understood in this competition includes diminutive, deciduous and evergreen hardy plants as are generally cultivated in modern Alpine gardening. The surface may be decorated with stone between the plants, but no moss

or other plants for furnishing purposes. A challenge cup, value five guineas, and first prize presented by Five Lovers of Alpines, the cup to be won three times before becoming the property of the winner, and the money prizes to be the property of the gardeners.—1st, 21s.; 2nd, 15s.; 3rd, 10s."

At the above meeting specimen gloxinias and regal pelargoniums of high merit were staged by Alderman Bewley, the pelargoniums including some fine hybrids raised in the gardens, Danum, Rathgar, for which a cultural certificate was awarded, a nice lot of roses being shown by Dr. O'Donel Browne, the thanks of the council being accorded to the contributors. A special meeting of the council was held on June 23rd, when arrangements were made for presenting the society's address to the King, the deputation for which will consist of Messrs. F. W. Moore, hon. secretary to the society, and Captain Lewis Riall, D.L., a vice-president of the society. At the latter meeting superb Malmaison carnations, including a fine new rosy-red seedling, was set up by Mr. McKellar, from the gardens of John Jameson, Esq., D.L., St. Marnock's, Portmarnock, for

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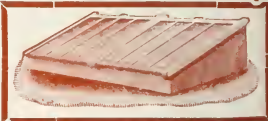


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Forthcoming Shows

July 10th.—Stillorgan and Foxrock Horticultural Society. At grounds of Convalescent Home, Stillorgan. T. F. Crozier, Esq., Avonmore, Stillorgan, *Hon. Sec.*

July 22nd.—Fingal Horticultural Society. At Malahide. Miss Plunkett, Portmarnock House, Baldoyle, *Hon. Sec.*

July 26th.—North Kildare Horticultural Society. At Carton, Maynooth. Miss Norah Maunsell, Oakly Park, Celbridge, *Hon. Sec.*

July 28th.—Irish Rose and Floral Society. At Botanic Gardens Park, Belfast. John A. Stewart, Esq., 18 Victoria Street, Belfast, *Hon. Sec.*

August 2nd.—Kingstown Horticultural Society. At People's Park, Kingstown. R. Macdonald, Esq., M.A., Technical Schools, Kingstown, *Hon. Sec.*

August 2nd.—Co. Clare Horticultural Society. At Court House, Ennis. H. Bill, Esq., Lifford, Ennis, *Hon. Sec.*

August 9th.—Naas Horticultural Society at the North Kildare Farming Society's premises, Naas. Dr. O'Donell Browne, Naas, *Hon. Sec.*

August 10th. Banbridge Flower Show at Banbridge. J. Burke, Esq, Banbridge, *Hon. Sec.*

August 11th.—Co. Galway Horticultural Society. At Ballinasloe. Miss J. T. Armstrong, Ballinasloe, *Hon. Sec.*



A CORRECTION.—In our report of last month under the heading of "A Good Sprayer," we made a mistake in the spelling of the name of the firm who are the patentees of the Pine Spray Syringe. The name should have been "Robinson Bros., Ltd.," instead of Robertson.

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50 gallons of mixed solution will kill all weeds on 200 square yards of paths, &c.

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1/- tin for 12 galls. solution	} Free Tins and Cases.
1/9 " " 25 " "	
6/- " " 100 " "	

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1 gallon	2/-	drum free
1 " "	3/6	" 9d. extra
2 " "	6/6	" 1/6 "
5 " "	14/-	" 2/6 "
10 " "	25/6	case 5/- "

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Kills WIREWORMS and other Soil Pests
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NO ROSE-GROWER SHOULD BE WITHOUT THIS VALUABLE PREPARATION

OF AGENTS EVERYWHERE

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The Dublin Wholesale Markets.

It is quite impossible in these brief notes to adequately describe the immense amount of business that has been transacted in the markets during June. At the present time buyers have such a large number of the different varieties of flowers, fruit, and vegetables to select from that it is really only select stuff that fetches a fair price.

Fruit, both home and that sent from across the water, is very plentiful, and considering the dryness of May, which was both unfavourable for fruit and other crops, we may yet have an abundant supply of the various small fruits, especially strawberries.

The choicest fruits—melons, grapes, peaches, &c.—are well in evidence, and are being disposed of at very good prices. The usual supplies of foreign apples continue to arrive in fair quantities.

Flowers of all sorts and sizes have greatly increased, and it would be quite possible to form a botanical collection from some of the stalls on a Friday morning. If the dryness did not favour fruit and vegetables it certainly must have worked wonders in the flower garden from the wealth of bloom to be seen.

Vegetables are not quite so good as during the previous month, and some of them, such as turnips, peas, spinach, &c., told plainly by their looks of dryness at the roots.

The following were the prices:—

FRUIT.		From	To
		s. d.	s. d.
Apples, American	per barrel	22 0	27 0
Strawberries, home	per lb.	. 0 4	1 0
Gooseberries, do.	per quart.	. 0 3	0 4

FRUIT— <i>on.</i>		From	To
		s. d.	s. d.
Melons,	do. each	. 2 0	3 0
Cherries,	do. punnet	. 0 5	0 7
Peaches,	do. per doz.	. 5 6	7 0
Grapes,	do. per lb.	. 2 6	3 6

FLOWERS.

Roses, mixed,	per bunch	. 0 4	1 0
Anchusa, blue,	do.	. 0 1	0 3
Aurum,	per doz.	. 2 6	3 6
Gladioli, The Bride,	per doz. bunches	0 6	0 8
Sweet Pea, mixed,	do.	. 1 0	1 6
Carnations, pink,	per doz.	. 1 6	2 6
Asparagus, fern,	per bundle	. 0 8	1 0

VEGETABLES.

Artichokes, globe,	per doz.	. 0 2	0 4
Cauliflowers,	per flasket	. 2 6	3 4
Cabbage,	per load	. 3 6	5 0
Cucumbers,	per doz.	. 1 10	2 6
Lettuce,	do.	. 0 2	0 3
Mint,	doz. bunches	. 1 2	1 4
Mushrooms,	per punnet	. 0 6	1 0
Parsley,	per tray	. 0 3	0 6
Radishes,	doz. bunches	. 0 3	0 6
Rhubarb,	do.	. 1 0	1 6
Spinach,	per float	. 0 3	0 8
Turnips,	per bunch	. 0 2	0 4
Tomatoes	per lb.	. 0 5	0 7
Sage,	per doz. bunches	1 0	2 0
Thyme,	do.	0 8	1 2

29th June, 1911.

ROBERT HUGH CLARKE.



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6/-	" 100 " "	Cases.

LIQUID.

1/-	gallon	- 2/-	drum free
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3 "	"	- 6/6	" 1/6 "
5 "	"	- 14/-	" 2/6 "
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Royal Horticultural Society of Ireland

THE monthly meeting of the council was held at the society's offices on the 14th ult., prior to the business of which a resolution was moved, seconded, and unanimously carried, that this council expresses its satisfaction at the honour of knighthood conferred by the King on Mr. F. W. Moore, and offer their congratulations, for which Sir Frederick Moore, who was present, thanked his colleagues. Judges were nominated for the autumn show, which by kind permission will be held in Lord Iveagh's grounds, Stephen's Green (entrance from Harcourt Street), on Tuesday, August 22nd. Arrangements were also made for the attendance of a military band, seating accommodation for visitors, and catering for tea. The secretary will be glad to have such subscriptions as are still due by members for the current year, on receipt of which members' transferable tickets (6) will be forwarded. Advance copies of the spring show schedule for 1912 have been posted to exhibitors at recent spring shows, generally, and will be sent to any one wishing to have same on application to the office. Prospective exhibitors at the winter fruit and flower show to be held at the Royal Dublin Society's premises, Ballsbridge, on Wednesday and Thursday, the 18th and 19th of October, who are not members of the Royal Horticultural Society of Ireland, are advised of alterations made by the council respecting entry fees; special copies of this schedule, with the amended entry fees and the council's arrangements for consignments of

fruit from exhibitors not able to attend personally, can also be had on application. Sir Francis Lambart, Bart. Beauparc, Meath, proposed by Mr. C. M. Doyne, D.L., and Miss E. Gresson, Queensboro', Drogheda, proposed by Miss Osborne, were elected members of the society; Mr. W. S. Rylands, the Grove Nursery, Stillorgan, being elected a practical member. The thanks of the council were voted to Messrs. Chas. Ramsay & Sons, for specimen blooms of double and single tuberous begonias and cannas sent in to the meeting from the Royal Nurseries, Ballsbridge.

The Garden

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Glass.—Hoyte & Son, Sackville Street, Dublin.
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GARDEN PLANS.

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Care must always be exercised in buying in plants. Cheap lots are as a rule disappointing. The mania for cheapness is a fatal malady where successful gardening

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 Hayward Mathias, Medstead, Hants.
 Young & Co., Hatherley, Cheltenham.
- Daffodils, Tulips, and other Bulbs.*—
 Wm. Baylor Hartland, Ard Cairn, Cork.
 Christopher Bourne, Bletchley.
 Ant. Roozen & Sons, 3 Cross Lane, London, E.C.
 Lissadell, Sligo.
- Shrubs and Trees.*—
 Wm. Power & Co., Waterford.
 Philip le Cornu, Jersey (fruit trees).
 Seabrook & Son, Chelmsford (fruit trees).
- Seeds: Cabbages.*—
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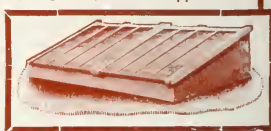
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Largest Manufacturers in the World

Why buy second or third rate goods when the superlatively **BEST** can be obtained at the same price, and which are infinitely **cheaper** in the end, in addition to giving the best results for your efforts. The product of 50 years' experience. Special Pots for Roses, Chrysanthemums, Vines, Orchids, &c. **No order TOO SMALL, none TOO LARGE.** State quantities and sizes required and have carriage paid quotation, or write for Price List—**FREE**

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IMPORTANT TO— Gardeners and Fruit Growers



"NIQUAS"

(Registered).
The most successful Non-poisonous Insecticide
of the day.

ITS ADVANTAGES ARE—
Certain death to all Insect Pests.
No possible injury to the most delicate Plant, Flower or Foliage.
It is by far the cheapest Insecticide known. One pint makes ten to twelve gallons for Thrip, Black and Green Fly, &c., whilst RED SPIDER, Mealy Bug, and Scale can be thoroughly eradicated by using "NIQUAS," about double the strength required for Fly.
It is most successfully used by Orange and other Fruit Growers in the Colonies, &c.
PRICES—Pint, 1/6; Quart, 1/3; Half-Gallon, 3/6; Gallon, 5/6; Kegs, each Five Gallons, 22/6; Ten Gallons, 42/6.

LETHORION

Registered Trade Mark. IMPROVED METAL
**VAPOUR CONE
FUMIGATOR . .**



At Greatly Reduced Prices.
INTRODUCED 1885.

This well-known invention for the entire eradication of all pests infesting vegetation under glass is now manufactured in a more simple and reliable form. The small candle, which will be found packed with each cone, has only to be lighted, and placed on the ground in the centre of the Cone Frame, to produce immediate results. Nothing on the market can equal it for efficacy and cheapness.

Cone No. 3, for a well-secured house of cubic 2,000 to 2,500 feet, price 1/6 each. Cone No. 2, for a well-secured house of cubic 1,000 to 1,200 feet, price 8d. each. Cone No. 1, for frames cubic 100 to 600 feet, price 6d. each. Full directions accompany each Cone.

Ask for a List of Testimonials, of which some hundreds have been received from the leading gardeners in the Kingdom.

Registered No. 14629. FOR

All Glass Structures THAT REQUIRE OUTSIDE SHADING

The only Genuine, Original, and Improved Article. It has been in general use for **over 30 years**

Be sure to ask for
**SUMMER CLOUD
SHADING**
And see that you get it!

Trade Mark  Sold by all Dealers in Horticultural Sundries throughout the Kingdom,
in Packets containing 8 ozs., for 100 feet of glass, 1/6; 24 ozs., 2/6;
and in Bags of 7 lbs., 10/6; 14 lbs., 20/6.

MANUFACTURED BY
CORRY & CO., Ltd.
13 and 15 Finsbury St., LONDON, E.C.

Strawberries—

Laxton Bros., Bedford.

MANURES.

To get the best results with crops the plants must be fed. Unless one understands the subject thoroughly it will be wise to use preparations of proved utility. The following may be depended upon by following the instructions supplied with each manure by the vendor:—

Ichthemic Guano.

Thomson's Manures.

Specialities of Boundary Chemical Co. ("Premier" Brand).

Salt—Flower & McDonald's.

These may all be obtained from seedsmen in Ireland.

INSECTICIDES, &c.

We may get the best seeds and plants the trade can supply, we may spend time and labour in cultivation, yet if we do not keep an eye to insect and fungal attacks our efforts may be reduced to naught by these ever-present pests. Spraying is the best insurance with respect to crops. The following preparations have the full confidence of gardeners:—

Aperite.

Auto-Shreds (Darlington's).

Bentley's Quassia Extract.

Nicotifide (Hunter & Gow).

Niquas (Corry).

"Sanitas Powder" for Slugs.

V2 Fluid.

Vapour Cone Fumigator (Corry).

XL All (Richard's).

WEED-KILLERS.

Bentley's.

Climax.

"Eureka" (Tomlinson & Hayward).

Gow's.

Hoyte's, Dublin.

SPRAYING APPLIANCES.

Abol Syringe.

Four Oaks Syringes.

Pine Spray Syringe (patent).

All the above preparations can be obtained from seedsmen in Ireland, or from Watson, Horticultural Chemist, Dublin.

Catalogues

THE BOURNE DAFFODILS—This is an interesting catalogue of "rare and choice" daffodils, issued by Christopher Bourne, the well-known specialist of Simpson, Bletchley, Bucks. The catalogue, which is illustrated, will be perused with profit by all readers interested in these popular bulbous plants.

CARNATIONS AND ROSES is the title of a catalogue issued by A. R. Brown, of the Wychall Nurseries, King's Norton. It contains an excellent essay on Carnation and Picotee Culture, being the substance of a lecture given before the Carnation and Picotee Society by Mr. Brown.

SPRAYS AND SPRAYING.—The well-known "Abol" Company sends us a pamphlet dealing with the whole matter of spraying as a protection against fungal and

insect pests. The necessary washes and instruments for applying them are described and illustrated. It is a booklet to interest gardeners in a subject that must not be neglected if specimen plants and crops are to be kept healthy.

A SWEET PEA flower show of quite exceptional interest was held one day last month at Simpson's Restaurant, Cheapside, London. It was organised by the frequenters of the restaurant, and confined entirely to its regular customers. A silver cup, silver medal, and third and fourth prizes were offered for competition. Now, Mr. Bewley, what do you think of the idea? Can we not have a show on similar lines next year among the frequenters of the Oriental Café, Westmoreland Street, Dublin? We see great possibilities in the development of such a simple scheme for the encouragement of amateur floriculture.

We are requested to mention that in the recent *Daily Mail* Sweet Pea competition the winner of the first prize (£1,000) and the winner of the third prize (£50) both used Bentley's "Sweet Pea Manure."

The Dublin Wholesale Markets.

THE month of July will be remembered by Irish growers as one of the best paying months in the history of the markets. Not for many years has such a splendid business been transacted by home growers. In causing this state of affairs two factors played an important part. First, the strike in the shipping trade hindered and prohibited the greater part of Cross-Channel supplies from being landed. Secondly, the Royal Visit to Dublin brought in its train a huge concourse of visitors and sightseers, all of whom did justice to the dainty fruits, &c., supplied by our premier city.

The quantity of fruit marketed was not so large as that disposed of during the previous two or three years, the exceedingly dry weather having rushed all fruits into season without any of the staying powers which accompany a slower development. Strawberries were a short crop, but the high price realised for them must have amply repaid growers. Raspberries, currants and gooseberries were noticeable in fair quantities, the former fetching splendid prices right through the month. Choice fruits were never equal to demand, the shortage having increased prices considerably—for instance, peaches reached the enormous price of twenty-five shillings per dozen. Grapes, melons and cherries looked splendid and sold well.

Novelty in the Flower Garden

IN these days the keen amateur is always on the look-out for something different from anything possessed by his neighbours. We have no objection to that. On the contrary, it is our business to hunt up all the best and newest things in plants and seeds from all parts of the world. A perusal of our New Seed Catalogue, which contains 12 pages of descriptions of novelties, will reveal many choice things not to be found in any other list. Latest novelties in Sweet Peas, hardy perennials, annuals, and miscellaneous seeds. These will mostly be found priced lower than by any other first-class house, especially the Sweet Peas, of which we are large growers.

THOMPSON & MORGAN, SEEDSMEN, IPSWICH

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(FUMIGANT)

No. 1 size Tin—1 pt. contains sufficient for 40,000 cubic ft. each—	15	0
No. 2 size Tin— $\frac{1}{2}$ pint " " "	7	6
No. 3 size Bot.—6 oz. " " "	12	0
No. 4 size Bot.—4 oz. " " "	8	0
No. 4 $\frac{1}{2}$ size Bot.—2 oz. new size " " "	4	0
No. 5 size Bot.—2 oz. "sample" " " "	2	0

CARRIAGE PAID

Fumigating Lamps

1s. each, for 5,000 cubic feet

Nicotide Plant Spray

1-pint 1/2 Pint 2/-

Quart 3/6 1-gal. 5/-

Gallon 10/- Carriage Paid

GOW'S LAWN SAND

DAISY ERADICATOR

28 lbs. (to dress 200 square yds.) 6/6

$\frac{1}{2}$ -cwt. 11/-, 1 cwt. keg 21/-



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1 gallon, to make 51 gallons, in solution . . . 3/6

5 " " Drums Free " Carriage Paid . . . 16/-

GOW'S SLUG DESTROYER And Combined Fertiliser

28 lbs. 5/- 1-cwt. 7/6 1 cwt. 14/6

All Carriage Paid Sample Tins, 9d. and 1/4

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disregard our offer to send a Pine Spray Syringe on approval. They will pay 10/6 for a syringe with none of its advantages—not so large, and not nearly so well made and finished

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a syringe ask your seedsman or ironmonger to send for a Pine Spray on approval. It will be there in 24 hours without expense to himself or you, and without any obligation to you to purchase if you do not entirely approve of the splendid combination spraying head

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We can confidently recommend the undermentioned articles; they are the outcome of years of careful experiments by practical Horticulturists, and annually give satisfaction to thousands of users

ARTICLE	Prices Carriage Paid				
	7 lbs.	14 lbs.	28 lbs.	56 lbs.	1 cwt.
"CLIMAX" LAWN SAND Kills weeds on Lawns, &c., and improves the grass	2/-	3/6	6/-	11/-	20/-
"CLIMAX" WEED KILLER Keeps paths clear of weeds for from 12 to 18 months	No. 1 2/-	No. 2 2/6	No. 3 3/0	12 Gall. 12/6	25 Gall. 24/6
"ALPHOL" Kills slugs, wireworms, &c., and improves growth of plants	2/-	3/-	5/-	8/6	15/-
"DEMON" INSECTICIDE Kills red spider, green and black fly, thrip, in any bug, &c.	Quart. 2/-	$\frac{1}{2}$ Gall. 3/-	Gall. 4/6	2 Gall. 8/6	4 Gall. 15/-
"PREMIER" ROSE MANURE A perfect rose stimulant	2/-	3/6	5/-	11/-	20/-
"PREMIER" GARDEN MANURE	2/-	3/-	5/-	8/-	15/-
"PREMIER" PLANT FERTILISER	2/-	3/6	6/-	11/-	20/-
"PREMIER" LAWN MANURE	1/6	2/6	4/0	8/-	14/-
"SIMPLICITAS" PEA NETTING Tanned and rot-proof; absolutely the best support for culinary and sweet peas, 3 and 6 feet wide	3 1/2 per square foot				

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Utterly annihilate Weeds, Moss, Dandelions, and all other weeds on Garden Walks, Carriage Drives, &c.

Have the largest sale in the United Kingdom!

Are the most powerful manufactured!

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LIQUID (Poison)		DOUBLE STRENGTH (1 to 50)	
3 Gallons, to make	150 Gallons
6 " " "	300 Gallons	...	10 18 0
12 " " "	612 Gallons	...	1 13 0
20 " " "	1,020 Gallons	...	2 7 6
40 " " "	2,040 Gallons	...	4 12 6
SPECIAL CONCENTRATED STRENGTH (1 to 80)			
3 Gallons, to make	243 Gallons	...	10 14 6
6 " " "	486 Gallons	...	1 7 0
12 " " "	972 Gallons	...	2 6 0
24 " " "	1,944 Gallons	...	4 10 0

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(THE ORIGINAL)

The deadliest foe of Green, Black and White Fly. The insecticide of insecticides for roses, chrysanthemums, tomatoes, wall and bush fruits, and other trees.

Safe to use anywhere and everywhere.

20 galls., 3/6 per gall.; 10 galls., 3/7 per gall.; 5 galls., 3/8 per gall.; 1 gall., 4/2; $\frac{1}{2}$ gall., 2/6; 1 quart, 1/6; 1 pint, 1/-

Carriage Paid on 7/6 orders and upwards

WHOLESALE MANUFACTURERS
JOS. BENTLEY, Ltd.
CHEMICAL WORKS BARROW-ON-HUMBER, HULL

Market Notes—*Contd.*

Vegetables of the choicer sorts were scarce, especially peas and cauliflowers. All green crops seemed to have suffered by the prolonged drought, with the exception of cabbage, which remains cheap. Salads of every description were quickly bought up. Good home-grown tomatoes sold well.

Flowers of every colour and variety were quickly disposed of, a large demand existing for the better class of decorative flowers such as sweet pea, roses, carnations, &c. Very large quantities of herbaceous stuff were sent to market, but a large portion of it was too soft to be profitably disposed of.

Before closing this brief market report (which may be my last) I would like to testify to the integrity and civility of the various salesmen in the markets. I am not acquainted with any of them nor have I any interest in the markets save to collect material for this report; yet have I always admired the keen way they bring the last farthing from a buyer. A salesman's commission is not so large that he can afford to dilly-dally over an article; quick bids and quick knocks are the ruling features. It is often very hard to dispose of carelessly packed stuff from the country when it has to be sold in competition with choice and carefully-packed Cross-channel produce.

If these people who talk about "rings" would take the trouble to send decently-packed and graded stuff to market they would obtain the good prices that those who do so are obtaining. It is not idle talk or words spoken in ignorance that will help what might yet be a great industry for Ireland. Therefore let not home growers listen to irresponsible wind-bags, but throw all their energies into placing a better article than the foreigners on the market.

The following were the prices:—

		FRUIT.	
		From	To
		s. d.	s. d.
Gooseberries,	per quart.	0 3½	0 5
Strawberries,	per lb.	0 6	1 2
Raspberries,	per 5lb. basket.	2 0	3 0

FRUIT— <i>con.</i>		From	To
		s. d.	s. d.
Currants (black)	per lb.	0 4	0 6
Grapes,	do.	1 6	3 6
Peaches,	per doz.	8 6	26 0
Melons,	each	2 6	4 6
Cherries,	per blade	0 5	0 8
Apples (Irish peach)	per float	1 8	2 0
Do. (Thinnings)	do.	1 4	1 10
FLOWERS.			
Roses,	per bunch	0 8	1 4
Carnations,	per doz.	2 6	3 0
Sweet Pea,	per bunch	0 10	1 4
Asters (annuals),	per doz.	0 4	0 7
Liliums,	do.	1 0	2 6
Smilax,	per bundle	0 8	1 2
Asparagus,	do.	0 7	1 6
Maidenhair fern,	per bunch	0 6	1 0
VEGETABLES.			
Artichokes,	per doz.	0 4	0 8
Beans (broad),	per float	0 5	0 8
Do. (French),	do.	1 4	1 9
Carrot,	doz. bunches	0 6	0 7
Cabbages,	per load	4 6	9 6
Cauliflowers,	per doz.	1 0	1 10
Cucumbers,	do.	2 0	2 8
Lettuce,	do.	0 4	0 7
Onions,	per bunch	0 5	0 8
Parsley,	per float	0 4	0 7
Peas,	do.	1 0	1 8
Potatoes,	per cwt.	3 9	5 6
Rhubarb,	doz. bunches	0 10	1 6
Spinach,	per float	0 4	0 8
Tomatoes,	per lb.	0 3	0 8
Turnips,	per bunch	0 4	0 7
Thyme,	do.	0 2	0 4
Mint,	do.	0 3	0 6
Sage,	do.	0 3	0 4
Mustard,	per punnet	0 3	0 4
Radishes,	doz. bunches	0 2	0 5
Mushrooms,	per float	0 10	1 8

28th July, 1911.

ROBERT HUGH CLARKE.



Skilfully, quickly, and cheaply, for any purpose requiring illustrations, but, as we have been blockmakers to "Irish Gardening" since its first issue, we are in a very good position to handle all Horticultural subjects, for Seedsmen's Catalogues and Advertisements.

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1 pt., post free. 2/3 12/- gall., carr. paid

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IF YOU HAVE A GLASS ROOF THAT LEAKS, a Conservatory to repair, or any kind of glazing work to be done, CARSON'S PLASTINE will save money, time, worry and annoyance consequent on the use of ordinary putty, which cracks, crumbles, and decays. It saves the expense of constant renewals. Carson's Wood Preservative in green and brown, for Palings, Trellis Work, &c. The best paint for Greenhouses is "Vitrolite." Write for Catalogue. CARSON'S, 22 Bachelor's Walk, Dublin.

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Leaf-mining Maggots, Mealy Bug and all Pests infesting plants under glass, &c. Simple to use, no apparatus required. In Boxes to fumigate 1,000 cubic feet, 6d.; 10,000 cubic feet, 3s. 6d. each. Obtained of Seedsmen and Florists; if unobtainable apply direct—

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Wholesale Horticultural Sundriesmen,
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Trade Terms and Catalogue of Sundries upon receipt of business card



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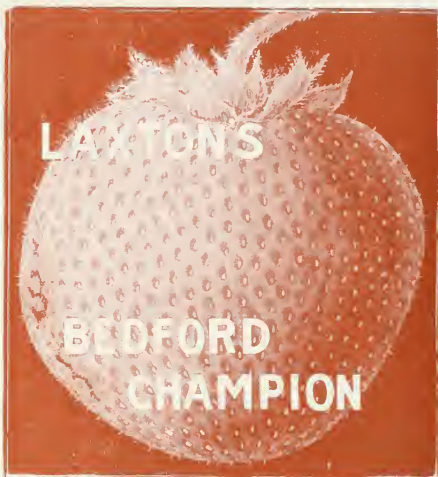
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FRUIT TREES, ROSE TREES, AND CARNATIONS

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HYACINTHS , single, first size, named, in 25 leading sorts, red, white, and blue varieties, equal quantities, my selection	15 0	—
TULIPS , single early, in the finest mixture	2 0	18 4
TULIPS , Darwin, mixed	3 0	25 0
TULIPS , double, in the finest mixture	2 2	20 0
ANEMONES , single mixed	1 4	12 0
ANEMONE , The Bride, pure white	1 4	12 0
CROCUS , first size, in the finest mixture	1 4	12 0
CROCUS , second size, in the finest mixture	0 9	7 0
SCILLA SIBIRICA , rich blue	1 6	14 6
IRIS , SPANISH, mixed	0 7	5 0
IRIS , ENGLISH, mixed	2 0	16 8
NARCIS , single, in the finest mixture	1 4	12 6
NARCIS , Trumpet, in the finest mixture	2 6	20 0
NARCIS , double, fine mixture	2 6	20 0
NARCIS -POLYANTHUS, finest mixed	3 6	30 0
SNOWDROPS , ELWESI, The Giant Snowdrop	1 6	13 6
RANUNCULUS , FRENCH, double mixed	0 9	7 0
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A Guide to Buyers.

BEING A CLASSIFIED INDEX TO GARDEN REQUISITES
ADVERTISED IN THE PRESENT ISSUE

NOTE.—Some misunderstanding arose last month owing to the form in which our index was presented. A letter of protest was received from one of our best known business houses in Dublin alleging unfairness in excluding the name of their firm from a list purporting to be a selective recommendatory one. We are sorry that the obvious meaning of the index was thus misconstrued. The advertisement pages in each issue of IRISH GARDENING form a valuable monthly feature of the magazine—valuable alike to readers, advertisers and publishers. It is therefore our interest to consider alike the interests of readers on the one hand and advertisers on the other.

The number of advertisements appearing in IRISH GARDENING is often very large, and when space admits we like to classify and index them. It is convenient for purposes of rapid consultation, and, as we believe, adds to the value of the advertisements. We hope that this note explains away any possible misconception as to the alleged bias on our part based on the particular form our list assumed last month.

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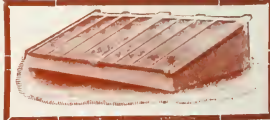
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KILLS WIREWORMS and other Soil Pests
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 Does not discolour the Foliage
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 VALUABLE PREPARATION

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SAVES WEARY WEEDING.

50 gallons of mixed solution will kill all
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1/- tin for 12 galls. solution } Free Tins
 19 " 25 " " " and
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LIQUID. 1/- 50.

1/2 gallon - 2/- drum free
 1 " - 3/6 - " 9d. extra
 2 " - 6/6 - " 1/6 "
 5 " - 14/- " 2/6 "
 10 " - 25/6 cask 5/- "

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 Why buy second or third rate goods
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ITS ADVANTAGES ARE—

Certain death to all Insect Pests.

No possible injury to the most delicate Plant, Flower or Foliage.

It is by far the cheapest Insecticide known. One pint makes ten
 to twelve gallons for Thrip, Black and Green Fly, &c., whilst RED
 SPIDER, Mealy Bug, and Scale can be thoroughly eradicated by
 using "NIQUAS," about double the strength required for Fly.

**It is most successfully used by Orange and
 other Fruit Growers in the Colonies, &c.**

PRICES—Pint, 1/-; Quart, 1/9; Half-Gallon, 3/-; Gallon, 5/-
 Kegs, each Five Gallons, 22/6; Ten Gallons, 42/6.

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 cheapness.

Cone No. 3, for a well-secured house of cubic 2,000 to 2,500 feet,
 price 1/6 each. Cone No. 2, for a well-secured house of cubic 1,000
 to 1,200 feet, price 8d. each. Cone No. 1, for frames cubic 100
 to 600 feet, price 6d. each. Full directions accompany each Cone

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All Glass Structures THAT REQUIRE OUTSIDE SHADING

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Be sure to ask for SUMMER CLOUD SHADING

And see that you get it!

Sold by all Dealers in Horticultural
 Sundries throughout the Kingdom,
 in Packets containing 8 ozs., for 100 feet of glass, 1/-; 24 ozs., 2/6;
 and in Bags of 7 lbs., 10/6; 14 lbs., 20/-.



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<i>Scrubberies</i> —Laxton Bros., Bedford	III
MANURES, &c.	
Ichthemic Manure	I
Specialities of Benjamin Chaswell, Esq. (“Premier” Brand)	XI
Thomson’s Manures	IX
These may all be obtained from seedsmen in Ireland.	
<i>Salt</i> —Flower & McDonald	XII

INSECTICIDES, &c.	
Apterite	IX
Auto-Shreds (Darlington & Sons)	I
Nicotinic (Hunter & Gow)	XI
Nyxus (Corry)	IX
“Sanitas Powder” for Slugs	I
Ask Fluid	IX
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XL All (Richards).	<i>front cover</i>

WELD-KILLERS.	
Climax	XI
“Eureka” (Tomlinson & Hayward)	IX
Gow’s	XI
Hoyle’s, Dublin	XI
SPRAYING APPLIANCES.	
Pine Spray Syringe (patent), Robinson’s	XI
The above preparations, &c., can be obtained from seedsmen in Ireland, from Watson, Horticultural Chemist, Dublin, or from the makers.	
CHIP BASKETS.	
Deaton & Sons	X

The Dublin Wholesale Markets.

THE passing of the summer season is already noticeable, as far as the markets are concerned. The Horse Show, which is held during August, encourages growers to hold back for that

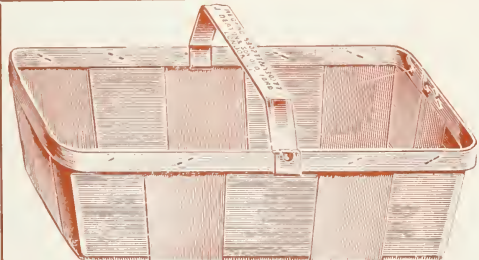
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Are grown by the million for early cut blooms. Their fragrance and beauty are increasingly appreciated. By forcing in succession they may be had in flower from November to March

Extra Large Bulbs, exceptionally fine roots, certain to produce an abundance of large flowers	Per 100	15/3/2
Selected Bulbs, these are usually sold as first-sized roots	17 6	2/-
Straw Coloured Italian	18 -	2/6



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occasion as much of the choicer products of the garden as possible, with the result that for some time afterwards the markets appear to be suffering from lack of supplies. However, this is not correct—it is merely the break between the summer and autumn supplies.

The quantity of fruit marketed during August was about equal to the demand, and, as a rule, prices were good. The small fruits marketed during the opening weeks were very quickly disposed of at prices which were the highest for the season. Plums seem to be rather inferior, and many seem to think the dry weather responsible. Apples were marketed in large quantities, Beauty of Bath being sold for enormous prices. Other varieties, including Early Victoria, Stirling Castle, Irish Peach, &c., sold well when marketed in proper condition as regards packing and grading. The choicer kinds of fruit have never been seen to better advantage. Grapes, melons, and pears were marketed in the most perfect manner, and their growers deserve every praise for their skill in growing and pains in packing. Melons would appear to be a good crop, the sunny weather having helped growers very much.

In speaking of vegetables, every one will agree with me in saying that it has been the most trying year for some time. Everything suffered from the drought, and weakened constitutions fell a prey to the fungi and insect enemies of the gardener; for instance, peas were swept with the mildew, while turnips were cleaned to the stem by the fly. Cauliflowers were only fit for pickling, and the same might in many instances be said of onions, &c., where a proper water supply was not available.

Flowers seemed to have received by far the largest share of the growers' attention, as every market day found large and well-grown consignments to be disposed of.

The following were the prices:—

HOME FRUIT.		From	To
		s. d.	s. d.
Apples—Beauty of Bath	per bushel	12 6	14 6
Early Victoria	per ½ bushel	2 4	2 8
Stirling Castle	do.	2 6	3 0
Irish Peach	do.	1 6	2 0
Grapes—Hamburgs	per lb.	1 2	1 10
Alicantes	do.	1 4	2 0
Muscats	do.	2 6	3 6
Peaches—Best	per doz.	5 6	10 0
Seconds	do.	3 0	5 0
Plums—Victoria	per ½ bushel	5 0	6 0
Czar	do.	5 0	7 6
Melons	each	2 6	4 6



Skillfully, quickly, and cheaply, for any purpose requiring illustrations, but, as we have been blockmakers to "Irish Gardening" since its first issue, we are in a very good position to handle all Horticultural subjects, for Seedsmen's Catalogues and Advertisements.

IRISH PHOTO ENGRAVING CO.

Oriel House, Westland Row, DUBLIN.

FOREIGN FRUIT.

	From	To
	s. d.	s. d.
Apples—New York Pippin	per barrel	13 0 14 6
Sturmer Pippin	do.	9 0 11 0
Peas—French	per box	4 0 5 6
Plums—Spanish	per ½ bushel	13 0 14 0
Melons—American	per doz.	2 0 2 6

FLOWERS.

Asters—Mixed	per doz. bunches	0 3 0 0
Carnations—Various	do.	0 5 1 0
Sweet Peas—Various	do.	0 5 1 2
Gladioli	per bunch	0 6 1 0
Roses	per doz. bunches	0 4 0 10
Geraniums	pots, each	0 4 0 8
Liliums	per doz. spikes	1 6 2 6
Smilax	per bundle	0 6 1 0
Asparagus	do.	0 8 1 0
Maidenhair Fern	per bunch	0 10 1 0

VEGETABLES.

Brussels Sprouts	per float	3 0 4 6
Beet	per doz. bunches	2 0 3 0
Beans—Broad	per float	0 10 1 4
French	do.	1 4 2 6
Cauliflowers	per flasket	2 0 3 6
Cucumbers	per doz.	2 0 3 6
Carrots	per doz. bunches	0 6 0 9
Lettuce	per doz.	0 3 0 6
Mint	per doz. bunches	1 0 1 2
Mushrooms	per float	1 6 4 0
Marrows	per doz.	1 8 3 6
Parsley	per float	0 4 0 7
Rhubarb	per doz. bunches	1 6 2 0
Sage	do.	1 4 1 8
Turnips	per bunch	0 2 0 5
Tomatoes	per lb.	0 3 0 6
Thyme	per doz. bunches	2 6 3 0
Parsnips	do.	0 6 0 10
Peas	per float	1 6 3 6
Cabbages	per load	6 0 12 6
Spinach	per float	0 4 0 10

29th August, 1911.

ROBERT HUGH CLARKE.

Novelty in the Flower Garden

IN these days the keen amateur is always on the look-out for something different from anything possessed by his neighbours. We have no objection to that. On the contrary, it is our business to hunt up all the best and newest things in plants and seeds from all parts of the world. A perusal of our New Seed Catalogue, which contains 12 pages of descriptions of novelties, will reveal many choice things not to be found in any other list. Latest novelties in Sweet Peas, hardy perennials, annuals, and miscellaneous seeds. These will mostly be found priced lower than by any other first-class house, especially the Sweet Peas, of which we are large growers.

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WEST'S RAFFIATAPE, better than raffia because it expands with growth, plants are quicker and firmer tied, cheaper, stronger, and no waste. rd. coils, 6d., 1s. and 1s. 6d. reels; samples and lists of all garden sundries.—C. E. WEST, Higham Hill, LONDON, N.E. Please beware of imitations.

IF YOU HAVE A GLASS ROOF THAT LEAKS, a Conservatory to repair, or any kind of glazing work to be done, CARSON'S PLASTINE will save money, time, worry and annoyance consequent on the use of ordinary putty, which cracks, crumbles, and decays. It saves the expense of constant renewals. Carson's Wood Preservative in green and brown, for Palings, Trellis Work, &c. The best paint for Greenhouses is "Vitolite." Write for Catalogue. CARSON'S, 22 Bachelor's Walk, Dublin.

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25 Narcissi, various, named	30 Scilla campanulata
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ROYAL HORTICULTURAL SOCIETY OF IRELAND

Great Winter Fruit and Flower Show

*Ballsbridge, Wednesday, October 18th, and
Thursday, October 19th, 1911*

ADMISSION: WEDNESDAY, 2 till 5 o'clock, **1s.** ;
5 till 10 o'clock, **6d.** THURSDAY, 10 till 5 o'clock, **6d.**

Entries close **October 9th**

EDWARD KNOWLDIN, *Secretary*,
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Schedules Post Free.

Dublin.

SPECIAL PRIZES given by the Department of Agriculture, the Royal Dublin Society, the Council and practical members of the R.H.S.I., &c., &c.

A FRUIT CONFERENCE will be held under the auspices of the Department of Agriculture, in conjunction with the above, on the second day of the Show.

General Notes on Cultivation of Fruit Trees.

THE following excellent notes on the cultivation of fruit trees appear in the Fruit Catalogue of Mr. Seabrook. They are written with full knowledge of the subject and an appreciation of what an amateur wants to know:

PREPARATION OF GROUND.

The ground must be well prepared, deeply drained if wet, and all stirred 18 inches deep, but not turned over. Gravelly soils may be made suitable by adding, when trenched, a good quantity of stiff loam, or, better still, marly clay, the surface round trees being well mulched in hot weather to keep it moist.

Very stiff clay should be trenched if possible the summer before planting, and a good coat of burnt earth or lime rubbish stirred in. No manure should be added when trenching, except on very poor soils, but all trees are benefited by mulching after planting.

FORMS OF TREES.

Cordon—One stem; best planted obliquely, but can be upright, used for covering walls, fences, &c. This system is invaluable for gardens where space is limited,

and will produce the maximum quantity of fruit on the minimum area of land. Strawberries may be grown under them, but should be at least two feet away from the stems. The very finest exhibition fruit is grown in this style. Should be planted two feet apart. The finest form of all for pears.

Bush—A tree with from eight to twelve upright branches each branch pruned like a cordon; centre kept well open. This is the form now almost universally adopted by market growers on a large scale, and enormous crops are grown in this way. They may be planted from eight to twelve feet apart, according to habit of growth and richness of soil.

Pyramid—Useful for kitchen gardens. Not quite so good for cropping as the bush, but better in shape and appearance. Should be planted from seven to ten feet apart.

Dwarf Fan-trained. This style is used for trees on walls and fences, and consists of the branches being trained flat and fan shaped. Fifteen to twenty feet apart. Apples and pears are generally horizontal-trained.

Half-Standard Trained; Standard Trained—Same as foregoing but longer stems. Used for covering upper part of high walls, &c. 15 to 20 feet apart.

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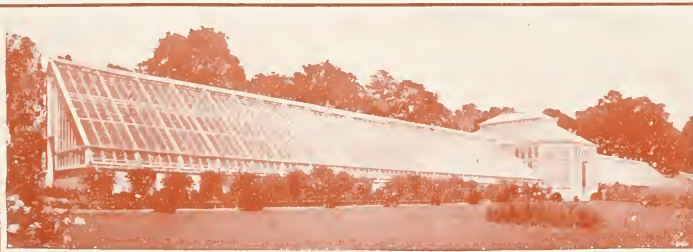
Are indispensable, and are cheapest and best straight from the grower. As grown in Ireland they have no superiors. Send for list of the old and newer kinds—with names of ten, twenty and fifty best kinds, to:—

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Half-Standard; Standard.—Consisting of a stem from 4 and 6 feet respectively, with branches at top. The old orchard system.

PLANTING.

The trees should not be planted deeper than just sufficient to cover the roots by about 3 inches. These should be spread out horizontally to keep them near the surface. The earth should then be trod down firm.

On heavy and very wet soils the trees should be planted on mounds, not in holes.

November and December are the best months for planting.

Trees arriving during frosty weather, when the ground is hard, should be placed unopened in a cellar, or similar place, free from frost, till they can be planted. Every care is taken in packing the roots, and in the event of the trees being delayed a few days in transit will take no harm.

SUPPORT.

Cordons.—Whenever a fence or wall is not available these trees may be planted in rows, preferably due north and south, a post fixed five feet high at each end, and galvanized iron wires strained along about every eighteen inches from the ground. Bamboo canes, six feet high, should then be put into the ground—one cane to a tree—and fastened to the wires.

Trees may be kept straight by tying a cane to the whole tree, the cane being tied to the wires. The trees should be inclined towards the south at an angle of 45° and as they grow longer may be pulled down to a sharper angle.

PRUNING.

Fresh Planted Trees.—All forms of fruit trees planted before the middle of January should be pruned in March, cutting back all young wood half-way to a bud pointing in the direction the leading shoot is required to grow.

Trees planted in gravelly soils after the middle of January should not be pruned that winter, unless they are mulched and given several good soakings of water occasionally in the event of spells of dry weather during May and June. The following winter such unpruned trees should be cut as far back as directed for trees planted earlier.

Subsequent Pruning: Apples.—If trees are planted after January they are best left unpruned the first summer; if planted before that, summer pruning should be done. This operation should take place in August, and consists of cutting back all new wood to five buds, except the

leader (or extension shoot), which should be shortened a little in winter to a good sound bud pointing outwards.

It is a good plan to stop all the vigorous side-shoots by pinching out the points early in June, thus equalising the growth ready for summer pruning. Summer pruning causes fruit buds to form on one or two of the eyes near the main stem, the other eyes sometimes making wood shoots. These are taken off in the winter, when the shoot should be cut back to a fruit-bud next the main stem. Should no fruit buds be formed, cut back shoot to two or three eyes. After a few years the fruit-buds will become too crowded on the spurs. Remove all but two when winter-pruned.

Pears.—These may be pruned the same way as apples. Very weak side shoots may be left unpruned in summer.

Plums.—These may be pruned in the same way, but taking care to cut back only the strong shoots, as the weak ones carry the fruit next season.

Cherries.—Cherries can be pruned like apples, leaving all fruit-buds.

The Morello is the only exception to this rule, as its fruits on young wood like a peach, and therefore only long, barren rods should be taken out, leaving enough young wood to bear a crop next season. For this reason the Morello cannot properly be grown as a cordon. Prune directly crop is gathered.

Royal Horticultural Society of Ireland

THE monthly meeting of the council was held at the offices, 5 Molesworth Street, Dublin, on the 8th ult. Accounts relevant to the Autumn Show were dealt with and judges were nominated for the coming Winter Fruit Show at Ballsbridge, October 18th and 19th, entries for which close on the 9th inst. In conjunction with this Show and in the interests of the Irish fruit-growing industry the Department of Agriculture and Technical Instruction for Ireland will hold a conference at 11 a.m. the second day of the show. Numerous applications have been received for the schedule of this particular show, which together with the excellent reports of the Irish apple harvest from far and near a fine display of high-grade fruit is promised. The following were elected members of the Society, viz.—J. T. Ellis Valdar, Garville Avenue, Rathgar; "Bakers" Wolverhampton; D. Watt (practical),

ULSTER HORTICULTURAL SOCIETY'S CHRYSANTHEMUM SHOW

IN BELFAST

14th and 15th November, 1911

Entries free, and close
Monday, 6th November

Schedules can be had from J. MACBRIDE, Secretary, 1 ADELAIDE STREET, BELFAST



Autumn preparation of the soil

The destruction of soil insect pests—the gardener's greatest scourge

Don't wait until your crops are spoiled before you apply Clift's Manurial Insecticide. Do it now before you sow or plant, and assure successful crops to follow

When digging this autumn sprinkle two or three ounces per square yard on the soil, and mix it into a depth of three or four inches. If needs be, within twenty-four hours of applying it you can crop the soil with safety. Make a clean sweep of wireworms, leatherjackets, slugs, snails, millipedes, woodlice, eelworms, &c., with Clift's Manurial Insecticide

DO IT NOW! THE COST IS SMALL! TROUBLE NIL!

CLIFT'S MANURIAL INSECTICIDE

PRICES—1 ton, £9; ½ ton, £4 15s.; 1 cwt., 10s. 6d.; ½ cwt., 6s. 6d.; 28 lbs., 4s. 6d.; 14 lbs., 3s. 6d.; tins, 2s., 1s. and 6d.

OF SEEDSMEN AND IRONMONGERS EVERYWHERE

Booklet, "Garden Enemies," and special leaflet on the autumn preparation of the soil, free on request to **Robinson Brothers, Ltd.** West Bromwich

Bentley's Nicotine Compound

This Vaporiser contains a higher percentage of Pure Nicotine than any other

Bentley's Insecticide

An ideal non-poisonous Plant Cleanser for general use under glass

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A perfect Winter Wash. Destroys mosses, lichens, fungi and their spores

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Universally popular. All Carnation Specialists admit its excellence

Bentley's Daisy Killer

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A most effective Weed Destroyer; completely transforms Lawns

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"PREMIER" GARDEN MANURE	2/-	3/-	5/-	8/-	15/-
"PREMIER" PLANT FERTILISER	2/-	3/6	6/-	11/-	20/-
"PREMIER" LAWN MANURE	1/6	2/6	4/6	8/-	14/-
"SIMPLICITAS" PEA NETTING Tanned and rot-proof: absolutely the best support for culinary and sweet peas, 3 and 6 feet wide ..	3d. per square foot				

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Vice-Regal Gardens, Phoenix Park; Miss Onlshaw, Johnstown, Straffan, A. Fiske (practical), Marlay Gardens, Rathfarnham; and Mrs. Gaisford St. Lawrence, Howth Castle, Howth. Thanks of the Council were accorded to Messrs. Chas. Ramsey & Sons for a bright and varied collection of dahlias, including new cactus kinds, and some very attractive collarette varieties sent in from the Royal Nurseries, Ballsbridge.

THE ROYAL INTERNATIONAL HORTICULTURAL EXHIBITION, 1912. Elaborate preparations are being made for the holding of this great exhibition in London next year. Forty-four years have elapsed since the last international horticultural exhibition was held in London. During that period many courtesies have from time to time been shown to British horticulturists by various foreign countries, and the time has now arrived when those courtesies should be in some measure returned. It is therefore proposed to hold another international horticultural exhibition in London in 1912, and to organise it on a larger scale than has ever yet been attempted; for which purpose an association, consisting of leading amateur and professional British horticulturists, has been registered.

The Lords Commissioners of the Royal Hospital, Chelsea, have consented to allow about twenty acres of land to be used for the purpose, and in view of the substantial support which has already been promised, it is confidently anticipated that the exhibition will be held on that site on May, 22nd to 30th inclusive, 1912. Horticulture has become vastly more popular since 1866, as is manifested by the fact that, whereas in 1866 the Fellows of the Royal Horticultural Society only numbered 3,389, they now number over 12,000, whilst the science and study of horticulture have advanced enormously. There ought therefore to be no doubt but that the proposed Exhibition should result in a considerable profit, which would, as before, be devoted to scientific, philanthropic, charitable or other public purposes connected with horticulture.

The Royal Horticultural Society of England, although in no way responsible for the undertaking, has made a contribution of £1,000 towards the expenses, and further, have guaranteed a sum of £4,000 against loss.

Sir Frederick Moore is the Hon. Secretary for Ireland, and it is hoped that this country will be well represented among the nations.

Miscellaneous.

LISSADELL CATALOGUES.—Two booklets—one concerning daffodils and another concerning Alpines and herbaceous plants—have been received from Lissadell,

in the County of Sligo. The descriptive lists of varieties given are very full, and both booklets are beautifully illustrated. Interesting notes are given.

CLOGS FOR WINTER.—As contributing to health and comfort, a pair of good, easy-wearing wooden clogs should be always worn in winter by gardeners. As the damp weather sets in those who do not possess these gardening necessities should secure a pair. The Wellington Manufacturing Co., Glasgow, in this month's issue, offer serviceable patterns to our readers. We have personal experience of the particular make and have found them most satisfactory.

A RECORD IN HONEY PRODUCTION.—A hive of bees belonging to Miss M. A. Forde, Inaghmore Lodge, Lurgan, who during the past three months has, from the hive in question, taken 144 lbs. of finished honey in sections. Our bee instructor, Mr. Hogan, can vouch for it.

A NEW HYBRID BERRY.—The Messrs. Laxton send us fruited samples of their new hybrid, said to be a cross between the raspberry Superlative and the Logan berry. It is named the Laxton berry by the raiser. It differs from the Logan berry in being less acid to the taste and in having a softer core. It appears to be nearer the raspberry than the Logan berry. The fruits on arrival were not in the best condition to sample, but we can well imagine that it will be a great rival to the Logan berry when it becomes better known.

SWEET PEA LIST OF H. W. CHURCHMAN.—This is a list compiled by a sweet pea specialist, and contains all the popular varieties in cultivation. There is a short article on the cultivation of sweet peas. The list is illustrated.

ILLUSTRATED AUTUMN GUIDE (Cannell & Sons) is a very full descriptive catalogue that should prove of much interest to head gardeners. It includes fruits, trees, shrubs, and flowers.

CATALOGUE OF DUTCH AND CAPE BULBS issued by Ant. Roozen & Son, seems to be a complete list of bulbous plants in cultivation.

ALPINES, ROCK PLANTS, AND HARDY PERENNIALS is a little catalogue issued by Messrs. Phipps & Ireland. There is an introductory chapter on "How to Make, Plant, and Keep a Rockery."

WATSON'S "CARNATIONS" is a useful little book as it contains not only descriptions and price lists of all the more recent new varieties of carnations, but very clear directions as to the general cultivation of these popular flowers. It is well illustrated, and may be had from the Nurseries, Clontarf.

DICKSON'S "HAWLMARK" BULBS is the name of Messrs. Alex. Dickson's Autumn list of bulbous plants for immediate planting. It is well arranged, gives necessary instructions as for planting, and is illustrated.

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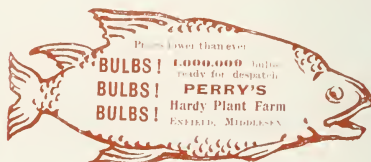
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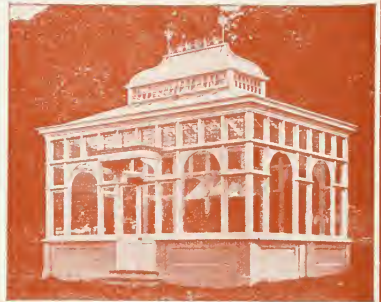
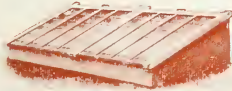
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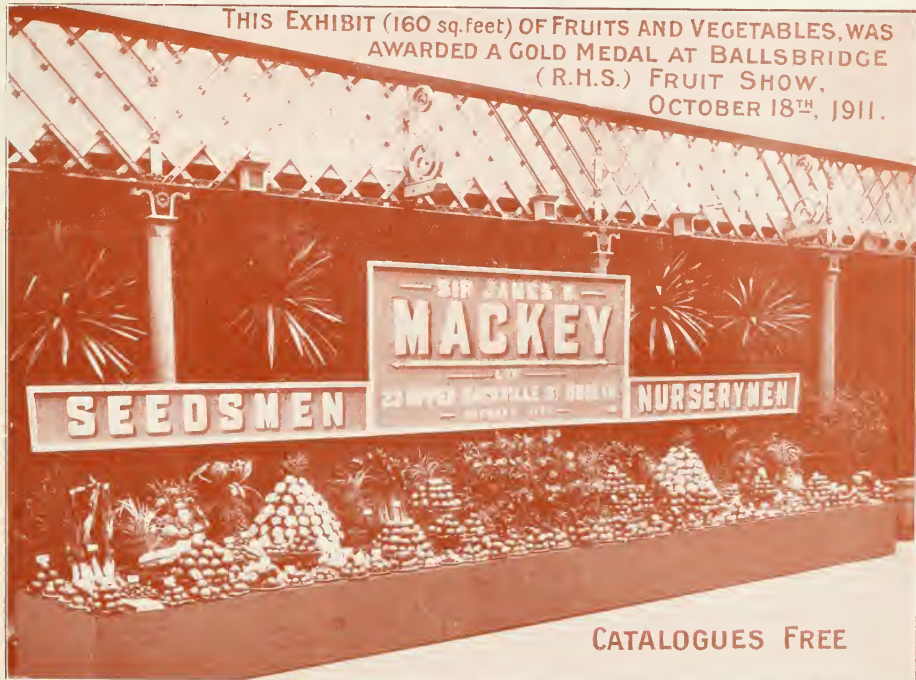
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THIS EXHIBIT (160 sq. feet) OF FRUITS AND VEGETABLES, WAS AWARDED A GOLD MEDAL AT BALLSBRIDGE (R.H.S.) FRUIT SHOW, OCTOBER 18TH, 1911.



CATALOGUES FREE

Autumn Fruit Show.

ROYAL HORTICULTURAL SOCIETY OF IRELAND.

THE above society held their Autumn Show on the 18th and 19th October in the premises of the Royal Dublin Society at Ballsbridge, Dublin. The chief classes were devoted to apples and the remainder to other fruits, vegetables and flowers. Valuable prizes were offered by the society, and these were supplemented by a grant of £60 from the Department of Agriculture for classes for apples and pears.

There was a record entry, there being over 70 entries in each of the classes for Cox's Orange Pippin and Bramley's Seedling, and some very fine fruits were exhibited. The fruits of Bramley were the best I have ever seen on an exhibition table, some of them being very large and almost scarlet in colour.

The outstanding feature of the whole show was the general high standard of the exhibits. It was the best collection of high quality fruit exhibited for many years, the fruits being of a much higher colour than usual. Poor quality fruit was conspicuous by its absence. Another noticeable feature of the show was the large number of successful exhibits staged by small farmers, many of the first prize fruits having been produced on trees planted by farmers who commenced fruit-growing only a few years ago. Some English growers who visited the show and who were exhibitors were very much surprised at the size and colour of the apples, being much better than the English fruit of this year.

For the best general exhibit of hardy fruits Messrs. Wm. Watson & Son, Clontarf, Dublin, staged a very fine collection, which gained them the society's gold medal, Messrs. A. Dickson & Son, Dawson St., Dublin, being awarded the silver medal. There were some very fine fruits exhibited in the collection of apples. For the best decorated table of 18 varieties Mr. Jameson was first; Earl of Bessborough, second; and Mr. Hennerty of Cork, third. In the collection of 12 cookers, Mr. Bowers, Silverspring, Co. Kilkenny, was first; Mr. Coffey, Newmarket-on-Fergus, Co. Clare, second. This class contained some of the finest apples in the show.

For twelve (eight cooking and four dessert), first prize was won by Lady Fitzgerald, Newmarket-on-Fergus, Co. Clare, Mr. J. Jameson being second.

For the best collection of six cookers, the first prize was won by Mr. Cooney, Kells, Co. Meath, and the second prize by Mr. R. White.

For the four dessert, Colonel Poe secured the first prize, while the second was won by Mr. Doyle, Broadway, Wexford.

The chief prize-winners in the dessert single dishes were Mr. Bowers, Kilkenny; Mr. Nulty, Kells, Co. Meath; Mr. Torney, Kells; Lady Fitzgerald, Newmarket-on-Fergus, Co. Clare; Mr. W. Coffey, Newmarket-on-Fergus; Earl of Drogheda (gardener, Mr. Pilgrim); Mr. J. Kennedy, Piltown; Mr. S. Bowles, Cork; Mr. R. Dalton, Piltown, who won the Coxony; Mr. T. Butler, Piltown; Mr. R. M. Whiting, Credenhill, Hereford, England; Mr. K. Malcolmson; Mr. Claude Ellis, Gorey, Co. Wexford; Mrs. Goodbody (gardener, Mr. Davis), Blackrock; Lady Annaly, Gowran Castle, Co. Kilkenny (gardener, Mr. Roche), being the first in the Bramley class.

There was good competition in the pear classes, and some very fine specimens were staged, especially those of Pitmaston Duchess and Doyenne du Comice. For the collection of six dishes Lady Fitzgerald was first, and Mr. Barton second.

For the collection of four dishes, Mr. J. A. Jameson, Bray, was first, and Sir E. Cochrane second.

In the single dishes the following were the chief prize winners:—Lady Annaly, Mrs. Malcolmson, Mr. M'Pother, Roscommon (who showed extra fine specimens of Pitmaston); Ald. Bewley, Rathgar; Colonel Poe, Lady Redmond, Lady Fitzgerald, and Mr. Barton.

It is interesting to note the advance made in the boxing and barrelling of apples for market. The entries in these classes were more numerous than heretofore, and the packing was more up to the market standard. The first prize for the best packed bushel box of dessert apples was won by Mr. Coffey with a nice box of Cox's Orange Pippin.

The best barrel of Bramley's Seedling was won by Mr. Morrow, Enniskillen.

The interest taken in large blooms of Chrysanthemums is very much on the wane at these shows, the number of blooms on show being less every year.

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Though our flowers were not an overly big number, they secured excellent display. The gold medal, Mr. J. Jamieson, gardener, Mr. McKelvey being first for twenty-four, income, Lord O'Neill being second, Colonel Crichton (gardener), Mr. Mitchell being first for the twelve, Mr. Ramsay second. Mr. Jamieson gave won the classes for trees, his white tree being and the crimson.

The early flowering varieties are becoming very popular. Misses, being so early cultivated. Mrs. Messer's was awarded first in the twelve vases, Mr. Jamieson being second. Miss Field, Colonel Crichton, Mr. Mitchell, Mr. J. Jamieson, Mr. Soden, and Colonel Lane was the chief prize winners in the other classes.

For the collection of hardy cut flowers the first prize was awarded to Colonel Poe (gardener), Mr. Cook (Gauge) Bird second.

Vegetables were of very high quality, considering the very bad season we had in which to produce exhibition specimens. For the collection, twelve different kinds. Mr. Brown, Naas, was first; Mr. Hone, second; and Major Henry, third. For the collection of six different kinds, Alderman Bewley was first, Mrs. Nesbitt, second; and Mr. Stubber, third.

The chief prize winners in the single dishes were — Miss Field, Mr. Brown, Earl of Longford, Alderman Bewley, Lord O'Neill, Lady Palmer, and Mr. N. Hone.

Seldom has the trade been so well represented as at this show, and it is to be hoped that they were well rewarded for their trouble in staging such fine displays of fruit, flowers, vegetables, plants and shrubs. Messrs. L. Ramsay & Son, Ballsbridge, were awarded a gold medal for floral designs and a very large group of ornamental and flowering plants. Sir James W. Mackey, Ltd., Sackville Street, Dublin, were also awarded a gold medal for an excellent collection of fruit, flowers and vegetables. Messrs. Baker & Co., Wolverhampton, were awarded a gold medal for preony-flowered dahlias; these were very fine flowers and were very much admired. Messrs. Pennick & Co., Delgany, Co. Wicklow, were awarded a silver medal for a very fine collection of ornamental and flowering shrubs. A silver medal was awarded to Mr. Dillon, Carrackmies, for herbaceous plants. Messrs. A. Dickson & Sons, Dawson Street, Dublin, were very highly commended for plants and shrubs; Messrs. Dickson, Ltd., Chester, for fruit and flowers; Messrs. Browett & Son, Kingstown, for palms, ferns and flowering plants. Messrs. Edmondson Brothers, Dame Street, Dublin, were highly commended for a display of fruit.

In connection with the show a conference of persons interested in the teaching of fruit growing, in growing it and in the disposing of it, was held on the 10th inst., the Right Hon. T. W. Russell, M.P., Vice-President of the Department, presiding. He alluded to the large increase in interest and activity in connection with fruit growing in Ireland during the last few years.

In 1905 the export of fruit from Ireland was about £30,000 worth. Last year it had risen to close upon £130,000. The increase in acreage under fruit had risen from 10,602 acres in 1906 to 14,045 acres in 1911. This was certainly proof that the industry of fruit growing was rapidly increasing, and the

quality of the fruit at the present show proved that high class fruit could be produced in Ireland.

Mr. J. R. Campbell, Chief of the Agricultural Branch, read an excellent paper on the fruit growing industry in general. He first referred to the work done and being done by the Department in the instruction of teachers, and by the various county committees with regard to the teaching of fruit growing, both for commercial and economic purposes. He also stated that if good fruit could be profitably produced in the northern counties of Ireland, as good, if not better, fruit ought to be produced in the southern counties, where the climate is more favourable, and especially in the Suir and Blackwater valleys. He referred to the need for more local societies, and that more of them ought to be formed to protect their local and common interests. Much more good towards successful cultural fruit can be done through societies than by individuals. With regard to the markets, he emphasised the importance of growing only a few varieties of apples, growing them well, carefully grading them and packing them well in attractive packages. He also spoke of the value to small growers to bottle the surplus fruit for winter use, which if not utilised for this purpose would be lost.

The Rev. W. Martin, Antrim, gave an instance of a County Antrim farmer who last year realised £110 from four acres of fruit, and who was of the opinion that this could be surpassed in the south of Ireland, as the fruit was more highly coloured in the south, and would, therefore, command a higher price in the market.

Mr. Livingston, Armagh, said that no doubt profitable crops of good fruit were grown in the north, and that in doing so they were only following the example of other countries. They advocated legislation with regard to fruit culture, and urged upon them the necessity of compulsory spraying the fruit trees as a preventive against insect and fungoid pests, as it was most important to fruit growers that the trees be properly sprayed.

Mr. Bennis, Limerick, referred to the railway rates, and said that they militated against the successful marketing of good fruit, as the charges for carriage were too high. He suggested that Mr. Russell take up the matter in Parliament at an early date, as it was undoubtedly the heavy rates charged by the railway companies which prevented to a great extent the spread of fruit growing in the south, and was holding it in check in other parts of the country.

There is no doubt that these conferences do much good to commercial fruit growing, as not only do they give growers a chance of stating their views publicly, but they also give them a chance of privately exchanging their views on fruit growing in all its branches.

OSBERVER.

Alpine Plants

THE article on page 129 of IRISH GARDENING was taken to task on the definition of the word "Alpine" by another writer on page 158.

The definition in question was supplied by the five



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part donors of the cup, and passed muster at the council of the R. H. S., and was adopted.

Now, I should like to ask, that if persons like to give a cup on certain conditions, and to define a line which they want the competition to take, would it not be absurd to dress the judges down for judging according to the definition, and were I one of those judges I fear actions would be my reply rather than words.

What I have to say in defence of my absurd conduct is that I was writing to a given definition and I was not defining the question myself, for which I am sorry.

With regard to certain woody plants, they do not come within the requirements of the act.

With reference to *Anemone nemorosa*, I have seen it at a great height in Norway. For authority see "Bilder ur Nordens" Flora "Lundham."

It is, of course, possible for a plant to be lowland as well as Alpine, as every Alpinist knows.

We can take *Gentiana verna*, for instance, which is of course used in Alpine gardening, and is truly an Alpine, yet in Co. Clare it grows most rampant only three or four feet from the sea level, in fact in the occasional spray of the sea.

It is well to remember that in the Alps almost every condition of life is seen, and that there are Alpine valleys and bogs as well as mountains.

Allysum saxatile and its varieties may claim to be a plant used in modern Alpine gardening. See definition, page 129.

Even *Primula rosea* is disputed. Why? Surely the wild Alpine bogs should be represented if the donors wish! The writer also adds, why not include some of the new Tibetan herbaceous plants? Most certainly, admit them if they comply with the definition of being diminutive.

The idea that all Alpine plants to be staged in 12 inch pans would appear somewhat erroneous if some one cropped up with *Pinus cembra*!

As for any twenty being any better than any other twenty, I repeat that the plants named are the easiest to handle for early exhibition work, and therefore the best.

W. H. PAINE, Tully.

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Catalogues

WM. WATSON & SONS, LTD., send from their Clontarf Nurseries a very tasteful catalogue dealing with Fruit Trees, Roses, Shrubs, Climbers, &c. It is a timely publication that should prove interesting to all readers who contemplate planting during the present season. The present number of IRISH GARDENING is mainly devoted to the subject of planting fruit trees, shrubs, and other woody perennials, and most of the species and varieties mentioned will be found here, with brief descriptions and price. The catalogue is well illustrated.

ALEX. DICKSON AND SONS LTD., of Newtownards, have issued a most attractive rose catalogue for the present season. There is a round dozen of novelties described, four of which are reproduced in colour. The roses are classified under the recognised headings, and each variety is briefly described both as regards habit of growth and colour of flower. A list of the prizes won by this firm during the present year occupies a full page. A copy of this issue ought to be secured by all rose growers.

MESSRS. MERRYWATHER & SONS, LTD., of the Nurseries, Southwell, Notts, sends an attractive catalogue dealing with Roses, Fruit Trees, Shrubs, &c. We note that this firm gives Bramley's Seedling as "unquestionably the finest profitable apple in cultivation;" further, that when cooked it is "without equal." There is a great demand for "Bramleys" in the markets, and as this fruit appears to grow exceptionally well in Ireland, planters will be wise in including this particular variety in their selection for planting. A very extensive descriptive list of roses is given.

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Covert and Hedge Plants.
Rhododendrons, Hollies, Yews and
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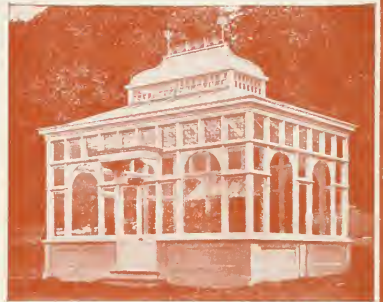
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Belfast Show

THE Ulster Horticultural Society's Annual Show was held in St. George's Market, Belfast, on the 14th and 15th November. The show, as usual, was well attended, notwithstanding the unfavourable state of the weather. The number of entries amounted to 1,250, and the quality of the exhibits, on the whole, was exceedingly good. Speaking at the Judges' dinner Mr. Wm. Cramp, an authority on fruit growing, said: "The show was one of the best he had seen that year anywhere. In Birmingham and other centres they considered themselves good fruit growers, but their exhibits were not in size and colour anything approaching what they had that day seen in the Belfast show. He was curious to know how this gratifying result had been achieved in Ulster, and felt sure the growers in Ireland were bringing their skill in cultivation to bear in the proper manner."

The nurserymen's exhibits added a great deal to the attractiveness of the show. Some of the exhibits, particularly those of Messrs. Hugh Dickson, Royal Nurseries, Belmont, were very well arranged, and included choice and well-grown plants. The floral display by Messrs. A. Dickson & Sons, Royal Avenue; Frank Smith & Co., High Street; and Arthur Ritchie, High Street, were exceedingly good, and greatly admired. Messrs. Hugh Dickson had a fine stand of apples—dessert and cooking varieties—of high-class quality. Reference must be made to the stand of hardy flowering shrubs and conifers exhibited by Messrs.

Peacock & Co., Delgany, Co. Wicklow. This firm also had excellent examples of fruit trees, bush and cordons, on view. Messrs. Bleakley, Killyleagh, Co. Armagh, showed a collection of apples of varieties suitable for present planting. He also exhibited specimens of well grown fruit trees.

Chrysanthemums were a very strong feature, and, although the large blooms have to a great extent gone out of fashion, they were on this occasion shown to a high degree of perfection. Single varieties were largely shown, and some new and pleasing shades were to be seen. Messrs. W. Wells, of Surrey, had a fine exhibit of single and double varieties, many being of their own raising and possessing much merit.

In the fruit section, apples constituted the outstanding feature; beautiful examples of well grown and highly-coloured fruit was shown. The finest dish of apples in the show was a dish of Peasgood's Nonsuch, and was grown by Mr. Thos. Nulty, Carnacross, Kells, Co. Meath. A very instructive feature was provided in the apple-packing competition. As was to be expected, the best packed barrels came from the fruit-growing districts of Portadown. The prizes for the best bush boxes of apples, however, went to counties Clare, Kilkenny and Fermanagh.

The vegetable and farm produce exhibits were of a high standard of quality, and very keen competition was shown in the different classes.

The following is a list of the principal prize winners in the various sections:—

Nurserymen's Class—Messrs. Hugh Dickson, Royal

200,000 FRUIT TREES AND BUSHES

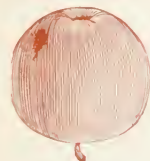
— of all kinds, including several thousand —

STANDARD APPLES, PEARS, AND PLUMS

10,000 Maiden Apples on English Paradise.

The following popular kinds are included:—James Grieve, Ben's Red, Charles Ross, Cox's Orange, Allington Pippin, Bramley Seedling, Lord Derby, Worcester Pearmain, Ecklinville Seedling, Newton Wonder, Norfolk Wonder, Blenheim Orange, Warner's Rival, Quarrenden, Lane's Prince Albert. Price, 6s. per doz.; 40s. 100.

Also a very fine lot of 20,000 Pyramid Apples (two and three years) on English Paradise, including:—Worcester Pearmain, Cox's Orange Pippin, James Grieve, Allington Pippin, Bramley Seedling, Warner's King, Houblon, Charles Ross, Lane's Prince Albert, Beauty of Bath, and many others. Price, 10s. per doz.; 65s. 100.



About 20,000 Half-standard Apples on Crab Stock (two and three years).

Worcester Pearmain, Cox's Orange Pippin, Bramley Seedling, Newton Wonder, Allington Pippin, Lord Derby, Blenheim Orange, James Grieve, Lane's Prince Albert, and many others. Price 10s. per doz.; 65s. 100.

Standard Apples.

The following popular kinds are included:—Cox's Orange Pippin, Worcester Pearmain, James Grieve, Ecklinville, Allington Pippin, Blenheim Orange, Devonshire Quarrenden, Bramley Seedling, Lord Derby, Warner's King, King of Pippin, Wellington, Lord Sullfield. Price, 18s. per doz.; 26 100.

About 10,000 Pears, Standard Czar Plums, 18s. doz.; 26 100. About 10,000 Black Currants, 1,000 Red Currants, 20,000 Raspberries, Superlative, 18s. 1,000; several thousand Cabbage, 2s. 6d. 1,000; and Strawberry Plants, Loganberry Plants, from layers, very fine sample, 15s. for 25 plants.

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	7 lbs.	14 lbs.	28 lbs.	56 lbs.	1 cwt.
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"CLIMAX" WEED KILLER Keeps paths clear of weeds for from 12 to 18 months ..	No. 1 } 2 } 3 }	12 } 25 } 50 }	Galls. } for } use. }	1- 2- 3 6	
	Tins and Drums Free				
"ALPHOL" Kills Slugs, wireworms, &c., and improves growth of plants ..	2-	3-	5-	8 6	15-
"DEMON" INSECTICIDE Kills red spider, green and black fly, thrip, mealy bug, &c. ..	Quart. } gall. }	2- } 4 6 }	1-gall. } 2 galls. }	3- } 8 6 }	
"PREMIER" ROSE MANURE A perfect rose stimulant ..	2-	3 6	5-	11-	20-
"PREMIER" GARDEN MANURE	2-	3-	5-	8-	15-
"PREMIER" PLANT FERTILISER	2-	3 6	6-	11-	20-
"PREMIER" LAWN MANURE	16	2 6	4 6	8-	14-
"SIMPLICITAS" PEA NETTING Turned sand rot-proof; absolutely the best support for culinary and sweet peas, 3 and 6 feet wide ..	3 1/2 per square foot				

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Vegetables—Lord O'Neill, H. Stewart, Bangor; Countess of Caledon, Lady Palmer, Rush; Col. Wallace, Downpatrick; N. Hone, Raheny; Earl of Longford, &c.

Apple Packing Competition—John Moffet, Portadown; Jas. Cromie, Portadown; D. McLaren, Clougher Park, Clougher; Mrs. M. Coffey, Newmarket-on-Fergus; Mrs. Duggan, Piltown; W. J. Morrow, Enniskillen, and R. White, Gowran.

Honey—W. G. Feris, Enniskillen; Rev. J. Salters,

Newtownards; H. C. Gibson, Ballygowan, R. Carson, Enniskillen, and Rev. H. Kirker, Drogheda.

The committee of the Ulster Horticultural Society and their able and courteous secretary, Mr. M'Bride, deserve the greatest credit for their labours in connection with this event.

G. D.

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Dublin Wholesale Markets.

It is to be my privilege to subscribe to this useful horticultural journal monthly reports of the Dublin Corporation Markets. In conjunction with the reports I hope to give from time to time a few hints on marketing which may prove of service to those who forward produce from the country, and who have only an occasional opportunity of visiting the markets. As the question of the marketing of fruit is one which is being much discussed at present by those interested in horticulture, I propose, in this article, to deal principally with that subject.

Owing to the exceptionally fine summer, apples have come to maturity very quickly this year, and, in the case of the earlier varieties, this has resulted in their season being over much before their usual time. The consequent result is that late-keeping apples, such as Bramley's Seedling and Lane's Prince Albert, are now being sold in much larger quantities than they were for the corresponding period of last year. It may follow then as a natural result that there will be a decided scarcity of Irish apples in the early spring.

Many of our best quality apples do not find their way to the Dublin markets, as a more profitable market for them is found across the Channel, where—in the words of a London buyer who spoke at the recent Fruit Conference at Ballsbridge—a certain amount of competition exists amongst English buyers for Irish apples, and especially for the varieties Bramley's Seedling and Lane's Prince Albert. Where a fruit grower is far away from the markets, and has accordingly to convey his produce by rail, it is to his interest to have it consigned there in the cheapest and most expeditious manner, and this is accomplished by packing it in barrels.

The grower, however, who has only a small area under fruit-trees will find it much more satisfactory to market his fruit in bushel or half-bushel boxes, rather than attempt to fill a barrel with ungraded and mixed fruits. It is a curious circumstance that, taking bulk for bulk, a higher price is usually paid for apples packed in the smaller measures than for similar fruit packed in barrels. The reason probably is, that for the smaller quantities private buyers compete with wholesale purchasers.

But whether the fruit be packed in bushel boxes or in barrels, let it be all of one variety and one grade, cleanly and tastefully packed. It is no uncommon thing in the Dublin Markets to see a prospective purchaser thrust his or her hand into a barrel to find out if it is a "topped" one. Yet nobody would think of treating a barrel of American apples to such an inspection, and it behoves packers to see to it that our home-grown fruit shall be treated with the same respect. This they may in time accomplish, by taking pains to have their fruit

placed on the market in a style similar to that adopted by our rivals. Buyers soon come to know the methods of the different packers who send their fruit to market, and are willing to bid a little higher when they are sure of getting the right article.

The following were the prices:

	HOME FRUIT.	From 8 d.	To 10 d.
Apples—Bramley's Seedling	per barrel	15 0	18 0
Lord Derby	do.	14 0	16 0
Wareham Russet	per bshl. box	6 0	9 0
Dessert, various	per doz.	0 6	1 0
Cooking, mixed	per 1/2 bushel.	2 0	2 9
Grapes—Alicantes	per lb.	0 8	1 0
Muscats	do.	2 6	3 0
Pears—Dessert	per box of 2 doz.	3 0	3 6
FOREIGN FRUIT.			
Apples—Canadian Kings	per barrel	17 0	18 0
Ben Davis, Canadian	do.	16 0	17 0
Newton Pippins	per box	9 0	9 6
Pears—French	per crate	7 0	9 0
Oranges—Jamaica	per box	13 0	13 6

	FLOWERS.		
Chrysanthemums, white,	per 3 bunches	0 8	1 0
do., other colours		0 6	0 10
Lily of the Valley	per doz. bunches	6 0	8 0
Roses	per doz. blooms	1 0	1 3
Smilax	per string	0 2	0 4
Violets	per doz. bunches	1 0	1 4

	VEGETABLES.		
Artichokes—Jerusalem	per float	1 4	2 0
Beetroot	per doz.	0 4	0 9
Borecole	do.	0 3	0 4
Brussels Sprouts	per float	1 6	2 0
Cabbages (York)	per load	10 0	19 6
do. (Savoy)	do.	7 6	12 6
Carrots	per doz. bunches	0 10	1 0
Cauliflowers	per flasket	2 6	4 0
Celery	per doz.	1 3	2 0
Leeks	do.	0 3	0 4
Lettuce	per tray	0 3	0 6
Mint	per doz. bunches	0 9	1 0
Mushrooms	per punnet	0 2	0 4
Onions	per cwt.	7 0	9 0
Parsley	per tray	0 6	0 10
Parsnips	per doz. bunches	0 8	1 0
Sage	do.	0 10	1 2
Spinach	per tray	0 6	0 10
Thyme	per doz. bunches	0 9	1 0
Tomatoes	per lb.	0 3	0 6
Turnips (white)	per bunch	0 6	0 8
(Swede)	per cwt.	0 10	1 6

25th November, 1911.

A. C.

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