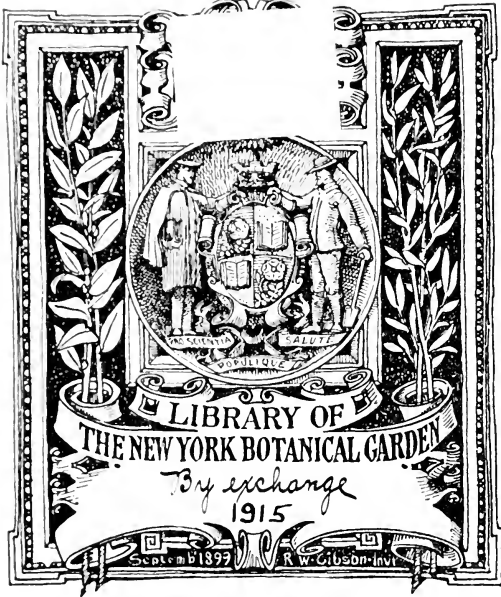


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IRISH GARDENING

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

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EDITED BY G. F. BALL.

The Present Condition of Horticulture in Ireland.

By SIR F. W. MOORE, M.A., M.R.I.A., F.L.S., V.M.H.

THIS important subject has been reviewed by me in IRISH GARDENING in the opening number, and again in January, 1910. In both these articles I took a hopeful view of the then position of horticulture and of its future prospects, so much so that many readers expressed the opinion that my views were optimistic—too much so—and that events would in the near future demonstrate this. Have they? On making a critical survey of what has been written in Ireland and of what has been done in Ireland in all that concerns horticulture, it must be admitted that the forecast was fairly accurate, and that there has been a steady advance along fixed, popular, and democratic lines.

Readers will kindly be lenient, and not ejaculate disgustedly "what a platitude" when I state that in this month of January, 1915, we are in a critical and eventful period in our national history, and I am guilty of this platitude simply because there is no more suitable way of calling attention to the fact and also to its possible influence on horticulture in Ireland. Our causes for anxiety are twofold—first, prospective changes in the government of our country, and second, the result of the war. Both these causes are likely to have a retarding effect on advances in horticulture for some years. The first cause will be temporary and transient, and will be the natural consequence of disturbance of existing fixed conditions and of the excitement and general distraction which must necessarily accompany great changes, such disturbance of mind and of method gradually disappearing as order is evolved and the experimental stage passes. The second cause will be more serious and lasting. No matter how this sad war may end, the bill will have to be footed, and the extent of that bill is beyond the conception of ordinary folk who are not

accustomed to talk lightly and familiarly of millions and hundreds of millions of pounds sterling. There is also the appalling loss of life, and the sorrow and misery which it entails—sorrow and sadness which will penetrate to the remotest parts of our country. It is some satisfaction to think that many will turn to their gardens and plants for consolation, and that in them they will find steadfast and unflinching friends and companions.

It is now five years since the last review of horticulture in Ireland was written in the pages of this journal, and, therefore, a new review may with advantage be taken. The main points dealt with in 1910 may be said to have become emphasised and consolidated. This is especially the case in indoor gardening. Collections continue to disappear, and useful decorative subjects take the place of curiosities and of plants which were of minor decorative value or which were chiefly of interest to their owners and to students or collectors: in other words, utilitarianism is gaining ground. Stove plants have almost disappeared, and are now only to be found in comparatively few gardens. Hard-wooded plants, such as *Boronia*, *Diosma*, *Erica*, *Epacris*, *Adenandra*, *Eriostemon*, *Genetyllis*, are no longer to be found in gardens, and an enthusiast who still gives up valuable indoor space to a collection of *Cactaceae* is regarded with grave suspicion as to his or her sanity. True, occasionally here and there a specimen of some of these may survive, and is pointed out as a curiosity, the name of which is probably unknown. It is questionable if many young gardeners even know the appearance of several of these, although at one time many houses were filled with them, and the splendid specimens which were exhibited at the principal shows were marvels of skilful cultivation and of

patient and increasing care. If we glance at the schedules of a modern flower show we find the main classes are those for Zonal Pelargoniums, Cinerarias, Mignonette, Spireas, Primulas, Carnations, Schizanthus, Coleus, tuberous and other types of Begonias, &c., and, of course, according to season, such specialities as Roses, Chrysanthemums, Hyacinths.

At recent Dublin shows old-fashioned gardeners will have noted with pleasure the re-appearance of classes for such old favourites as Show Pelargoniums, Amaryllis (or Hippeastrum, as we should now call them), and Gloxinias. It is not for me to say if these facts are indicative of advance or decadence in indoor gardening; I have not sufficient temerity to do so, and I therefore must leave readers to interpret according to their free will and inclination. I must, however, place on record that the standard of cultivation of these soft-wooded plants is distinctly high and in advance of what it formerly was.

In outdoor gardening developments have been more pleasing and, it is to be hoped, permanent, as on all sides there is evidence of more culture (or should it at the present moment be written "Kultur" ?), refinement, taste, and of accurate knowledge and thoroughness in this particular branch than in any previous period in the history of horticulture in Ireland. Proof of this is forthcoming in the fact that the only section of outdoor gardening which is rapidly declining in extent and in popularity is bedding-out on mathematical lines and general formal gardening. Outdoor gardening must be dealt with in two phases—gardening for pleasure and gardening for profit.

In such a vast subject as outdoor gardening there is opening for every variety of taste and of work, and, therefore, especially in small-sized gardens and amongst amateurs, specialisation is practically compulsory, so we find gardeners devoting themselves sometimes exclusively to some branch or section, such as Roses, Sweet Peas, herbaceous plants, Narcissus, Violets, trees and shrubs, alpine, or to the more practical and useful fruit and vegetable growing. In all these the advance in both type and cultivation is marked, of which there is ample evidence both in the garden and on the show benches. By type I mean the standard of grace, beauty, shape, colour, and general form which all reflect the good taste of the flower-growing public. The reaction against mere size is strong and we find such things as decorative Roses and single and decorative Chrysanthemums giving in favour each year and steady support given to varieties with moderately-sized

flowers, as against mere size often accompanied by coarseness. If we take the Narcissus as an example, I contend that such varieties as King's Norton and Glory of Noorwijk are huge, coarse, and ugly, whereas King Alfred, Florence Pearson, Mad. De Graaff are beautiful and refined, and many of the new Triandrus hybrids are of great merit. In Sweet Peas the advance is very marked. Here there has been increase of size, in most cases without coarseness, a wider range in colour, firmness and length of stalk, and practically no loss of perfume. In the opinion of many experts and good judges sufficient advance has been made in size, and a few varieties, by fission or by duplication of the standard, are tending to heaviness and lack of grace. Other genera in which advance is marked are Gladiolus, Delphinium, Aster or Michaelmas Daisies, Astilbe and Spirea. The varieties of Michaelmas Daisies now offered are very welcome additions, and we get a prolonged flowering season at a time of year when flowers for house decoration are getting scarce. The new pink varieties of Astilbe and of Spirea are noteworthy and meritorious introductions, most useful for margins of lakes, ponds, streams, and for the bog garden, or even for the herbaceous border where the soil is deep and moist.

In flowering shrubs there is ever increasing variety, and as many of the new species and varieties have high qualities to recommend them there is corresponding increase in the attention and care they are receiving and in the space devoted to them. Such genera as Rhododendron, Spirea, Philadelphus, Deutzia, Berberis, Prunus, Cotoneaster, and Cytisus have furnished us with splendid novelties such as Cytisus Dallemorei, Berberis Wilsonae, Philadelphus roseae, Deutzia gracilis venusta, Spirea Veitchii, Prunus microlepis var. Smithii, or as it is more generally called P. miqueliana, many of which have been described in the pages of IRISH GARDENING. Further references to these pages will indicate the amount of space devoted to alpine and to rock works, and the number of articles written on these subjects during the last five years, which fairly reflect the growing interest taken in this class of gardening. The cultivation of alpine is now much better understood, and the results are more satisfactory; hence probably the increasing attention given to them. The number of deaths is less and the number of "impossibles" has been largely reduced, not that the plants have become less exacting, but simply because their requirements are more carefully studied and more intelligently administered to. A moraine

is no longer regarded as an exaggerated fad of a pronounced faddist. It has been demonstrated that concrete beds and extensive masonry are quite unnecessary, and that the structure of a moraine is comparatively simple, all that is required being deep porous rubble with perfect drainage. The number of rare and beautiful species which may be seen growing, spreading, and flowering in a moraine, although formerly regarded as too difficult to succeed with, is most encouraging. The devotees to this particular branch seem to give more time and attention to a critical study of their plants than those in any other branch of gardening, except perhaps Orchid growing, and there are amongst the so-called amateurs many who possess such an intimate and thorough knowledge of groups and genera as to be generally accepted as authorities, even by recognised systematic botanists of eminence, which is a gratifying sign of progress, and will lead to better results than a mere study of herbarium specimens.

This review has extended so much that but little space or time remains to consider the second branch of outdoor gardening, which perhaps had better be kept for another occasion. The fact that in the recent pages of a publication such as IRISH GARDENING articles by well-known specialists are to be found on such subjects as Mendelism, Hybridisation, the Nature of the Soil, Bacteria, Electrifying the Soil, Sterilising and other Soil Problems, the Science of Manures, and that such articles are appreciated by the gardening public who support IRISH GARDENING, and who, instead of grumbling, ask for more, is one of the most satisfying proofs of progress. In IRISH GARDENING for November, 1910, page 169, appears an article copied from the *Outlook*, entitled "Farming as a Modern Equivalent for War." I would recommend the perusal of this article at the present crisis, and to substitute for "farming" the word gardening.

Irish Demesnes.

By A. E. MOERAN.

MR. STEPHEN GWYNN, I think it is, who somewhere says that modern Irish history is for Irishmen to forget, but for Englishmen to remember, and I think he is right; but he does not refer to one branch of our modern history which is already so forgotten, or overlooked, that its story is little likely ever to be written, and for this I am sorry, for it is the story of the great planting revolution—bloodless and non-political—which, beginning in the latter half of

the eighteenth century and lasting up to, say, 1830 or 1840, gave employment to tens of thousands of Irishmen at home, and which re-clothed her hills and valleys with some, at any rate, of the woods which centuries of war and waste had swept almost utterly away. In the works of such travellers through Ireland at this period as have published their experiences we meet constant references to the works being carried on, and the records of the Royal Dublin Society and old estate papers help us to realise what a busy time it was; but to fully appreciate all that was done we must spell out the story backwards, starting from our existing trees of to-day and reading their life history back through maturity to early growth and infancy, and when we do this we find that in place after place, county after county, the trees and woods, almost without exception, date from the same period—viz., from 80 to 130 years ago. Of course there are later plantations, but these, for the most part, are coniferous plantations, generally on outlying areas and not, strictly speaking, connected with the parent demesne.

The astonishing thing about it is that, in one fine place after another, not a single tree will be found older than the uniform date of the woods. Sometimes we find rows of old ash or scattered beech, or a small grove of hoary old trees near the crumbling walls of what was once "the big house," but these are quite exceptional, and the more one sees the more one is forced to the conclusion that immediately previous to this great planting revival, Ireland had reached a state of denudation without parallel in history, as all the planting that has since been done still left the percentage of wooded areas lower than that of any other habitable country in the world. However, this new forestry work was spread over the whole face of the land in a multitude of small woods and belts and groves and sercens, and together with a generous measure of hedge-row trees, mostly dating from the same time, it made a brave show and went far to cloak the shame of our country's nakedness.

Of course it was at the same time that the great majority of our country houses were built.

In England there are plenty of houses surrounded by wide, well-timbered parks dating back to Stuart and Elizabethan times, but in Ireland we do not seem to have developed this idea at all until the period of which I speak, when it suddenly "caught on" and ran like wildfire through the length and breadth of the land. The picturesque, but I have no doubt very uncomfortable, old semi-fortified houses or castles were deserted and let fall into ruins, or pulled down to provide stones for the great

square, to the big Georgian houses that sprang up over the town.

From our extreme we jumped to the other. For only the big houses had practically no private grounds, but stood amidst a rookery of retainers and satellites, and no doubt pigs and ducks and dirt. Now all this was swept away, and we could the English in the extent of our park and in the height of the demesne wall surrounding it.

They say that an Irishman's house is always built *near* a good situation, and it is all the more strange to find how seldom it is actually *on* the right spot, when one realises with what care and skill and real knowledge of forestry and landscape gardening, these newly enclosed demesnes were laid out and planted.

To those who know nothing of such work it may seem a simple thing to enclose a few plots of ground and plant trees in them and to scatter a few "specimens" here and there about the grass land, but there is not a yard of that wood fence, the long sweet curve of which you lightly admire, that was not planned and pegged out and changed and altered again and again to get it just what you see, and in the wood behind it no tree but was the result of anxious thought on "soils," and "exposures," and "nurses," and "maincrop." Each of those outstanding park trees that seem to have scattered themselves happily and promiscuously about the place cost much wagging of wise old heads before it was selected as the right kind of tree, and still more before the exact right spot for it was arrived at and the tree planted there. But how proud they must have been of their work, these pioneers of planting in Ireland, and how generously and luxuriantly the trees repaid the thought and care lavished upon them! Of course in some cases the best laid schemes went agley.

As time went on the wise old head was laid to rest, and perhaps a new king arose who knew him not and who had no skill or wit to trace and carry on the original intentions which even now the cunning eye can discover, but nature was prodigal of her kindness, and the woods grew and took the shape we know to-day, and were good to look upon, and so a new period was born.

Out of these square country houses, some big and noble, and other small and unpretentious, came healthy, free-faced children that played through the young woods, and knew and loved every tree and branch in them, and as they grew, in many of them, scattered to the far ends of the earth. Brave men, and fair women—as brave and as fair, as the best the world has seen, and for a score of a century so it has been. There is no uttermost outpost of the world where the

foot of white man has gone but from it loving thoughts came flying back to the square grey house and the soft cool green woods and trees around it that made it home.

But another leaf has been turned in the history of these woods, and ignore it or shirk it as we may, if we let things drift on as we have been doing, the word "finis" is inevitably close in front of us. Some kinds of trees last longer than others, but all have a more or less definite age. Already the shorter lived trees have almost disappeared out of our woods of this period, and in other cases decay and degeneration is only forestalled by cutting down and selling the timber.

It is customary to denounce the wholesale cutting that has unquestionably been going on for years past, and to lay the whole blame of the denudation of the country on this. Of course there are many instances of this that are greatly to be deplored, but it is lost sight of that, in at any rate a large number of instances, the cutting of the trees only anticipated by a few years their disappearance from natural causes, and that once woods have arrived at a certain age—which varies with every class of tree, and soil, and site—the downhill journey to decay and dismemberment is automatic and often surprisingly rapid. I do not wish to appear to advocate excessive cutting, but I do want people to realise that by simply leaving their wooded areas alone they do not ensure that there shall be woods on them, but that on the contrary they inevitably ensure that there shall be nothing but fallen, rotting logs among the scrub and briars and such few chance seedlings as the rabbits may have overlooked.

I feel very strongly that owners of places, big or little, have each a duty in this matter that is not in all cases sufficiently recognised. Let me put it this way.

Three or four generations have enjoyed the results of one man's work and expenditure. It has been a family asset. I do not mean in money only, though perhaps that too has not been inconsiderable, but as having created a home worthy of the love of those sons of the house who have cheerfully done their share, and more than their share, in whatever part of the world men's work was a-doing. However deperate the venture was, however discouraging the work, they had this green thing in their hearts, the picture of their far away home, and so they were no discredit to it, but played out the game let come what might.

I do not wish to appear sentimental, but no one who has met Irishmen of this class abroad can doubt this.

And now to those at home, a crisis has developed which threatens to leave that home shorn of all for which it stood. Are we not bound to do our share in the sequence of things and to pass on the place at least no worse than we got it? Worn out old woods must be restocked with suitable trees. Not all at once, but bit by bit, as circumstances permit, but above all with serious consideration and understanding. I had far rather nothing was done than that money should be spent on some scheme foredoomed to failure. If the matter is faced squarely the difficulties often shrivel into insignificance, and many unexpected facilities crop up. In numbers of cases a trifling sum per acre in supplementing and safeguarding the natural seedlings will secure a full crop. Some owners, and they not always the most favourably situated, have already for some time past been quietly working on these lines with the best results. They are not afraid of what the future may bring forth, but are courageous enough to "do the next thing"—and so, all credit to them.

[In a future issue our correspondent will put forward suggestions for dealing with existing woods.—ED.]

Saxifrages—New and Old.

By MURRAY HORNIBROOK, Knapton, Abbeyleix, Queen's County.

To everyone who takes an interest in Saxifrages there comes a time when he despairs of their names and doubts if any be true. For this nurserymen are much to blame, their methods of naming plants are notoriously free and easy and their imaginations run away with them when they are let loose amongst the Silver and Mossy Saxifrages. For the nurseryman there is this much to be said—both these types of Saxifrage seed freely, and hardly any of them come true from seed, consequently every nursery and garden has its own varieties and forms, some of which are sent out as well known species, and others are given high-sounding names, and the result is chaos to the gardener.

Saxifrages have a particular attraction for me, and for some years I have, for the purpose of comparison, acquired every species and variety that by description or appearance seemed to be distinct. Of Aizoon Saxifrages alone I have over 200 "named" varieties, and very many of these are old friends with new names, and the confusion is terrible. Some visiting gardening friends recently said: "It seems almost hopeless for the non-specialist to know

what to get and what he is getting." I was struck with the truth of this remark, and, as a result, I have gone through my Saxifrages, sorting and comparing them, eliminating identical or nearly identical forms and disregarding varieties of no particular merit. By these methods I have, I think, evolved a certain amount of order out of chaos, and, remembering my own difficulties, I am placing the results of my observation before the readers of IRISH GARDENING in the hope that they may be of use to them. I have entered upon my task with misgivings. We are at present much in need of a comprehensive work on Saxifrages by some real authority. One is always hoping that Professor Bayly Balfour will spare the time to help us in this matter, but whatever chance there may be of a work of this nature I fear that there is none of an authoritative work on the many garden forms that exist, and it is with these I will chiefly deal. I should add that in most cases therefore I have had to depend, for my description and naming of a plant, upon the comparison of the various plants received on good authority from botanic gardens and from various nursery and private gardens.

In the present article I will deal with the Aizoon or Silver Saxifrages. Of this section I think it is safest to assume that there is no recognised type, and we are on surer ground when we call the well known local forms after their localities. The Aizoon Saxifrages are especially notable for the beauty of their rosettes—white, blue, silver or green—and some for the additional beauty of their flowers. The best are pure white or white spotted with crimson, the worst green-white, but most forms are so beautiful in leaf that they are well worth growing even if they never flowered. They are extremely hardy, and increase readily from rosettes torn off and stuck down anywhere in the open ground.

Let us first examine the dwarf forms; the smallest in commerce is *S. Aizoon baldensis*, which makes moss-like mats of tight silvery rosettes. I have not seen it in flower. I have an equally small collected form having greener rosettes with scarlet reverse to the leaves. I have not yet given it a distinctive name, as it has not flowered, but I have a free-flowering dwarf form in *S. Aizoon Venetia*, not quite as small as the others, but bearing its pure white flowers with freedom. *S. lagave dauphine* or *lagraveana* is slightly larger again, with tight rosettes and solid creamy flowers. *S. labradorica* and *S. retinata* seem to be the same plant and not particularly attractive. *S. Aizoon pusilla* is another small form not to be compared with the

first four. *S. Aizoon recta* is very compact, a rapid grower and free in flower.

Of intermediate forms, I think *S. Churchillii* is the best; rosettes of narrow grey foliage and free in flower. *S. sempervivoides*, with distinct "lumped" cushions, and *S. sturmiana* are useful. *S. Aizoon mutata* and *S. Aizoon ambigua* have very narrow shiny green foliage, deeply line indented, and dull greenish flowers; they are distinct and evidently seedlings of *S. paradoxa*, and have many aliases. *S. paradoxa* and *S. circuta* are very similar, but their foliage is entirely covered with lime encrustation, and are probably seedlings of *S. crustata*, which

has beautiful silvery foliage. *S. Aizoon Rex* is magnificent; stout rosettes and large pure white flowers on scarlet stems. *S. Hostii* has innumerable forms, leaves as a rule long and green, and flower stems sometimes two feet in height, especially in a form sent out as *S. Hostii var. lingulata*, which has probably *S. Cotyledon blood* in it. Distinct forms of *S.*

Hostii are *var. Trentino*, with very sharp-pointed foliage, and *var. altissima*, with pine-apple rosettes edged with silver. *S. voehimensis* has very long narrow foliage, which it holds erect. *S. Zeleni*, most distinct with foliage almost snowy in its whiteness and wedge-shaped foliage. *S. bulgarica* has good flowers, but requires more sun than most of the other forms. Another sun-loving species is *S. Aizoon hirsuta*, with dull flowers and most distinct small dark-green rosettes covered with a hairy down.

Of colour forms, *S. Aizoon rosea* bears the palm both for vigour and freedom of flower (rosy pink). A form sent out as *S. Aizoon atropurpurea*, Sir F. Moore agrees, is distinct, much dwarfer and darker flowers. *S. kolenatiana* has small wedge-shaped leaves which acquire a red shade in exposed situations. The

flowers are of a delightful shell pink. *S. Sendtneri* is said to be a larger form, but its rosettes are quite distinct, long and narrow; its flowers are of the same shade of pink. A plant with larger rosettes of a deep dull green and similar flowers is sent out by one nursery as *S. kolenatiana* and by another as *S. Helene*. It seems to me to be nearest to the description of the true *S. cartilaginea* (Nicholson), and as such I, for want of an authoritative name, recognise it. It is a much better doer than either *S. kolenatiana* or *S. Sendtneri*. *S. triternata*, of Glasnevin, I have not got. One nursery catalogues it, but the plant sent out I

cannot distinguish from *S. kolenatiana*, which is a much larger and stronger plant than *S. triternata* as grown at Glasnevin. All these pink forms are hardy, but should be grown in half shade, as in the sun their flowers are apt to fade. *S. Aizoon balcana* has small rosettes and white flowers so densely spotted with crimson as to



ENCRUSTED SAXIFRAGAS.

appear pink in the distance. Then we have the two yellow forms, *S. Aizoon lutea* and *flavescens*, the former is the better plant, with rosettes of yellow wedge-shaped leaves and primrose flowers; the latter smaller, narrow-leaved rosettes and pale sulphur flowers. These also should be grown in half shade.

We now leave the endless forms of *S. Aizoon* proper and come to the other Saxifragas classed with it. Of these, *S. lingulata* is the most satisfactory. There are two distinct forms—*S. lingulata Bellardi*, with rosettes of long, narrow, twisted leaves and magnificent two foot sprays of pure white flowers. *S. lingulata lautoscana* has similar flowers, but rosettes of broader dark green leaves, and grows equally in sun or shade. A form sent out as *S. lingulata Alberti* appears to have other blood in it,

possibly a cross with *S. cochlearis*; it is well worth growing, as is also another hybrid form sent out as *S. calabrica*. *S. cochlearis*, with large rosettes of blue-silver spoon-shaped leaves and pure white flowers on red stems, is equally desirable. It has a smaller form which masquerades as *S. caesia* major and *S. Probyni* and a tiny form usually (wrongly) sent out as *S. valdensis*. *S. cochlearis* prefers a sunny situation, and with me does not flower until it has made a good sized tuft. *S. Cotyledon* is another splendid species with large rosettes of broad, rounded leaves and immense sprays of flowers either pure white or crimson spotted. The centre rosette in the type dies after flowering, but in the form *var. altissima* it does not. *Var. icelandica* has enormous strap-like leaves and even larger sprays of flowers. This form is not a good doer everywhere, and to flower it freely it is necessary to detach the side shoots—which may be grown on by themselves—and to leave only the one big rosette, which then usually flowers. *S. longifolia* is the last of the great Aizoon clan; nothing to my mind can equal the beauty of its marvellous rosettes, and it is a bitter disappointment to one when its centre shows signs of a flower shoot, for the type makes no offsets, and dies after flowering. All these Aizoon Saxifrages cross readily, and some very fine hybrids have been obtained from them. The true *S. Macnabiana* (*Cotyledon* × *Hostii*), with white flowers and very dark crimson spots (avoid the substitute of commerce which has pale spots), *S. Dr. Ramsay*, and *longifolia* × *cochlearis* and *longifolia* × *crustata* are all well worth growing. *S. mutata* is classed with the Aizoons, it makes a rosette of dull green leaves like *S. Cotyledon*, and bears small orange flowers, and is usually a biennial: I do not think it worth growing; it likes a cool, moist place. *S. Burnati* is a *cochlearis* hybrid of great merit. There are, as I have said, hundreds of other forms, but I think I have mentioned all which are of sufficient merit or sufficiently distinct for the purpose of the present article.

(To be continued.)

Lilium auratum Seeding.

MR. G. N. SMITH, Daisy Hill, Newry, writes:—“I have secured several pods of seed of *Lilium auratum*, and hope that some of the seeds may prove fertile. I do not know of an instance of this plant seeding before. Have you ever heard of one? (Readers please note.) *Buddica auriculata* is now in full flower in Warrenpoint Public Park, colour creamy-white and deliciously fragrant.”

Planting Fruit Trees.

LARGE numbers of these are now being or about to be planted, and it is impossible to exaggerate the importance of attending with the greatest care to the details of planting.

As regards soil, when the natural soil is very poor, some better garden soil may be used for shaking in amongst the roots when planting, as this helps to give the tree a good start. No manure should be used under the ground, but a thin layer over the surface when planting is completed will prove beneficial.

For each tree a circular or square hole, about 3 feet wide, should be opened, and all the soil broken up to a depth of 18 inches, without bringing the bottom spit to the top.

Trees must never be allowed to lie about, even for a short period, with the roots exposed. On arrival from the nursery the roots should be well covered up with soil in some convenient spot from which they should be taken one by one when ready to plant. Rather than plant in wet sticky weather, it is better to leave the trees thus “heeled in” for a week or two, choosing a suitable day for planting. But get the trees along from the nursery so that they may be at hand, “heeled in,” when a good day comes.

Before planting, all roots growing straight downwards should be shortened back, and any jagged or torn roots should have the injured portions cut off cleanly with a sharp knife.

Cramping the roots in a hole, filling in with earth and stamping it down is bound to result in failure. Holes must therefore be made as described above, and each tree must be placed at such a depth that when the planting is completed it will be at the same depth as it was in the nursery. This will readily be seen by the earth mark on the stem. Another guide is that, when finished, the highest up-roots should be 3 or 4 inches below the surface. Not to plant too deeply is vital, especially in heavy or wet land.

No roots should be allowed to take a directly downward direction, but every root, even the smallest fibre, should be spread out, slanting very slightly downwards. First spread out the lowest roots and scatter fine soil over them, proceeding similarly with the higher roots in rotation, and give the tree a little shake now and then to let the soil in between the fine roots. Having thus spread out and covered all the roots, give the tree a vigorous shake, add a little more soil and tread firm, while it is very important not to leave the soil loose about the stem and roots, it must only be trod firm, not rammed. Then fill up the hole a little higher than the surrounding surface to allow for sinkage: 2 or 3 inches higher is essential, or a hollow will occur for stagnant water to fill.

A stout stake should be placed to each tree to prevent straining of the roots by the wind, but great care must be taken that the tree is secured in such a way that it will not chafe against the stake in windy weather, otherwise it would be better to have no stake at all.

Grass sods must not be laid over the roots of newly planted trees, but the ground should be kept free of weeds and the surface stirred lightly at intervals for a couple of years, say 2 or 3 inches deep, to admit sun and air.—J. M. W.

A Few Dessert Apples.

RIVAL was raised by Mr. Chas. Ross, and introduced by Messrs. Clibran, and is a seedling from Peasgood's Nonsuch and Cox's Orange Pippin. The fruit is rather over medium size, even and round, highly coloured with scarlet, of good flavour, and ready for dessert from October to December. A well cropped bush is a joy to see, for it is an apple both good to look at and good to eat.

JAMES GRIEVE is an excellent dessert variety of medium size and even shape. The skin is yellow, and usually flushed with red on the side exposed to the sun. It is in season during September and October, and when ripe the flesh is very juicy, with a flavour somewhat resembling Cox's Orange. Of vigorous growth, this variety has been largely planted in many parts of England, where it has proved itself a heavy cropper. Unfortunately, however, it has not been a great success all over Ireland. In a few districts it has borne heavy crops, but over the greater part of the country it has fallen far short of what was expected of it. This variety is named after its raiser, and was first sent out by Messrs. Dicksons, Edinburgh, about the year 1890.

LANGLEY PIPPIN is a very useful dessert apple for a small garden, ripening about August and September, before Worcester Pearmain, but of much better flavour than this variety. The fruits are on the small size, flecked with red, and it was raised by a cross between Cox's Orange Pippin and Mr. Gladstone. The tree is only a moderate grower, and somewhat addicted to mildew unless planted on good ground.

BEN'S RED was raised by Mr. B. Roberts near Penzance in 1830, and was introduced by Messrs. Bunyard in 1890. With some English market growers it is becoming a popular September variety, to come into use after Worcester Pearmain. Its dark rich red colour would, no doubt, help it to sell. The flesh is firm, but not so well flavoured as many of our better dessert apples. This variety is very free bearing, and crops well even in a young state.

Aethionema Schistosum.

This is one of the prettiest of the Candy Mustards, and rejoices in a sunny position in deep, gritty soil. It is admirably adapted for a deep chink in the rock work, and is equally suitable for the wall garden, particularly where the roots can penetrate well into soil which can never become sour, but nevertheless retains moisture sufficient for the support of the many shoots and leaves which revel in the sun. The flowers are a pretty shade of pink, contrasting beautifully with the glaucous green leaves.

The majority of the *Aethionemas* are delightful rock plants flourishing under conditions similar to the above.

A. grandiflorum is a general favourite, with deep rose coloured flowers borne on graceful shoots bearing linear bright green leaves.

A. pulchellum has beautiful corymbs of soft pink flowers and glaucous leaves.

A. persicum is dwarfier, of compact habit, with shorter slightly glaucous leaves and corymbs of pretty pink flowers.

A. ibericum is a free grower bearing in spring a abundance of white flowers.



AETHIONEMA SCHISTOSUM

Kniphofia modesta.

Mr. G. N. SMITH, Daisy Hill, Nowry, writing on November 23rd, says: "Herewith I send you a photograph of *Kniphofia* (*Fritoma*) *modesta* taken on the 14th inst. in one of the borders in the nursery. I do not think it has been figured before, and it certainly has never flowered here out of doors as it has done this year. It is growing in the open without protection of any kind, although during hard weather it is covered with some dry litter."

[*Kniphofia modesta* is a rather rare South African species producing spikes of white flowers when in a flourishing condition such as is depicted in the illustration. Shelter from cold cutting winds and protection from hard frost would probably meet the requirements of this unique and pretty plant.—ED.]

Fast-growing Evergreen Hedges.

ONE never fails to be struck by the beauty of a hedge composed of *Cupressus macrocarpa*. When clipped it forms what can only be described as dense smooth walls of a vivid green

not found in any other evergreen hedge plant, and it grows at incredible speed. The writer observed an average of over one foot of new growth during the autumn months of 1914. Few, if any, hedge plants show so little sign of having been clipped, and, as speedily formed hedges are so much sought, it is a pity that this shrub is not more generally known for ornamental hedge purposes, though its properties as a seaside shrub are fairly well recognised. It has many uses. A large number of fine specimens grown singly may be seen near the Zoological Gardens in the Phoenix Park, and the writer saw it growing on the sand dunes of the Brittany coast, where, bending to the wind from the English Channel, it survives.

In a young state *Cupressus macrocarpa* must always be grown in pots or transplanted twice annually in order to move well. Planted at eighteen inches apart it rapidly forms a dense hedge.

Clontarf.

J. M. W.

Correspondence.

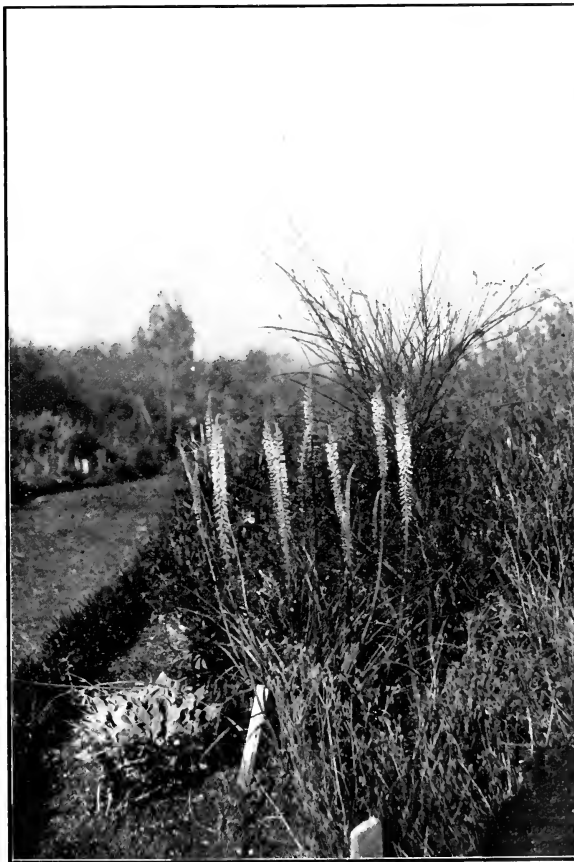
TO THE EDITOR OF IRISH GARDENING.

I HOPE Canon Hayes will pardon me if I note a few small inaccuracies in his pleasant paper on plant names.

Solanum Anthrophogon is not a potato, it is a tomato. I believe there is only one *Solanum* that bears potatoes, *S. tuberosum*. There is another of the family very near *S. tuberosum*, but it does not produce edible tubers, and so is called *S. etuberosum*.

Among the specific names mentioned by the Canon, *pratense* means of the meadow, not of the garden. *Montana* means a mountain plant wherever found, not U.S.A. *Alpina* does not mean from the Alps, as we generally understand the word, but from alpine country all over the world.

That ends my criticism, but I may thank the Canon for his paper, and hope it may induce many others to study plant names. Few know how much interest they may add to their garden if they know the meaning of the names. I will give two instances of plants that can, perhaps even now, be seen in flower at Glasnevin. An old plant that used to be called *Plumbago Larpente* is now called *Ceratostigma*—*i.e.*, horned stigma—and so it draws attention to the unusual form of the stigma with dark horns up both sides of



KNIPHOFIA MODESTA.

it, such as are not found in other flowers. Another flower has the long name of *Caryopteris mastacanthus*, a delightful aromatic late autumn shrub. The name has no connection with the *Acanthus* flower, but means the flower with a moustache, and the lower petal of each flower is edged with a pretty little moustache. It is clearly to be seen, and is worth looking at.

H. N. E.

Dec., 8, 1914

Hardy Ferns for the Rock Garden.

AMONG all the various plants written about and recommended for the rock garden, one seldom sees much about ferns. Yet even among our native species there are many of the smaller kinds eminently suitable for shady nooks and crannies in association with other plants requiring like conditions. Others too will flourish in sunny places under apparently dry conditions, and all contributing to the diversity of form which adds so much to the beauty of the alpine garden.

As a clue to the successful cultivation of such ferns as are indicated, it is only necessary to recall how the tiny "Wall Rue," *Asplenium ruta-muraria*, establishes itself in the seams of an old wall, reveling in the crumbling mortar and finding therein abundance of moisture for its modest needs. In addition, there are others of equal or even greater beauty, though some of the rarer kinds, it must be confessed, call for patience and perseverance to get them established.

The Mountain Parsley fern, commonly called in catalogues *Allosorus crispus*, but correctly called *Cryptogramme crispa*, is a delightful inhabitant of stony places, and not inaptly described as the Parsley Fern, since the compact tufts of fronds are not unlike that popular herb. Naturally it prefers to grow between stones, and should on no account be subjected to stagnant moisture.

We are so accustomed to associate Maiden-Hair ferns with indoor culture that we are prone to overlook the fact that there is a hardy species which is a rare native found only in a few places in the warmer and more salubrious parts of Britain and Ireland. Since, however, many other rock plants are found to benefit by covering with a sheet of glass in winter there is no reason why some similar protection should not be afforded to *Adiantum Capillus Veneris*. Shady cliffs and caves near the sea are said to be the haunt of this fascinating fern, and so in the rock garden an overhanging rock or cave-like depression may provide a happy home for our native Maiden-Hair in captivity.

Aspidium Lenchitis, the Mountain Shield or Holly fern, is a general favourite, and looks very handsome in its array of stiff prickly-looking fronds. It is a truly mountain species, growing in damp situations, but difficult to transplant successfully from its native habitat. Plants from pots, however, are procurable, and few who attain success will regret some time and trouble expended in the process.

The Spleneworts, or, as they are called botanically, the *Aspleniums*, are desirable and pretty rock plants frequently found on damp shady walls, but affecting various situations. In most species the fronds are delicately and beautifully divided and subdivided, rendering them very pretty and graceful.

Allusion has been made to *A. ruta-muraria*, a dense tufty little species often found on old walls, and which might, with advantage, be introduced to the rock garden in fissures of rocks and between stones. An uncommon species is *A. septentrionale*, which has slender elongated fronds divided at the ends into several divisions. It is not highly ornamental, but affords an interesting comparison with the other members of the genus. Peaty, well-drained soil is essential.

A. Adiantum-nigrum is a rather handsome fern attaining a fair size when growing strongly, but usually the fronds are from four to six inches long on walls or among rocks. The fact that it is evergreen is an advantage, the triangular fronds, with divided pinnae set on dark purple stems, forming a pretty picture in a shady corner.

The "Maiden-Hair Splenewort," *A. Trichomanes*, and the "Green Splenewort," *A. viride*, are two very pretty kinds suitable for wall cultivation or in cracks of shady rocks. Porous soil is essential, since, though moisture is necessary, excessive wet is not desirable. These two species are somewhat similar in the shape of their fronds, which form small flat rosettes of great beauty. The rachis or midrib of *A. Trichomanes* is black, while in *A. viride* it is green. *A. Ceterach*, sometimes called *Ceterach officinarum*, is also known as the Scaly fern. It is fairly abundant on old walls in some districts, and is at once distinct and pretty. The fronds are usually three to four inches or less long, thick in texture, green above, and covered with rusty brown scales on the under surface. It is not always easy to establish in cultivation, but when once induced to grow soon makes a very pretty tuft. Gritty soil with a large proportion of old mortar suits it well, and it will often grow in sun as well as in shade.

Blechnum spicant, also known as the Hard Fern, from the stiff hard nature of the fronds, is a pretty native. It is fairly easy to grow among shady rocks in moist peaty soil. The fronds are of two kinds, barren and fertile, both being narrow in outline, but the barren ones are more deeply cut than those bearing spores.

Botrychium Lunaria is an interesting fern, also known as the Moonwort. It occurs among damp rocks in nature, and should be tried in a similar situation in the rock garden. It is not exactly easy to cultivate, but a colony in the rock garden would be sure to please. The fronds are composed of two parts, one barren and the other fertile, the segments of the barren part being crescent-shaped.

Cystopteris fragilis, the Bladder Fern, is a pretty species, spreading freely in peaty soil, forming a most refreshing patch of greenery during summer. The fronds grow about 6 inches high, and are elegantly divided.

The Polypodiums are an interesting family containing many beautiful species and varieties. To these belong the popular Oak and Beech Ferns called respectively *P. Dryopteris* and *P. Phegopteris*. Both spread very freely when doing well, and it is not advisable to introduce them near choice alpine. A shady position in loose soil containing a good proportion of leaf-mould will suit them. In *P. Phegopteris* the frond is in one part made up of numerous pinnae, deeply, toothed, but in *P. Dryopteris* the frond is branched and the pinnae also deeply cut.

The common Polypod *P. vulgare* is pretty well known, and in its finer varieties is one of the most charming of hardy ferns. The varieties *cambrium*, *cornubiense*, *elegantissimum*, and many others are extremely beautiful, and spread freely when doing well. A fairly light soil and shade from fierce sun gives the finest fronds, though the plant will grow also in sunny places.

Only the smaller growing British ferns have been mentioned in these notes. There are many very beautiful kinds among the larger growing species, which are sadly neglected in most gardens.

B., Dublin.

Hints to Novices.

By R. M. POLLOCK.

WAR OF NO WAR, work must be gone on with in the garden; many things have to be done now, and the coming seasons must be prepared for. It would be a sad state of affairs were our gardens not looking their best to welcome the heroes on their return, and there are many who have left their homes whose gardens occupied much of their time, who would be sadly disappointed if those left behind had not done their best.

If the fruit trees have not already been pruned, the sooner this is put in hands the better, as when pruning is completed spraying may be started. The first of these is the Bluestone spray

(Sulphate of Copper) for apple and pear trees, where scab and spot may be—1 lb. of Bluestone to 20 gallons water. The Sulphate of Copper takes a long time to dissolve, so that preparations should be made a day before the spraying is to commence. This ingredient is not expensive, and can be had from any druggist. A fine sprayer should be used, and various forms of these are now on the market, and can be had at a reasonable price.

EDGINGS.—These can be made during the present month, and care should be taken to firm the ground well before planting, so that when everything is complete the plants will all remain at the same level. There are many low and close growing plants most suitable for such work, among which of course box is the most common; but this has its drawbacks, and that most often stated is that it harbours garden pests, such as slugs, woodlice, snails, &c. That it does this no one will deny, but that it does it to any greater extent than any other form of edging is doubtful. Another reason against box is the time it takes to trim and keep tidy. As regards the latter, there is very little done anywhere that does not take some little time and trouble. In many places box is the only suitable edging.

Thrift, *Armeria maritima*, is a compact growing plant, a good deep green, and a plant which will stand any amount of hard usage, such as many edging plants have to undergo.

Mossy Saxifrages are another suitable class of plant. Varieties of *Saxifraga decipiens*, white, pink and red, or varieties of *S. muscoides*. These have the advantage of bearing flowers which can be gathered, but both have the disadvantage of being very attractive to birds, as they can pull them apart to search for food lying underneath. The ordinary London Pride, *Saxifraga umbrosa*, makes a charming edging, in sun or shade, but it is a rapid grower, and would have to be re-made every couple of years. The most popular edging at present is a stone edging, over and between which alpine and rock plants can be planted, and so combine a varied effect with utility.

Roses on walls should have their shoots shortened back, so that when growth commences the shoots will be low down and the flowers within reach. This applies to *Reve d'Or*, *Mrs. W. J. Grant*, *Safrano*, *Gloire de Dijon*, *Reine Marie Henriette* and many others, but the Rambler Roses, such as *Dorothy Perkins*, *Dorothy Denison*, *Crimson Rambler*, *Excelsa*, *Blush Rambler*, *Tea Rambler*, &c., should only have the old wood removed, and no pruning of any sort done to the new shoots.



THE CAROB TREE (see page 13).

Among climbers suitable for light pillars and trellis work, in a bright warm position, the following may be mentioned:—*Vitis flexuosa major*, one of the brightest of all the vines, and very free growing.

Vitis Henryana, with small very much divided leaves and marked veins. A good colour the whole season.

Forsythia suspensa, this well-known shrub needs little recommendation, its yellow flowers and free habit being very popular.

Polygonum Baldschuanicum, a rapid grower, with panicles of pale pink flowers in July.

Rubus flagelliformis, a very attractive Chinese climber of recent introduction, with beautiful velvety marbled leaves, which seems to thrive best in semi-shade. The flowers are inconspicuous, but is worth growing for its foliage alone.

Clematis aromatica (also known as *C. cœrulea odorata*) with small flowers, but very sweetly scented.

C. flammula, with large trusses of small white flowers produced late in the season, and, like the previous species, sweetly scented.

A New Book.*

Trees and Shrubs Hardy in the British Isles.

WHEN we think of the enormous number and the varied forms of the new plants that have been introduced into the British Isles during the past seventy or eighty years, more especially since the beginning of the present century, and when we remember the great and rapidly increasing interest taken by so many people in beautifying their grounds and gardens, it does perhaps seem strange that there was no comprehensive and authoritative book available in the English language, giving a plain and simple description

of those trees and shrubs that are suitable to our climate. Mr. Bean has now supplied that great want, and his work, which is named at the head of this short article, and which has just been published, will be cordially welcomed with sincere satisfaction and appreciation by the many who devote their leisure to horticultural pursuits. Mr. Bean's position at the Royal Gardens, Kew, where he superin-

tends and has done so much for the magnificent collection of hardy trees and shrubs which are cultivated there, his great experience in practical gardening, and his accurate and scientific knowledge, give the book an authoritative character, and make it a most valuable work on the interesting subject with which he deals. His book in short, written by a master hand, is indispensable to all growers of trees and shrubs; and even to those who, not having sufficient space, confine their operations to the cultivation of the smaller woody plants, it will prove most worthy of their best attention.

The work is formed of two parts. The first part of about 100 pages, divided into twenty-seven short chapters, deals not only with the gardener's practical work, and contains full and

useful instructions on planting, transplanting, propagation, pruning, and on the care and preservation of trees and shrubs, but it also gives very valuable information of another sort. Plants are sought after for the beauty of their leaf, of their flowers, fruit, bark, autumn colouring, for the season of the year in which they flower, &c.; in some parts of a garden evergreens are wanted, in others climbers; then pendulous trees, or those with an erect habit in the form of a column, are often required; and again, dwarf shrubs are desired; the question of soil and position must also enter into a gardener's calculations to enable him to select the plants that will grow in his garden, and their proper grouping is a matter which he cannot neglect. Lists are given of woody plants which are remarkable for many

of these special qualities alluded to; and all the points just mentioned are clearly and fully treated by Mr. Bean in a way which makes it easy for a lover of Nature to plant so that he may hope to realise the effect he wishes to produce.

The second part of the work is a descriptive list of Genera and Species, arranged in an alphabetical order, and contains nearly 1,300 pages. It is

the main part of the work, and is of special interest. There are some 1,500 species and varieties enumerated and described. The list given is very comprehensive and is practically complete, containing nearly all the trees and shrubs, sufficiently determined up-to-date, that would live in the average climate of our islands; and in it are included the more recent introductions made by Mr. Wilson from Central and Western China, which have been identified. Generally speaking, little is as yet known of these latter plants except by those who have had occasion to get some of them; and even they have scarcely seen their flower or know much of their full value, except in a few instances. Mr. Bean has therefore rendered us a real service by giving us full information of these rare species not to be found elsewhere; and as his book circulates and is read, so will the desire increase to enrich our gardens with the many beautiful plants which have been brought to us from China. The descriptions are easily to be understood even by those who have had no scientific training and whose knowledge of



WHITE BROOM AT KNAPTON, ABREYLEIX.

* "Trees and Shrubs Hardy in the British Isles." By W. J. Bean, Assistant Curator, Royal Botanic Gardens, Kew. Two Volumes. Published by John Murray, Albemarle Street, London, 1914. £2 2s. net.

botany is defective. A few botanical terms have, of course, to be used, but they are carefully explained in a glossary printed at the end of the first part, and no one will find difficulty in understanding them. The descriptions, made from authentic material, are short and are written in clear and simple language; they give all the necessary information connected with each species—*e.g.*, height of plant, habit, flower, fruit, leafage, its habitat, when and by whom introduced into this country, anything specially remarkable or interesting about it, and where a good specimen may be seen growing, when such exists. They give, in effect, the distinctive character, the garden value, and the culture of the numerous plants which the author has included in his extensive list. The hardness of the species is also mentioned, when there may be fear that it will not stand out in all parts of the British Isles. It is obvious that our climate is a variable quantity; plants hardy in Cornwall and in the more favoured districts of Ireland may not grow in the Midlands. Mr. Bean has fully gone into this matter, and in his descriptions he tells us how the plant thrives at Kew, how it is treated, and where it is placed there. Every grower knows his own climate and soil, and can easily ascertain how they compare with the conditions that prevail at Kew. We have thus a standard of hardness given to us, which is a valuable addition to the useful information the book contains, and which will be of great assistance to those who desire to know what they can try in their own gardens with a chance of success.

The two volumes are well illustrated by sixty-four plates representing some fine specimens of various plants growing in different places; also by numerous well executed line engravings freely interspersed through the letterpress. There is moreover a full index, enabling the reader to get what he wants without trouble or difficulty. The print is clear and good; the volumes are handsomely bound, and form a desirable addition to the library.

The preparation of this admirable work has evidently entailed much labour and trouble on the author, who has spared no pains to make it worthy of the object he had in view; and we may indeed congratulate Mr. Bean on its production. All those interested in the subject may also congratulate themselves that so useful and so complete a work in trees and shrubs has now been published and is accessible to them. It is a work of permanent value, which will become more and more appreciated as time goes on, and it will be a welcome *valde necesse* to all those who are anxious to succeed in their horticultural pursuits. It is much to be hoped, when the latest importations of Mr. Wilson, of Mr. Forrest, and of others from the remote regions of China, are identified, and when these plants have been tested and their garden and scientific values ascertained, that Mr. Bean may find leisure and opportunity to continue his important work, by giving us descriptions of these newest trees and shrubs of which at present we can know so little.

SIR JOHN ROSS OF BLADENSBURG, K.C.B.

Hardy White Broom—*Cytisus albus*.

A NATIVE of Spain and Portugal, this is one of the most charming of our hardy flowering shrubs. Though flowering in May, when flowering shrubs

are abundant, it is always welcome and conspicuous in its wealth of pure white blossoms. For grouping or for single specimens the White Broom is delightful, and should be represented wherever flowering shrubs are appreciated. Like most of its family it does not bear well transplanting from the open ground, and should always be purchased or grown on in pots. It is easily raised from seeds, and grows rapidly, making good specimens in three or four years. To ensure well furnished bushes it is desirable to prune back the growths for the first year or two.

Our illustration shows a single specimen in the garden of Mr. Murray Hornibrook, Knapton, Abbeyleix.

B., Dublin.

The Carob Tree.

CERATONIA SILIQUA.

THIS somewhat uncommon plant is hardy only in the milder parts of Britain and Ireland. Where it flourishes it forms rather a striking shrub, bearing pinnate leaves of thick leathery texture. The flowers, which are not often seen, are not showy, consisting of little more than bunches of stamens, and occur on the older wood, as shown in our illustration. In South European countries, where the plant is found wild, it is often also cultivated for its long brown pods, which contain a great deal of sugary matter and are valuable for feeding purposes. Occasionally the pods are seen in shop windows in the British Islands, and are also called Locust Beans.

Ceratonia Siliqua belongs to the great order of leguminous plants.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath, Ballywalter Park, Co. Down.

ROSES.—All work remaining to be done in the Rose garden should be pushed on when weather conditions are favourable; delay is fatal. The earlier in the year the work is completed the better are the results in the summer. A few of the newer varieties should be planted annually to keep the collection up-to-date. Dwarf Roses in beds are better lifted every third year, and the beds thoroughly trenched and manured with well rotted farm-yard manure, and if possible a portion of the old soil taken away, and replaced by some good stiff loam from an old pasture. If the loam has been in stack for a few months so much the better. By lifting the Roses in this way the blooms are larger and better, and the growth more vigorous. To get the best effect the beds in the Rose garden should be planted with one variety only. Teas and Hybrid Teas should be largely planted; varieties such as the following give splendid results with the minimum of labour: General M. Arthur, Papa Gontier, Coralina, Warrior, Pharisæe, Melody, Lady Battersea, Madam Abel Chatenay, Frau Karl Drusciski, Lady Hillingdon, Lady Dunleath, Caroline Testout, Madam Ravary. The climbing sorts are indispensable for covering old stumps, pergolas, &c. Nothing can be more beautiful in the late summer than a pergola covered with Roses, including some of the Wichuriana type, which may also

be planted in the Rose garden or on the lawns as standards. The effect is gorgeous. A few of the most useful sorts are Hiawatha, Lady Gay, Paul Transon, Excelsa, Ards Pillar, Minnehaha, Alberic Barbier, Ards Rover, Dundee Rambler, Paul's Carmine, The Wallflower. On the pergola we may with great advantage include: Clematis montana, C. montana rubra, and also a few of the Jackmanii type: Polygonum Baldshuanicum, Vitis Thunbergii, V. Coignetia, V. C. purpurea, V. cordifolia, V. Henryana.

HARDY PLANT BORDERS will now need attention by finishing up all improvements; and later in the month, when signs of growth can be seen amongst the plants, fork in well-rotted manure; this should not be neglected, as herbaceous borders soon become poverty-stricken owing to the thick mass of roots which nearly all varieties make. *Dolphins*, *Tritomas*, *Rudbeckias*, *Sunflowers*, *Michaelmas Daisies*, *Spiraea Aruncus*, *Campanula persicifolia*—blue and white, *Foxgloves*, &c., when planted in masses at the present time in what one might call a wild garden, give a very fine show, especially when room is left to sow, also in masses, *Shirley Poppies*, *Clarkia*, *Eschscholtzias*, *Lupins* and *Candytuft*.

ANNUALS may now be sown in pans or boxes of light soil, being careful never to allow the soil to become dry. *Antirrhinum*, treated as annuals and sown at the present time, flower well throughout the summer. Intermediate varieties, such as *Fire King* and *Orange King*, make a very fine addition to the summer bedding, while the taller varieties are excellent for massing in borders.

SWEET PEAS should now be sown in three or four-inch pots, four or five seeds to a pot. The soil, consisting of loam and leaf-mould, should be passed through a half-inch sieve, and the pots may be placed in heat, but as soon as the seedlings appear they must be moved to a cooler house for a couple of days, and finally to a cold frame with a good coating of ashes in the bottom. This not only prevents slugs attacking the seedlings, but keeps a uniform moisture in the frame and saves continual watering, which is very bad for the health of the plants. Sweet Peas deserve the best culture whether they are intended for exhibition or otherwise, therefore a trench should be made for them at once; the trench should be at least 2 feet 6 inches deep, and plenty of manure and bone meal added to the soil, leaving it rough and exposed to the weather till planting time.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitzgerald, Carrigoran, Co. Clare.

WE might readily come to the conclusion that the sight of such magnificent crops of fruit of all kinds which were so generally recorded during the past season (with the very regrettable exception of those districts which were so disastrously affected by May frosts, &c.) would act as a pleasurable incentive to fruit growers to persevere in their efforts to attain as near perfection as possible in the management of such varieties of fruits as they cultivate, or even to make more or less extensive additions to their fruit plots; nor would it be surprising to hear of many new

growers joining the rapidly swelling ranks of fruit growers. Rarely do we see such an abundant crop of all kinds of fruit, with weather conditions enabling all to mature in first class order.

APPLES on the whole (and some varieties of **PEARS**) clothed themselves in such glorious hues as to be almost unrecognisable. The very general abandonment of fruit shows throughout the country on account of the dreadful war was comparatively a minute matter; though had the shows been held as usual, visitors would no doubt have witnessed a record display of fruits, equal (and probably superior) to any in the British Isles. D.V., the war will soon come to an end, and may we all have a happier New Year than the past, and a prosperous one to fruit growers; and the fruit trees also (why not?), for I think the past year proved a very unhappy one to many poor fruit trees, where owing to improper management and pruning, numbers of branches were fairly broken with the loads of fruit they carried (or rather failed to carry)—this fact providing a forcible reminder of the necessity for timely and proper pruning of garden and orchard trees, so that they may form a compact head of sturdy branches, capable of carrying plentiful crops of fruit, so that it may enjoy the fullest exposure to sun and light, enabling the fruit to mature in first class condition for either market or private use.

Trees of this type will be ensured by careful pruning in the early stages of their growth, and continued annually until they have attained the desired dimensions, commencing with a suitable number of leading branches, according to age of trees (these branches to be increased in number as trees age). Keep all side growths pruned at 3 or 4 buds from base of shoots, and shorten the leading shoot at about half its length, in the case of strong growing varieties, but cut the leading shoots of weaker growers a few inches shorter, taking care to cut at a bud pointing outwards; cut at a bud on upper side of shoot in pendulous growing varieties.

Varieties of apples which have the reputation of producing fruit principally at the ends of the previous year's growth are scarcely worth the trouble entailed in growing them. A tree almost devoid of fruit spurs, and with a meagre crop of apples hanging at the ends of shoots a couple of feet long (perhaps undersized and scabby), is by no means a desirable or profitable object; though if such varieties must be grown, much improvement may be effected through root-pruning or lifting, to ensure much more compact growth and more fruitful condition. Pears may be pruned in a similar manner. Plums should not be so severely pruned.

Apples, pears and plums trained on walls, wires, &c., whatever form they may be trained in, should be similarly pruned. This principle of pruning applies equally to any form of tree. Overgrown and unsightly fruit spurs on trained trees should be thinned, cutting away more or less each year until the trees become re-furnished with spurs. When cutting away such spurs leave about 2 or 3 inches at base, and from this will be produced shoots which form the basis of new fruiting spurs. Morello cherries produce their fruit over the whole length of previous year's growths, consequently a sufficient number of the young shoots should be tied in, and the surplus shoots cut away completely. The pruner

should always endeavour to carry out this work thoroughly, being careful to cut away all dead or diseased parts, large or small. Branches badly affected by canker should be cut clean out; other parts affected by canker should be pared down to healthy bark (using a very sharp knife or chisel), and afterwards painted with Stockholm tar, to prevent any further lodgment of the canker fungus.

Old trees which have, through mismanagement or neglect, got into a generally undesirable condition may be much improved by freely cutting out weakly and interlaced branches and the application to roots of some stimulant to healthy growth, such as thorough soakings of liquid manure or a mulch of new compost or well decayed rich manure.

Both old and young trees may (and frequently do) break away into rampant, unfruitful growth, or the roots may have grown down into a subsoil, which causes the tree to produce small, badly coloured and diseased fruits; when this occurs, root-pruning in the case of old trees and lifting of young trees must be resorted to as a means of restoring them to proper fruiting condition. Root-pruning may be carried out this month, rather than defer it to another year. In root-pruning work half round the tree this year, taking the other half the following year; make sure that no strong fibreless roots are left uncut; add some good manure as the trench is refilled, and a little basic slag is a very useful addition. Lifting of trees may also be carried out, if condition of soil allows of being well trampled during course of replanting; though as weather and soil conditions are as a rule much more favourable during February, this operation may be better carried out during that month. The pruning of fruit trees, if not already finished, should be got through as quickly as possible, so that advantage may be taken of first favourable days to spray the trees. Calm dry days, such as are absolutely necessary for successful spraying, are rather an exception than the rule, so that it is very advisable to have the trees pruned and everything in readiness to make the most of first favourable days. Caustic compounds may be applied for the destruction of moss and lichens, scale, and woolly aphid; the latter very common pest may be dealt with where the number or size of trees hardly call for the purchase of spraying machines and compounds by painting the affected parts with methylated spirits; a small quantity of spirits could be carried in some receptacle, such as a small paint tin, and applied to the affected parts with a rather stiff and small paint brush. For apple and pear scab and brown rot in plums and cherries, thoroughly spray the trees with sulphate of copper—1 lb. of sulphate of copper dissolved in 10 gallons of water. Obtain the powdered sulphate, and it dissolves more readily if tied in a piece of coarse canvas and suspended in the water. Where attacks of scab have been severe, this winter spraying is of considerable value in destroying the spores of the fungus which lay dormant on the trees during winter.

All trees which have reached fruiting age, and specially old ones carrying heavy crops of fruit, should receive annually a good dressing of farm-yard manure, quantity to be regulated by size of trees; fully developed trees should be manured at least 6 feet all round the stem of the tree.

The application of basic slag to fruit trees is

very beneficial, supplying as it does an amount of phosphate absolutely necessary to the maintenance of trees in profitable condition; apply at rate of from 4 to 6 ozs. per square yard before spreading the dung; spread the slag during January whether the ground may be dug or not during this month.

BUSH FRUIT PLOTS.—If the different varieties are already pruned, proceed with manuring and digging on all favourable occasions. Black, red, and white currants may be similarly treated as regards manuring, and must receive annually a liberal allowance of good farm-yard manure to ensure heavy crops of fine fruit, and maintain the bushes in vigorous healthy condition for a number of years. Have sufficient quantities of manure carted or wheeled to convenient spaces, then remove the surface soil under bushes until roots are met with, using a rake or fork for this purpose, for a distance of 1 foot all round stem or centre of bush (or more in the case of larger and robust bushes). Give the cleared ground a good dressing of manure, and as the digging of ground proceeds cover this manure with clean fresh earth to a depth of about 3 inches; do not use the removed surface for the purpose, but bury it deeply in course of digging. Take advantage of spaces where deep digging will not destroy roots to bury weeds, leaves, &c. My practice when having currant squares dug is to have the men provided with a bucket of basic slag, and as each bush is finished, a couple of handfuls of slag is spread over ground under the bush; and I find this treatment gives excellent results. Black currant bushes should be closely examined for the black currant mite. If any slight attack is found, the shoots bearing affected buds must be cut out and burnt; badly attacked bushes should be dug up and burned completely.

GOOSEBERRIES will yield satisfactory crops of fruit with much less manure than currants; it is good practice to give them a dressing of manure, applied as for currants, one year, and slag, dissolved bones, or any approved artificial manure the following year. Whatever manure may be applied, do not fail to remove the surface soil from under the bushes to about the spread of the branches, and bury it to the depth of the spade or fork, away from roots of trees. This removal of surface annually will prevent, and in great measure stop, attacks of gooseberry caterpillars. Keep a good look out for our feathered "friends," bullfinches, tom-tits, and sparrows; where these abound they seldom spare gooseberry and red and white currant buds; if their attacks go on undetected all chance of a crop rapidly disappears. I find here that after the bushes are pruned and ground dug over, we are free from attacks of these birds. Any of these birds will sit quite unconcerned in a thick unpruned bush, feeding away on the buds, but not so in a pruned bush, where the shelter that emboldens them is absent. It is good and economical practice to put in a few rows of cuttings of the bush fruits when the bushes are being pruned. For this purpose select clean straight shoots, about 18 inches long. Black currants may be inserted as they are cut from the bushes; gooseberries, red and white currants must have all the buds removed, except 5 or 6 at point of shoot. All cuttings should be inserted about 8 inches deep, and made thoroughly firm in the ground.

STRAWBERRY BEDS OR PLANTATIONS should be cleared of weeds, all late-formed runners and dead leaves; do not damage or remove any healthy live foliage on plants. Thus cleaned the ground is in order for the annual dressing of manure, and if the best results are to be obtained, this dressing must be ample in quantity and feeding properties. Choose a calm day, after the cleaning of beds, when the surface is dry (or fairly dry), and apply a dressing of basic slag, about 1 ozs. to the square yard, or from 8 to 10 cwt. to the acre. On comparatively small areas it is a good plan to mix the requisite amount of slag with a quantity of fairly dry (or quite dry) earth; by this means a more uniform distribution may be secured, and can be spread on a windy day; spread the slag quite close to plants, but not over the foliage. After the lapse of a week or ten days, give the ground a liberal mulching of rich manure (or the very best obtainable). The best manure for this mulching is manure which has been made in houses under highly fed cattle or milch cows. The manure may lay in heaps a few days to season, but not allowed to overheat, or be washed too much with rains; such exposure would very materially reduce the feeding properties of the manure. Cover the whole surface of ground 2 or 3 inches deep, and right up to crown of plants underneath the foliage.

RASPBERRY PLANTATIONS.—Cut away all old canes and such canes as are not required to tie in for carrying this year's crop of fruit. Where the canes are tied to wires, tie them about 6 inches apart; if grown in clumps or stools, tie 5 or 6 canes to the stakes; afterwards clean the ground thoroughly, and then apply a dressing of basic slag as recommended for strawberries; also farm-yard manure in similar proportions, but this need only be applied about 18 inches on each side of canes. It is advisable to leave shortening of canes until danger of injury through severe frosts is past wherever the canes have overgrown desired height.

The Vegetable Garden.

By ANDREW PEARSON, Gardener to A. S. Crawford, Esq., Lota Lodge, Glanmire, Cork.

THE year 1915 will be to many garden owners one of economy—to some "marking time" and to others retrenchment. In the vegetable garden, however, it ought to be one of redoubled energy, and, if at all possible, an additional area should be laid out for vegetable production. Well-grown vegetables are at all times acceptable on the table, and in such a year as this may prove to be, they will be doubly welcome.

The best structures are reared on good foundations, and the vegetable world is no exception. See then that all vacant plots are properly prepared by thoroughly digging or trenching the soil, incorporating with it a liberal dressing of farmyard manure on heavy land. This ought to have been accomplished in autumn. There is still, however, time for the atmosphere's anchoring effects to take place before seed beds are made.

If rotation in cropping is not followed, it ought to be, and the present is an excellent time to draw

up a plan of the squares, showing the crops, permanent or temporary, thereon; by such a plan one can avoid the mistakes of overlapping, repeating crops, &c., and incidentally insure a maximum crop from a minimum outlay of expense and labour. A detailed plan cannot be given within the limits of these monthly notes.

The difficulty of obtaining pure seeds may be accentuated this year on account of the curtailed supplies. It is hardly necessary to say that immoderately cheap seeds are often very expensive, being deficient in purity and germination; it therefore behoves all who wish to grow the only produce worth growing to buy first-class seeds only. These given first-class cultivation will not be disappointing.

Much depends on the weather this month, and to work soil or sow seeds during wet or frosty weather is only courting disaster.

Peas and broad beans of the early sorts may be sown on the first favourable opportunity on a sheltered south border, dressing the seeds with either horticol, red lead, paraffin oil or similar dressing to ward off rats, mice, or bird attacks.

Potatoes may be planted on a bed of leaves and stable manure. Sharpe's Express, Midlothian Early, May Queen, and British Premier are useful early sorts for such work. On a similar hotbed French horn carrots, Early Milan turnip, Lettuces of the dwarf cabbage varieties, Radishes, silver skin onions for saladings, cabbage, cauliflower, &c., may be sown, while towards the end of the month all of these small seeds, excepting turnips, may be sown in small pinches on the most sheltered possible border.

Continue the forcing of French beans. The climbing variety, Tender and True, is a splendid forcing sort; if perhaps a few days later than the dwarf varieties. It continues longer in bearing—an important point in the early spring supplies.

Early tomatoes should be afforded water carefully, keeping the plants close to the roof glass.

Bring forward fresh batches of seakale and rhubarb, either by gentle forcing indoors or in open quarters by the aid of fermenting material. Seakale is of superior quality when forced gently, and light must be rigidly excluded by using seakale pots over the crowns. Save all thongs of seakale for future planting, cutting top ends straight, and bottom with a sloping cut, tying in bundles and placing in ashes until required for planting fresh beds.

Where mushrooms are grown, fresh beds may now be made, using only hard fed horse manure for the purpose.

If Asparagus beds are not yet mulched, give a dressing of farmyard manure, or if close by the sea, seaweed is to be preferred. Salt should not be applied at present.

All autumn sown or planted stuffs should be kept clean and encouraged to grow by hoeing on favourable days. Keep dried bracken or straw convenient for covering celery or tender crops on frosty nights. Wheel manure on to vacant plots during frosty weather, and prepare pea sticks for summer use.

Look over the root stores in wet weather, removing decaying roots; turn onions to prevent growing, disbud all potatoes required for late use, and any required for planting should be placed in sprouting boxes, if that has not already been done.

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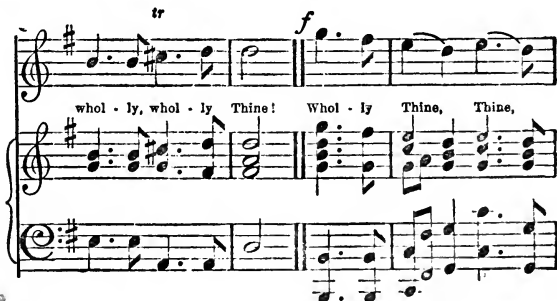
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Globe Flowers

TROLLIUS.

FOR many years one or two species of Trollius have been known to and appreciated by lovers of hardy plants. It is only within recent years, however, that the Globe Flowers have really come into their own, so to speak. This is due to the ever-increasing love of outdoor gardening and the consequent better understanding of the needs of hardy plants. Moisture, so essential in varying degrees to all plants, is of the utmost importance to Trolliuses; in fact they revel in a moist wet soil at all times. This assertion is borne out by the illustration accompanying these notes, which shows masses of Globe Flowers flowering in the bog garden in the Botanic Gardens at Glasnevin. In this position they are saturated for a long period in autumn and winter, and always moist and cool in spring and summer, withal fully exposed to sunshine.

Much of the beauty of modern varieties is due to seedling-raising and subsequent selection. Whether some of the fine giant varieties are seedlings of one species or hybrids is difficult to say. The similarity in shape of flower and

leaf of the older species makes it difficult to discern a hybrid, but in any case for garden purposes most of the named varieties are superior to the older species. In these new kinds greater vigour, larger flowers and more intense colour have been obtained without any

sacrifice of original charm.

One of the most prolific raisers of new and improved varieties has been the veteran Mr. Thomas Smith, of Newry, from whose nurseries so many other acquisitions have emanated. Many of the fine sorts mentioned below were raised by him at Daisy Hill.

In common with other members of the Ranunculaceae family the

sepal is the ornamental part of the Globe flower: the petals, although often highly coloured, are very small and narrow, standing as a rule erect within the sepals. As most plant lovers sooner or later hark back to the species, even if it be only for comparison, it may be useful to mention briefly the better known ones as found in gardens.



GLOBE FLOWERS IN THE BOG GARDEN AT GLASNEVIN.

Trollius alaiensis, although not often seen, is quite worth growing. The flowers are pale yellow, with numerous broad sepals and finely-divided leaves.

T. americanus, sometimes called *T. laxus*, has not much garden value, the flowers being small and of a greenish white colour, and composed of a few spreading sepals. From N. America, and of botanical interest only.

Trollius asiaticus is a bold showy species resembling the native *T. europæus*, but perhaps less free flowering. The flowers are of a rather deep shade of yellow, the stems reaching about 18 inches at flowering time.

T. europæus is the best known species in gardens, and one of our showiest native plants, being found wild in the British Islands in certain localities. It makes a fine border or bog plant, and responds nobly to liberal treatment. Flowers pale yellow.

T. europæus albidus is a yellowish white variety, of very little decorative value.

T. chinensis is a handsome and interesting species from China. It grows two feet or more high, and belongs to the flat-flowered section of the genus, the flowers not being globular as in the commoner sorts. The flat sepals are of a fine golden yellow colour, the long narrow petals being conspicuous in the centre.

T. patulus is a dwarfer species from Siberia, and is admirably suited for the smaller type of bog garden. The golden yellow flowers are pretty, rendering this a useful plant for situations not suitable for a more robust species.

T. Ledebourii is similar to *T. chinensis*, and has the same erect narrow petals arising in the centre of the flower. It is a tall grower, and looks handsome in a border or by the water-side.

Trollius pumilus and its variety *T. p. yunnanensis* are dwarf plants of the flat-flowered section. The latter is a recent introduction, and likely to become very popular. The large flat flowers, of a golden yellow colour are most attractive, while the dwarf habit of the plant is in contrast to the taller species, rendering it suitable for damp pockets in the lower reaches of the rock-work or the small bog.

The forms called by some writers *T. Fortunei* and *T. napellifolius* are only varieties of *T. asiaticus* and *T. europæus* respectively. Leaving the species and turning to what may be called garden varieties, we find some of the handsomest and most brilliant of spring and early summer flowers. For the most part they are robust

plants, growing from two to three feet high and varying in size of flower and shade of colour. The difference in colour is obvious enough in the growing plants, but not exactly easy to describe on paper.

T. Golden Globe has large flowers of a golden yellow colour. *T. Newry Giant* is very handsome with rich golden flowers. *Orange Globe* is one of the finest. *Prince of Orange* has very large bold orange-coloured flowers, while *T. Smith* is said to be the largest of all. *Yellow Globe* is pale yellow, with finely formed flowers, and *Citron Queen* is a distinct addition. *Orangeman* is preferred by some to *Orange Globe*, and *Freedom*, pure yellow, with *Goldsmith*, deep yellow, are both handsome and desirable. These do not exhaust the number of garden forms, but are a fair indication of the value of the *Globe Flowers* to hardy plant lovers.

J. W. B.

Colletia cruciata.

This shrub, although not handsome, is very curious and distinct. It is practically leafless, being built up of spines, which are large, and each pair is produced crosswise to the other. The small inconspicuous flowers are borne in clusters from the base of the spines; they are of a greenish white colour, and produced on very short pedicels.

Another *Colletia*, which is known as *C. spinosa*, although differing in a great degree from the former, was for a long time regarded as a distinct species, but in many cases this kind has been produced from the other, and can only be described as an excellent example of dimorphism.

C. cruciata is found in Uruguay, and cannot be described as perfectly hardy, except, perhaps, in the more southern parts of England, and should, therefore, be afforded protection during the winter. The plant is evergreen in character, and can be propagated by cuttings.

H. C. ELSDON.

Important Notice.

ALL growers of gooseberries who have not yet filled up the form relating to Gooseberry Mildew sent out from Wisley by the Royal Horticultural Society are requested to do so without delay. Further copies of the form may be obtained from the Director, R. H. S. Gardens, Wisley, Ripley, Surrey.

The King of the Alps.

(*Eritrichium nanum*).

By HENRY CORREVOY, Geneva.

THIS is one of the best, but one of the most difficult to grow and to acclimatise, of the plants of the whole Alpine flora. Growing either on limestone or on granitic soil on the highest rocks of the Alpine chain, the King of the Alps is one of those things everyone would like to possess in their garden or rockery, but few, very few, can succeed with. I saw it lately in the maritime Alps above Nice, in such an abundance and luxuriance that I, at first sight, hardly could believe it was not a dwarf King of Forget-me-Nots (*Myosotis alpestris*). There it was at an altitude of over 8,000 feet, and only on primitive rocks; but in the Champorcher Valley (Vallée d'Aosta) it grows on the chalk, and not higher than 6,000 feet, and is beautiful in colour and health.

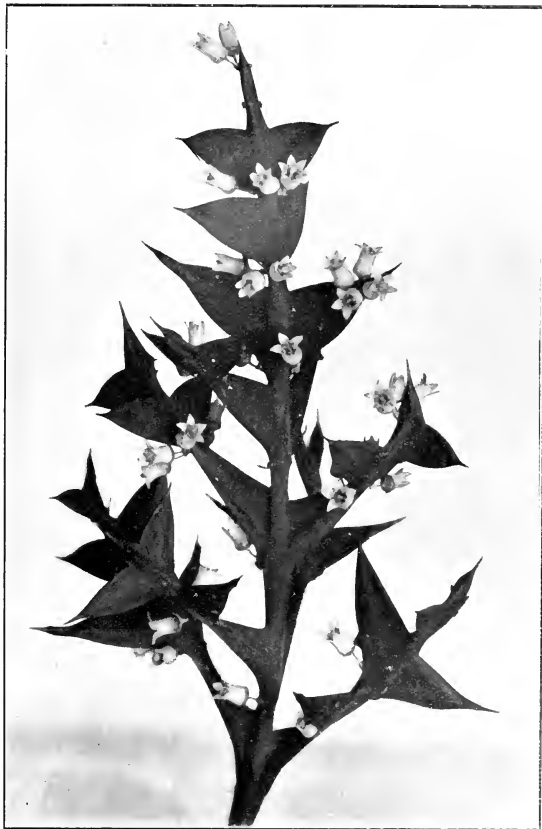
The plant grows all over the Alpine chain, always on dry cliffs, facing full sun, and in the purest light of the high Alps. In the Western Caucasus it ascends to 9,000 feet, and is very abundant. A friend of mine brought me once, from the highest summits of the Cordillera in North America, some dried specimens of *Eritrichium nanum*, saying the plant was very abundant there. In fact it is a very near species of *Eritrichium* called *argenteum*, and given by Clements (see "Clements' Rock Mountain Flowers," p. 119 and plate 21, fig. 8) quite

wrongly as an annual, the plants I had in my hands being very old ones.

The acclimatisation of *Eritrichium* is difficult, and the best means of succeeding with it is to sow and raise it by seeds, or to make cuttings and treat the cuttings like those of *Myosotis*.

We, of course, have old plants which flower well in spring, and are quite acclimatised in pots. But they require special treatment, and cannot be left out through the wet winter. These plants, raised in pots, and which we have already grown for two to three years, we have to keep under a cold frame through the winter, and keep them very dry. I have now an exceedingly good and healthy colony in a turf frame, which are watered from below. They flower in such a condition as well as on the Alps, and give good seeds. But that treatment requires a hard insulation, and this you cannot have in your island climate. I think that the best means of growing and succeeding with *Eritrichium* in the British climate is to grow it in the wall, facing south, and keeping it dry, and

to grow it in a poor soil. Although difficult to keep, I know in England many rock gardens where *Eritrichium nanum* does splendidly, and even some where it sows itself round the mother plant. I think, however, that it cannot be considered as a true perennial, and although I saw some patches in nature which might be more than twenty years old, the plant must be, when cultivated in Britain, considered as a biennial.



COLLETIA CRUCIATA.

Some Gardens and Nurseries in England.

By J. W. BESANT.

(Cont. cont.)

MIDDLE GREEN NURSERY, LANGLEY.

THIS well known nursery, at the time of my visit in the hands of Messrs. James Veitch & Sons, is situated not far from Slough, and is now carried on by Mr. J. C. Allgrove, for many years Messrs. Veitch's capable and courteous manager. Hardy fruits, herbaceous and alpine plants have long been a feature at Langley, and there many of Wilson's and Purdon's new Chinese plants first saw the light of day in western lands. I was in quest of new and rare plants, and with only a matter of hours at disposal, had no time to admire the fine breadths of common, but none the less beautiful, things. A new unnamed *Senecio* of ample proportions seemed a likely subject for the bog or waterside, and for the same purpose *Trollius Ledebourii* attracted attention. An unnamed *Codonopsis* in the way of *C. sylvestris* will be useful when more plentiful, while *Rheum Alexandræ*, a striking plant, with cream-coloured bracts, was soon noted. This plant is beautifully illustrated in Mr. Wilson's book on his rambles in China.

A very good form of the shrubby *Lavatera Olbia* was noted as desirable for the flower border, while *Thalictrium diptero-carpum*, a specialty at Langley, must have been in thousands. It was there in all sizes, from strong specimens, 7 ft. to 8 ft. high in 6-in. h pots, down to small plants in 3-in. pots, and even tiny seedling. That it is not only a pot plant, however, was demonstrated by viewing the original bed where the first raised seedlings were planted. There its vigour was undiminished, though the plants had been there for years. Mr. Allgrove threw out a hint as to the successful cultivation of *T. diptero-carpum* in stating that it is a surface rooter, and should have an annual topdressing to keep the roots covered. This is one of the most graceful plants of recent introduction and should be in every collection. *Eurotia speciosa rosea* is not uncommon, but very pretty, rejoicing in a light soil, while *Aster Purdonii* will be suitable for border or rockery, resembling somewhat a large *A. alpinus*.

Gentiana Veitchiorum, sometimes called *G. ornata*, is a beautiful *Gentian* rejoicing in a damp, half-shady situation in a mixture of peat and loam. The leaves are narrow, and the blue and white flowers are nearly as large as those of *G. asclepiadea*, while the plant when happy spreads freely by means of stolons or running shoots.

Primula sibirica chinensis is a pretty pale blue species, suitable for a moist pocket and for a sunny, well drained spot in border or rockery; *Scutellaria baikalensis celestina* is a gem. *Androsace tibetica* is a new species of a very popular genus, and likewise *Primula cognata* will be sought after when better known. *Primula Maximowiczii*, one of Purdon's introductions, has already attracted attention, while a number of other new species of *Primula* gave promise of other delights in store.

Veratrum Wilsoni, a handsome plant with a fine spike of pure white flowers, will be excellent for the herbaceous border, and an unnamed white-flowered *Lysimachia* from Purdon looked promising.

Eremurus Bunzei magnificus is an improvement on the type plant, having long handsome spikes of deep yellow flowers.

Quite a number of other good things were noted, all of much beauty, and combining to give evidence of the richness of the Langley nurseries in good plants. Space forbids going into details of the hardy fruits, enormous breadths of which are magnificently cultivated, forming perhaps to most gardeners the most important feature. Cleaner grown or better trained specimens of apples, pear, plums, gooseberries, currants, &c., could not be found anywhere, and certainly never came under the writer's notice.

Three gooseberries specially noted and highly recommended by Mr. Allgrove were Langley Gage, a white fruit of rich flavour; Langley Beauty, an early pale yellow, hairy fruit, and Golden Gem, of a beautiful golden-yellow form, firm and late.

An apple which is beginning to attract attention is the Rev. W. Wilks, raised at Langley. The fruits are shapely and freely produced on quite young trees. This variety should be in every collection, and will yet be found popular in the markets.

Several other notable gardens will be dealt with in a future issue.

Notice.

CONSIDERABLE confusion appears to exist in gardens over the names of cultivated *Sedums*, one name being attached to quite different plants, while identical plants are often grown under different names. In order to be able, with the help of experts in the genus, to straighten out this muddle, we are endeavouring to get together at Wisley a complete collection of *Sedums*, and we should be grateful for plants or cuttings to grow on for comparison from as many sources as possible. Specimens should bear the name under which they are known, and should be sent by the end of February, addressed to the Director, R. H. S. Gardens, Wisley, Ripley, Surrey.

Ccelogyne cristata.

By T. W. BRISCOE.

THIS may truly be termed a garden Orchid, because it is often found in a thriving condition where no attempt is made to cultivate a collection, or expert advice is at hand. These facts should be borne in mind by the amateur and gardener who have not yet added this chaste and beautiful plant to their glasshouses. The plant quoted above produces drooping racemes of large, pure white flowers, excepting the lip, which is stained and crested with orange-yellow. In the variety *alba* or *hololeuca* the orange-yellow is conspicuous by its absence, and with the form known as *lemoniana* the lip is crested with citron-yellow. All are free-flowering, and the spikes of beautiful flowers can be utilised in various ways.

At the present time (January) growth has already begun, and in a few weeks

the scapes will also appear. Hence it is advisable at this stage not to allow any water to lodge in the shoot, or both may decay.

While the plants are in flower the atmosphere can be kept tolerably dry, then they are not spoilt through the spot disease. Soon after the spikes are removed new roots will be seen at the base of the growth, and it is at this stage that any re-potting or top-dressing can be done. The former need only be carried out at rare intervals, but the latter may be practised annually if such is considered necessary. It consists of removing any decayed soil and replacing it with fresh material, without unduly disturbing the base of the plant. With this attention specimens will thrive for years, and

produce a good crop of bloom. The time will come, however, when re-potting will be a necessity to prevent the deterioration of the bulbs, and a thorough overhauling is required. All useless back pseudo-bulbs are cut away, leaving three or four behind each lead or growing point. These pieces are then carefully arranged, so that a nice compact example is the result, seeing that a few of the leads point towards the centre. Pans 8 or 10 inches in diameter are convenient sizes, and they ought to be filled one-third of their depth with drainage. The soil is made up of good peat, *Osmunda* fibre, and sphagnum moss in equal parts, the whole being cut up into

about inch lengths, and all the fine particles sifted out. For a few weeks careful watering must be the rule, but once the roots take possession of the compost the water supply may be increased with advantage. When the bulbs are fully developed, water the plants less frequently—in fact only sufficient need be given to maintain



HERBACEOUS BORDER IN MAY.

the bulbs in a plump and rigid condition. An average temperature of 55° to 60° Fahr. should be adhered to as far as possible, but I have obtained equally satisfactory results in both a higher and lower temperature. The ordinary stove would be an ideal place for the growing season, and ainery while at rest. The chief insect pests are thrip and scale; the first-named can be held in check by fumigation, but the scale must be removed by an insecticide.



“SPEAK of flowers as the laughter of the earth and uttering itself in colour and form. . . . Flowers are the love songs—written out instead of being sung or spoken—of God’s green world.”
—*Constance Kernahan* in “*Dreams Dead Earnest and Half-Jest.*”

Saxifrages New and Old.

By MURRAY HORNIBROOK, Knapton, Abbeyleix,
Queen's County.

PART II. THE KALSCHEIAS.

AMONG the Kalscheias may be found some of the choicest and most interesting Saxifrages, the majority of them make tight moss-like cushions of apparent rosettes. I say apparent, because if the cushion be examined it will be found that the rosettes are not separate, but own a common tap-root. Unlike the Azoons, which flower in early summer, the Kalscheias flower in early spring. They are not difficult, but require a very stony, well-drained soil, not fully shaded, but at the same time not too arid a situation. Here, they do best where the shade of a large stone keeps the sun from them for some hours daily, and, with few exceptions, all rejoice in abundance of limestone on the surface of and mixed with the soil. They are best propagated by careful division, or cuttings taken immediately after flowering has ceased.

S. arctioides makes a nice cushion when it is happy, and has flowers of a greenish yellow; it is not everywhere a good doer; it is a doubtful lime-lover, and requires an especially well-drained situation; it will do with only two or three hours of summer day sunshine, and much dislikes a heavy, sodden winter soil. Var. *primulina* is a beautiful plant with tighter silvery foliage and pure primrose flowers. Mr. Farrer suggests, and I agree with him, that it is far nearer to *S. diapienoides* than *S. arctioides*; it is rare in cultivation. *S. apiculata* is both one of the easiest and most effective of its section, having stout, green, spiny cushions, which, given full exposure, will smother themselves with pale sulphur flowers borne in bushy heads. There is a pale form, var. *pallida*, with stronger foliage and smaller flowers; two white forms, var. *alba* (one much better than the other) and a var. *macrantha*, which I as yet have not flowered. *S. apiculata* is easily increased by tearing it up and planting the pieces.

S. burseriana and its varieties almost need an article to themselves. Experts and collectors wage wordy warfare over them; they seek to determine the type and also to decide whether *S. burseriana* is a sun-lover or a shade-lover. As regards the first point, I will not be tempted into enlarging upon it further than to say that, as we get our plants from at least two distinct localities, it is somewhat difficult to determine the type, and in absence of any authoritative decision I should personally be inclined to recognise as such the old plant with green spiny foliage sent out as *S. burseriana* and *S. burseriana speciosa*. As regards situation, however, I have more to say. Mr. Clarence Elliott urges one to grow *S. burseriana* in full sun. Mr. Farrer, on the other hand, states that he finds it in its native habitat growing in limestone rubble at the foot of sunless cliffs; it smacks somewhat of the custom of Irish fairs to "split the difference," but, be that as it may, that is what I propose for the reader to do. My experience of the plant here is that it grows and prospers in full shade, but does not flower so freely as it does in sun; in full sun, however, it

invariably burns up and dies. I expect our wet winters and consequent absence of rest prevent the plants from flowering so freely when grown in full shade, and, on the other hand, find it difficult to believe that good sized plants of *S. burseriana* would ever survive a British summer in full sun without careful and constant watering, which may be possible when plants are grown in frames near a constant water supply, but is another matter when they are grown out on rockwork. *S. burseriana*, var. *speciosa* and var. *minor*, have all rather dull green, small spiny foliage and pure white flowers of perfect form, those of var. *minor* having very dwarf flower stems of deep crimson. These varieties, I believe, come from a different district to the others, which have much stronger spines of blue-silver, and are possibly freer in flower. Var. *major* is the best known; var. *tridentata*, still larger flowers, often waved at the margin. Mr. Farrer's varieties "Gloria" and "Magna" are, I think, selected forms of this, var. *crenata* is most distinct, with delicately crimped petals. I have also a form sent to me as var. *macrantha*, which is the last to flower, and has curious loosely tufted foliage. A form once widely known and now rarely seen is var. *multiflora*, with dwarfer spiny foliage and white flowers, two or three on a stem—this must be a hybrid and is not far from *S. Salomoni*. Another hybrid form is var. *rosa*, with pink flowers. Var. *elegans* is another new form with compact foliage and pink flowers opening to white.

S. burseiulata is a hybrid between *S. burseriana* and *S. apiculata*; it resembles a very strong growing *S. burseriana*, and bears white flowers. *S. Boryi* is a rarity from Greece, said to be synonymous with *S. marginata*, but I imagine this was before both plants were obtainable true, otherwise it is difficult to understand how they were confused. *S. Boryi* has the most distinct foliage, forming a cushion of pale green rosettes resembling tiny green roses; its flowers are pure white and borne rather grudgingly.

S. Bilekii is a hybrid with very tight cushions and pale yellow flowers, not very far from the so-called *S. arctioides* var. *primulina*. *S. Borisii* one must be careful about. My impression is that its raiser increased his stock by raising seedlings from the original plant, as I have received several forms of varying merit. My first plant is by far the best, and to distinguish it I now term it var. *compacta*; it makes tight cushions, and bears large sulphur coloured flowers on erect crimson stems; these flowers have the perfectly rounded overlapping petals one associates with *S. burseriana*. Other forms vary in the height and texture of their foliage; the flower stems are sometimes crimson and sometimes green, and the petals do not overlap, but incline to star-shape, and in some cases approach very near to *S. Kyrilli*.

S. Boydii is one of three hybrids of great merit raised by Mr. James Boyd (of, I think, *S. burseriana* minor and *S. arctioides*), the others being *S. Faldonside* and *S. Cherry Trees*; all of them have close, compact cushions, fairly intermediate between the parents, and all have yellow flowers, those of *S. Boydii* being deep yellow, those of *S. Faldonside* paler and larger, and those of *S. Cherry Trees* nearer to *S. Boydii* in size, but of a very distinct pale lemon, and none of them are easy to manage. *S. Faldonside*

is the best doer and *S. Cherry Trees* the most difficult, in fact the latter has almost disappeared from cultivation. I have but one tiny plant, which has barely increased in three years, but there is a very fine plant in Glasnevin which is worth going any distance to see when in flower, in March or early April, if only to warn one for ever against the so-called *S. Cherry Trees* of commerce. The true plant is unfortunately at present unobtainable, and the many imposters which masquerade in catalogues are plants to be avoided. I have received no less than five fairly distinct imposters, all cousins of *S. Elizabethæ*, and children therefore of *S. burseriana* and *S. sancta*, not of *S. aretioides*, all making strong dull green cushions—as unlike the true plant as possible—and rarely flowering. The

three true plants do best with me in very well drained stony soil, not parched in summer nor waterlogged in winter. There is also a plant called *S. Boydi alba*, a strong growing, straggly thing that does well anywhere. *S. cæsia* is one of the smallest of the section—a tight silver lichen that does best in half shade in limestone moraine, bearing perfect white flowers. Even smaller is *S. squarrosa*, which dislikes being parched or water-soaked; then we have the natural hybrid between the two, *S. tyrolensis*, an easier plant than either of its parents, with similar white flowers on fairy-like stems. With me it does well sheltered by a rock from the mid-day sun.

I am not sure about *S. dalmatica*, I think it is a species, it is anyhow a very desirable plant, bearing its white flowers very freely. *S. Desoulavii*, however, is a species of recent introduction, with distinct bright green cushions of tiny moss-like spines and bright yellow flowers in early spring. I am told that this plant is rightly *S. lævis* (there are two other *Saxifrages* of this name), but of this I am not certain, anyhow it appears to be identical with the plant sent out by Kew as *S. caucasia*. *S. diapiensoides* makes cushions so hard and tight as to feel almost like a stone, and bears flowers of the purest white; it likes lime here and half shade. *S. Elizabethæ* is a seedling from *S. burseriana* and *S. sancta*, makes large green cushions, and its best forms bear quantities of pale yellow

flowers on red stems. Paradoxically its best forms are sent out as *S. Elizabethæ* and priced about 6d. a plant, and its bad forms—from which one coaxes a few flowers with difficulty—are sent out as *S. Cherry Trees* and priced from 1s. 6d. to 2s. 6d.! Close to *S. Elizabethæ*, but later to flower, is *S. L. G. Godsell* or *sancta speciosa*, and close again is *S. Mrs. Lenz*. I have also a curious self-sown seedling of *S. Elizabethæ* with very strong foliage emphasising the *burseriana* parentage. All these *S. Elizabethæ* cousins should be given as full an exposure to the sun as they will stand if they are to flower freely. *S. Eudoxiana* is another hybrid with compact foliage and small orange flowers. *S. Ferdinandi-Coburgi* is a species with dense silvery rosettes and bright yellow flowers freely produced in early spring. This plant will stand

any amount of sun, and re-joices in lime.

S. Forsteri and *S. patens* are very rare natural hybrids of *S. cæsia*, the former with *S. mutata* and the latter with *S. aizoides*—neither are of much interest, and prefer moraine in somewhat shady situations. *S. Haagi* is a hybrid of *S. Ferdinandi-Coburgi*, with strong cushions and a profusion of yellow flowers; it is one of the easiest and best of the section. *S. Jacqæna* I am not sure about.

I have it on good authority, but it has not flowered; its foliage seems similar to that of *S. marginata*, but much stronger. *S. juniperifolia* or *juniperina* I cordially dislike, it makes untidy masses of bright green, spiny foliage, and flops about and rarely flowers; it seems to be very near indeed to the new *S. macedonica* (which dislikes lime here), and is not far from *S. pseudo-sancta* and *S. sancta*. None of these *sancta* folk—except the type—flower freely, and all bear dowdy yellow stars when they flower at all. *S. sancta* flowers freely here in full sun, but only once did I coax a flower from *S. juniperina*—a friend who flowers it tells me that in its native habitat it gets the soil washed away from the top portion of its roots, and that if one plants it first with a few large stones as a collar, and when the *Saxifrage* has taken hold later remove these stones, it will flower, but to do this would but make *S. juniperina* flop still more, and personally I have no patience with a plant so sparing of its dull flowers.



SAXIFRAGA TYROLENSIS AT KNAPTON.

S. Kyrilli is a half-brother to *S. Borisii*, but taller and looser, with star-shaped yellow flowers; it is an equally good doer. *S. marginata* is a very fine plant indeed, with large green rosettes, distinctly margined with silver, and pure white flowers, several to each stem, the petals round, thick and overlapping; it is, to my mind, the most desirable of the many somewhat obscure forms that are round, *S. rocheliana* and *S. scardica*, the next best being *S. rocheliana*, var. *coriophylla*, with compact cushions and smaller white flowers on red stems. *S. rocheliana* is similar to *S. marginata*, but with looser star-shaped flowers. Numerous small forms not far from this, with thin petalled white flowers, are sent out as *S. scardica*, of which the best is one termed var. *obtus.* *S. scardica vera*, which I believe to be the true plant of Grisebachi, is a very much finer thing, with large (for the section) rosettes, like miniature water lilies, lime-margined and large white flowers of good texture; it divides freely, but I have not yet fathomed its needs. So far my larger plants die unaccountably; I fancy it requires frequent topdressing, fine stuff worked in between its tall rosettes, to enable them to root for themselves. *S. Obristii* is a hybrid of *S. marginata*, with taller and looser silvery blue foliage and white flowers. *S. Petraschii* is, I think, the best white—excluding the *burserianae*—in the section; its foliage is very compact and silvery, and it bears abundance of large pure white flowers on crimson stems. *S. Sundermanni* is so near as to be almost identical, the petals of its flowers, however, are crimped and waved. *S. pungens* is a much-valued hybrid that I dislike, it is usually catalogued as possessing "precious cushions;" that may be so, but it possesses precious little besides, as the cushions are of a dull green, and its small yellow flowers dowdy in the extreme, and show their *S. juniperina* blood. *S. Pseud-Kotschyi* is a charming imposter, it has been sent out for years as the true *S. Kotschyi* (which is a relative of *S. Grisebachi*); the false *Kotschy* is, however, well worth growing for its quantities of pale yellow flowers borne so early in the season and its strong constitution.

S. Pauline is possibly the best yellow of the section; I hesitate between it and the compacta form of *S. Borisii* already referred to. Possibly *S. Faldonside* of its best surpasses either, but *S. Faldonside* is seldom seen at its best. On the other hand, *S. Pauline*, with its bright silvery spines and brilliant yellow flowers on scarlet stems, is very little behind *S. Faldonside* in beauty, and has the advantage of being as hardy as a cabbage, and, given very stony soil and full exposure, will make tight cushions like silvery hay-cocks, and will flower profusely. *S. rocheliana* I have already mentioned, but I forgot its colour forms: var. *lutea* is a yellow counterpart of the type, and var. *purpurea* has purple flower stems and pink buds opening white. *S. Salomoni* is a hybrid of *S. burseriana* and *S. rocheliana* with tight silvery spines, a good doer, but poor flowerer; white flowers on red stems. A stronger form, var. *major*, flowers with greater freedom. *S. Spruneri* is almost unobtainable at present; it is a new species from Greece with distinct somewhat hairy rosettes and white flowers. *S. tombeana* is one of my especial joys; when well grown it makes the tightest, hardest cushions, like bright green beehives, and

bears pure white flowers in May. The true *S. valdensis* is classed with the *Kabschias*, but one can see how the minor form of *S. cochlearis* was mistaken for it, as the rosettes are somewhat alike, but the true plant can always be recognised by the manner in which its foliage is rolled back—so tightly do the backs of the leaves hug the surface of the soil that the centre of the rosette is exposed and the whole cushion feels smooth. *S. cochlearis*, on the contrary, holds its foliage nearly erect. The true *S. valdensis* is extremely rare and bears white flowers, it does best with me fully exposed in granite chips. *S. Vandelli*, the last of this section, is not an easy plant, preferring tight chinks and crevices in solid rock and plenty of sun; it has very tight and sharp bright green spines and white flowers.

This, I think, concludes the list of *Kabschias* proper as at present known, and none of them are really very difficult to manage in very stony soil with sharp drainage; they resent being parched in spring, and bitterly resent overhead watering in dry, windy or sunny weather; whenever one hears of plants of this section turning yellow and perishing one can almost invariably trace the commencement of the trouble to overhead watering during dry spells. If the weather be dry in spring—like it is so often here in April and May—watering will be most necessary, and one can avoid overhead watering by getting some old coffee tins—Bath Oliver biscuit tins are best of all—bore a few holes with a bradawl or nail in the side of the tin, as near the bottom as possible, then place the tin at the top of the slope or pocket in which your Saxifrage are growing and fill the tin with water. To water by hand round the roots is a laborious and time-wasting business, but a good-sized tin filled in this manner will do the business equally well for you, the water slowly percolating through the holes and sinking in round the roots, and it must be an over fastidious Saxifrage that will not be satisfied and deceived into the belief that a miniature glacier is being slowly dissolved for its benefit. In my next article I hope to deal with the *Englerias* and some of the smaller sections.

Coronilla glauca.

This is an old friend in some gardens, and probably many will recognise it as a greenhouse plant. Certainly it is an ideal subject for cool houses, but this delightful *Coronilla* is seen at its best when planted out, where it will form a shrub from 2 to 4 feet high. I have in mind a specimen which flourishes on a hill in the Wye Valley of Gloucester, where it has been more or less in bloom for the last twelve months, and is still a mass of flowers. The leaves are prettily divided, and, as the name indicates, of a glaucous tint, while the fragrant flowers are bright yellow, and very conspicuous in a mass.

Those who have not tried this plant in the open should do so, especially if a slightly sheltered position can be selected. It can be propagated freely from cuttings, and will thrive in ordinary soil.

Another species, but not quite so showy, is *C. valentina*, which makes a pretty little shrub, as will *C. emerus*, while it is also a desirable plant for a north or west wall. The last named produces plenty of seed, by which it can be readily increased.

T. W. B.

The Food of Plants.

By CHEMIST.

THE keeping of a garden is associated with one of the earliest traditions of the human race; and no doubt gardens have been kept and the culture of fruit and vegetables carried on by civilised peoples from time immemorial. Yet very little seems to have been known of the processes of plant nutrition until quite recent times. As a matter of fact, whatever knowledge in this department of plant physiology we now possess has been acquired for the most part during the course of the nineteenth century. Towards the close of the previous century the work of Lavoisier had laid the foundations of the infant science of chemistry on a really firm basis. His interpretation of the phenomenon of burning and the closely allied one of animal breathing paved the way for a rapid advance in general chemistry as well as in animal physiology, and from the progress thus attained new light was shed on the problems of vegetable physiology. We certainly know more about the processes of vegetable growth and nutrition than our ancestors knew, though it must be owned that life itself, which guides and controls these processes, remains as much as ever a marvel and a mystery.

In this article it is proposed to treat from the historical point of view the question of carbon assimilation, the most fundamental of all the processes concerned in the manufacture of plant food, or indeed animal food for that matter. It may not be out of place therefore to look back on some of the early experiments in this domain, those reconnoissances, as we may say, of an unknown land, and to study them for a moment in the light of our present-day knowledge.

Probably the first experiment in plant physiology in which the balance was called into use, is the well-known one of Van Helmont carried out three hundred years ago in the garden attached to his laboratory in his native city Brussels. He planted a willow slip 5 lbs. in weight in a large earthenware pot, which he buried in the soil and covered over with perforated tinfoil to keep out dust, &c. He watered it with either rain or distilled water, and at the end of five years his slip had grown into a little tree 169 lbs. 3 ozs. in weight, not taking any account of the leaves which had come and gone meantime. There had been originally placed in the pot 200 lbs. dry weight of soil, which when removed at the end of the five years and again carefully dried and weighed was found to contain the original 200 lbs. all but 2 ozs. Where did his 161 lbs. of wood, bark and roots come from?

Van Helmont concluded the increased weight came from the water, and he thus came to regard water as the chief primary element in nature. Obviously the air, the other medium with which his willow tree came in contact, did not appear to him as a source wherefrom some of this weight might have been obtained. The conception of matter in the gaseous form was not then clearly defined. Aristotle, one of the greatest thinkers of antiquity, held the view that air had no weight, having convinced himself by actual experiment that a bladder inflated with air is no heavier than the same bladder deflated and empty. Of course, we now know that the inflated bladder is buoyed up to a greater extent than the deflated one, owing to the greater displacement of the sur-

rounding air in one case than in the other. As a matter of fact it is buoyed up to a greater extent by a force equal to the weight of the extra volume of air displaced, and so it is the weight of the air within the bladder is just neutralised. Where the volume of the containing vessel remains unaltered through the experiment, as, for instance, when a flask came to be used on the invention of the exhaust pump, the idea that air has no weight was very soon found to be erroneous.

But to return to our subject. That plants did affect the composition of the air was proved to be the case about two hundred years after Van Helmont's time, by Priestley, an English scientist, whose name is better known in connection with the discovery of oxygen. He had noticed that air is vitiated by burning and breathing. When, for instance, a lighted candle is placed within a closed vessel the candle soon goes out, the residual air being no good so far as combustion is concerned. And similarly with expired air. Now since burning and respiration continually tend to vitiate the air, there must be, Priestley reasoned, some natural reverse process whereby the air comes to be revived. Having noticed that bubbles of gas were given off by green slime (algæ) in water, it occurred to him to collect and examine some of the gas thus set free. He had already hit upon a simple method of collecting gases, by the displacement of water and other liquids, a method often since made use of and well known to the school-boy of to-day, who watches the process with unusual attention. Priestley found that the air thus set free by water plants behaves very like oxygen towards a glowing chip. Another experiment we shall let him describe in his own words:—"I have been happy as by accident to have hit upon a method of restoring air which has been injured by the burning of candles, and to have discovered at least one of the restoratives which nature employs for the purpose. It is *vegetation*. . . . I put a sprig of mint into a quantity of air in a glass jar in which a candle had burnt out and inverted the jar over water, and found after ten days a candle would burn again in the air perfectly well. Several times I divided the quantity of air in which the candle had burnt out into two parts, and putting the plants into one, left the other in the same exposure contained also in a glass vessel inverted in water, but without any plant, and never failed to find that the candle would burn in the former but not in the latter."

Another scientist, a Dutch man named Ingenhousz, living in England, and a contemporary of Priestley's, carried the matter a step further:—"I observe," he says "that plants not only have a facility to correct bad air in six or ten days, as the experiments of Dr. Priestley show, but that they perform this important office in a few hours; but this wonderful operation is by no means owing to the vegetation of the plant, but to the influence of the sun, and to its illuminating and not to its heating power."

But neither Ingenhousz nor Priestley could explain the process by which the plants thus purified the air. At the time (about 1779) the composition of carbonic acid gas was not understood, though the gas itself was well known under the name of "fixed air" as a constituent of limestone, chalk, washing soda, pearlash, &c. It remained for Lavoisier, who now appears on

the scene, to explain the real nature of this gas as an oxide of carbon. He showed that when pure carbon in any of its forms is burnt in oxygen the carbon disappears, a certain amount of oxygen being used up in the process, and that carbonic acid gas is formed. Further, he proved that the weight of carbonic acid so formed was equal to the combined weights of the carbon and oxygen used up in burning. "Though 'used up,' however, he points out, 'low these elements were not lost or destroyed.' Similarly he showed when any substance containing carbon is burnt in the ordinary way, the same gas is produced, and thus the air gets 'injured,' as Priestley put it. When the percentage of the gas increased above a certain point his candle went out, though the supply of oxygen was unexhausted. With this additional knowledge to hand, Ingenhousz was now in a position to explain the process by which plants purified the air, namely, that carbonic acid was absorbed by the leaves and split up by the aid of sunlight, the carbon being retained by the plant and the oxygen set free.

The clearest exposition of the whole process was, however, furnished by the work of De Saussure (1804). He showed that water entered into combination with carbon to form the dry substance of plants, though, owing to the backward state of organic chemistry he was unable to define the compounds thus formed. He further showed that, though by far the greater part of the plant substance is formed in this way, yet a certain small amount of mineral matter is necessary in the formation of certain other substances essential to the life of the plant. He pointed out how all this was in keeping with the "environment" (to use a later term) of the plant. The soil, owing to its slight solubility, being unable to furnish any considerable part of the vegetable material, whereas the supply of water is constantly replenished by the rain and a never-failing supply of carbon exists in the air.

The amount of carbonic acid in the air, however, all being said and done, is only about 3 volumes in 10,000, or .03 per cent., a very minute fraction when one comes to think that a plant has to obtain all its carbon from this source.

How largely carbon does enter into the composition of vegetable matter may easily be seen by heating a twig or bit of chip in a test tube. The moisture being driven off as steam, and some heavy combustible gases rich in carbon being also driven off, the greater part of the carbon remains in the test tube unburnt for want of air. Roughly about half of the dry weight of a plant is carbon. Hence the difficulty at first of believing that all this carbon comes from a gas present in the air in such small quantity. The idea seemed far-fetched. A more natural source would appear at first sight to exist in the plant remains or humus present in every fertile soil. Opinion veered round to this point of view, and De Saussure's investigations were set aside, and his interpretation fell into neglect. The humus theory, as it was called, held sway for the first few decades of the century, and even Berzelius, the great Swedish chemist, gave the theory the weight of his support.

The science of chemistry was, however, making headway all the time, and in the forties the work of Liebig greatly extended its scope, more especially in its bearing on industry and agriculture. He studied the feeding of plants and animals from the chemical point of view, and,

more than any one else, perhaps, may be said to have laid the foundation of scientific farming. In carrying out his researches on the feeding of plants he put the humus theory to the test of experiment in a simple way. Two plants similarly potted in soil rich in humus were placed under glass, provision being made for necessary intake of air in each case, all conditions being the same except that the carbonic acid gas was removed by suitable absorbents from the air supplied to one of the plants. It was found there was no new growth in the latter case, neither was any starch formed in the leaves, thus showing that plants do not obtain their carbon from organic compounds in the soil.

Leaving the realm of experimental science for that of mathematics, Liebig showed by calculation that the percentage of carbonic acid gas in the air, though small, was yet ample for the needs of the most luxuriant vegetation. But it might be asked how can the plants get the gas in sufficient quantity diffused as it is throughout the whole atmosphere. This difficulty disappears, however, when we consider of the nature of gases and the tendency towards diffusion which is one of their essential properties. If any one of the gases present in the air should happen to be removed or diminished at any point, the loss is made good by an inflow of the gas in question to the place where its "level" or pressure has thus been reduced. When, for instance, carbonic acid gas is removed from the air-spaces within the leaf of a tree, through being decomposed in sunlight, there is set up an inflow of the gas from outside to take its place, and the tree thus, as it were, automatically absorbs the gas from the air to obtain its carbon supply.

Liebig, in short, settled the matter once for all that a plant does not feed on organic substances as animals do, but that it builds up its tissues from inorganic materials alone. Thus the humus theory went overboard and De Saussure's interpretation came once more into its own.

The process of assimilation within the leaf was studied in detail by Sachs, Professor of Botany (1867-1896) in the University of Wurzburg in Bavaria. He found that starch was the first organic compound formed from the raw materials, carbonic acid and water—or at least it was the first to be recognised in the leaf—and that it was formed only in sunlight. The starch was conveyed away, usually at night, in the form of sugar, to the growing points or wherever else required in the plant. More complicated compounds, such as proteins, wherein nitrogen, sulphur, &c., are assimilated, may be formed away from light, but only in the presence of, and at the expense of, the energy stored up in, the starch or sugar.

Sachs made much use of water and sand cultures to find out the essential elements of the mineral food of plants, but we are not now concerned with these researches, except in so far as they show that a plant has no need of carbon as a food in the soil. As we have already seen, it gets that element elsewhere, but these pot culture experiments confirm our belief in the fact and, as it were, complete the chain of evidence in the proof.

As a teacher of plant physiology, Sachs was pre-eminent in his time, and his fame, spreading beyond the confines of Bavaria, attracted students from all parts of the world. Under the master's guidance and inspiration they learnt

how to question nature as to her inmost processes, and studied how to interpret her answers. Owing largely to his influence, the teaching of Botany has developed more and more along the lines of plant physiology: the physical sciences have been impressed into the service and the study of the subject has become more intense and interesting inasmuch as it deals more closely with the problems and activities of life itself, as revealed in the vegetable world around us.

We have now traced the sources from which plants draw the materials to build up their substance; the carbonic acid gas taken in by the leaves from the air, the water taken up by the

prism-shaped, so as to split up the beam into its component colours, dark bands are noticed in the red, in the yellow and other colours, showing some of the light has been absorbed. In the leaf the energy of this absorbed light becomes latent in the potential energy of the newly-formed starch and sugar.

The energy is changed by the chlorophyll from one form into another, from the bright dancing sunbeam to the stored up energy of starch. Beginning with this starch the plant is enabled to build up the various other compounds of which its tissues are composed, to assimilate the nitrogen, the phosphorus, the potassium, and all those



Photo by]

SAXIFRAGA BURSERIANA AT MULLABODEN.

[W. Mitchison

(See page 22.)

roots, and the comparatively small amount of mineral matter got from the soil and taken up in solution. How can the plant combine them? The idea of "vital force" is not admissible. A plant cannot create energy any more than it can create matter, and to combine these inorganic materials is like taking water up a hill, it means work. Where does the energy come from?

Carbon assimilation only takes place in sunlight, and the sun is the great source of energy. As we know the green colouring matter—the chlorophyll, as it is called—enables the plant to avail of this energy: how it does it we know not; but this we do know—if a sunbeam be passed through a solution of chlorophyll in a glass jar,

other elements necessary to its life. The reverse of this building-up process takes place when a log of wood is being burnt. The carbon takes up oxygen and disappears once more into the air, the water disappears as vapour, soon to be condensed and so to return to the earth as rain. The ash or mineral matter alone remains. The absorbed sunlight that at the bidding of life had bound them all together now reappears in the form of heat. In the language of the chemist, the organic has given place to the inorganic. Nothing is lost, however. All the elements are now ready to take part in the same cycle over again.

We may conclude our article on carbon assimilation.

lation with a few words from Mayer, the discoverer of the law of conservation of energy: "The plant world forms a reservoir in which the fugitive rays of the sun are imprisoned and made to subsolve certain uses . . . and thus nature has herself taken in hand the task of seizing the light pouring on the earth's surface and of storing thus the most mobile of all forces in a fixed and available form."

Native Ferns: Why Not!

By THE REV. CANON H. KINGSMILL MOORE, D.D.

EVERYONE who rides a hobby is disposed to express wonder as to why so few get up and ride beside him; perhaps better results may be obtained by endeavouring to picture the attraction of the hobby which carries us so well.

My hobby runs in the shape of native ferns. Our native ferns enjoy the double advantage of being *accessible* and *unmanageable*: they are, as a rule, easy to get and easy to keep. There is no county in Ireland without its ferns, and few which cannot boast them in abundance. To stand at Killarney among *Osmundas* which reach to your shoulder, to see the walls and the trunks of trees in Cork rich with miniature forests of the common *Polypody*, to wade in a Sligo glen through woods of amazing *Hartstongues*, experiences such as these are enough to captivate even a Cockney tourist. But such exceptional prodigality is not needed to win and keep our Irish hearts. It is a day of incessant rain; I have just come for a week among the Carlingford Mountains, and time will not wait. Accordingly, I mock at the blasts and the waters: the hedges and the walls I want to explore give useful cover, and in less than an hour three of our *Sphenworts* have welcomed me. A similar walk in the afternoon adds four more species, and this in midwinter. There are plenty of signs to show that were it summer the list would have been still further increased.

Of course all the species noticed are common. I have been trying to emphasise the *accessibility* of our ferns. One of the specimens, however, is seen to depart in a marked way from the normal form; it is as if it were a "variety" in the making.

Here we come in contact with an inexhaustible source of interest. The number of native species is small, under forty-five; and of these some are so rare that the collector who has found, say thirty, has every reason to be well satisfied. But varieties are endless. It is the special characteristic of British Ferns that, to a degree unknown in any other part of the world, they have spent their time developing into all sorts of novel and beautiful forms. One collector has been heard to say that he holds upwards of a thousand varieties of a single species—the common *Hartstongue*. Probably in such a case his friends would make inroads on the total, by banning many as "too much alike." But the mere fact that such a collection is thought possible is enough to unfold long vistas of delight. In so speaking, I do not mean to suggest that the discovery of varieties which are both good and new is common. In the lists of the "British Fern Gazette" I am credited with one or two. I am not a great hunter, and even if I were I have

but scant leisure for the sport. Where I have done a little, others, with keener eyes and more time, could do a good deal. But while it is true that really good "finds" are rare, departures from the normal forms are so common, that it is scarcely too much to say that I have never gone fern hunting without meeting something of the kind. Two days after the walks referred to above an afternoon stroll gave three variations of *Laetia Filix Mas*, one of which shows real promise. In their capacity for surprise our native ferns have a fascination which appeals widely. Wherever you go there is always the possibility of being confronted with something that is new.

The second of the main characteristics of our ferns which I set out for notice is that they are *unmanageable*; if it is true that anyone can find them, it is also true that anyone can grow them. Of course there are heights, and depths, both in the finding and the growing, but average results stand open to all. And here another valuable feature emerges. To put it paradoxically, the worse the site the better they will do; which, being explained, means that ferns flourish where most other plants would fail. Once I attempted a fernery in what seemed a very desirable situation; it had, however, a drawback which neutralised everything else—the aspect was south. That experiment resulted in wholesale failure. Choose some dark corner where nothing will grow but the coarsest herbage, there you may plant ferns with confidence, provided there is shelter. Absolute shelter from wind, and plenty of shade, these are what most ferns demand; and they are also very particular as to drainage. If the soil drains well ferns will grow on the flat, but it is much safer to raise them, as the most superficial study of the places they select for themselves will prove.

If I were to be betrayed into writing about the *beauty* of our native ferns, it would involve another paper. I shall therefore content myself with brief mention of the species which are both the most accessible, and which yield the finest forms. For sheer beauty *Athyrium filix-femina*, our common Lady Fern, stands out; its varieties are very numerous; some of them, as *A. f.-f. plumosum superbum crispatum* (Drucry) may be said to rival any ferns in existence. Given good shelter, *Athyrium f.-f.* may be cultivated with ease. The varieties of *Polypodium vulgare* are numerous and beautiful to a degree, which the type would never suggest. One of them has fitly been termed *Trichomanoides*, from its close resemblance to the fine cutting of a Killarney Fern. *Polypodiums* grow best in light soil, for preference leaf-mould, with a dash of lime and rubble. They take time to establish themselves.

A third species, which astonishes by the beauty of its varieties, is the common *Hartstongue*, *Scelopendrium vulgare*. The plumose varieties, *S. v. crispum*, are exceedingly attractive. Lime in some form should be introduced in planting.

Finally, it would be difficult to speak too highly of *Polystichum angulare* and its splendid varieties. For ease of culture the *Polystichums* are easily first, and the beauty of such aristocrats as *P. a. plumosum laxum* (Fox), or *P. a. plumosum* (Esplan) can be exceeded, if at all, by nothing but the most perfectly developed *Athyriums*.

The Culture of the Schizanthus.

THE Schizanthus is a plant (annual) of the easiest possible culture; it is especially adapted for pots, and can be sown at almost any period of the year. The finest specimens are those produced from a sowing made the first week in September, for preference. A good compost to sow in is one of equal parts leaf-mould, good fibrous yellow loam and sand; at all potting stages use beech or oak leaf-soil if you can procure it. Run the compost through a 1-inch sieve, sow in pans into which are placed some clean crocks, cover these with some rough material, and fill to within 1/2-inch of the top with the compost advised above; make a nice even surface, and a practice we always adhere to is giving a good watering through a fine rose with very hot water; this has the advantage, "in preference to cold water," of killing small insects, worms, &c., that lurk in the soil, and so often, when the seeds are sown and finished with, come to the surface during the night and upstart the seeds by exposing them on the top of the soil, and the result is they never germinate. We always practice the above in all cases before seeds of any kind are sown with great success. When watered, leave to drain for a few hours, then sow the seed thinly and cover lightly and place in a cool house; cover with a sheet of glass, which must be turned every day. A piece of paper is very useful too on bright days to ward off the strong sun's rays until germination takes place, which is generally in about seven or eight days. At this stage remove the glass altogether, and gradually use the seedlings to full sunshine. Keep near the glass, and when each plant is in possession of two leaves prick out into 2 1/2-inch pots—one in each pot, or three in each pot, as the grower thinks fit. The former make nice plants in 6-inch and 7-inch pots, and the latter make large plants in 9-inch pots; we have grown them to a height of 4 feet and the same through, and they certainly make a fine show. When the seedlings are pricked off into the small pots water well and put into a closed frame for four or five days, then remove the light altogether, and gradually expose to full sunshine as before advised when in the seed pan; in about three weeks they will be growing free. Keep as near the glass as possible, and when at about the fourth leaf pinch out the centre of each plant, and thus secure a good foundation for good, strong, bushy stuff.

When the small pots are well filled with roots remove again into 5-inch pots, using the same mixture of soil all along. (In potting Schizanthuses never use a potting stick until the final potting, and then it certainly is necessary to make the soil firm, but at the same time not too hard.) When put into 5-inch pots you will find the plants in about three weeks growing very freely. Keep always in a cool house or frame with a temperature of from 40 to 50 degrees, never more; this is an ideal temperature to grow in. Schizanthuses, like *Calceolarias*, like the coolest treatment you can give them, only never below 40 degrees if possible (I may say here they are very easily touched by frost). At this stage the grower must use his own discretion with regard to pinching, tying, &c. We always keep the plants neatly staked, and pinch them regularly up to the month of February, say the 20th. Any twiggy growth, such as Snowberry, is splendid

for staking if cut a couple of months to get rid of the sap before using, as they grow very readily when cut, and put to stake the plants immediately.

By the month of January the plants ought to be in their flowering pots, 7 inches or 9 inches, as before mentioned. The mixture for this potting is as follows:—Equal parts loam and leaf-soil, some sand, a 6-inch pot full each of bone-meal and soot (old) to each barrow-load of soil; pot firmly, using the potting stick. Do not sieve the loam this time, but chop with a spade, or pull asunder with the fingers; run the leaf-soil through a 1-inch sieve, water carefully at all stages, especially at the above, as over-watering tends very much to sour the soil if done to excess before the roots get well into the new soil; yellow discoloured foliage are sure signs of over-watering. When the plants are growing freely now and the pots are well filled with roots, a little feeding is very good, but use same cautiously. Weak soot-water, sheep, horse and cow manures are all very good, and will prove very beneficial to the plants. We find "Thompson's Vine and Plant Manure" awfully good for foliage and flowers. W. B.

The Sweet Pea Annual.

THE National Sweet Pea Society has issued its Annual for 1915 with commendable promptness, and we find it full of "good things" as usual. Mr. Landlee Perrier sends a very interesting contribution from British Columbia; he tells of an orange-cerise seedling which he intends to call Victoria, and expects it will make its mark, for all his plants came true. Mr. Thomas Stevenson writes some "Cultural Hints for Would-be Exhibitors." No better adviser can be found. "The Cause and Prevention of 'Streak'" is very fully dealt with by Mr. E. R. James; and among other valuable contributions we notice "Early Flowering Sweet Peas," by Hamilton C. Mott, Albany, New South Wales; "Winter Flowering Sweet Peas, by J. Harrison Dick, New York; "Sweet Peas under Glass," by G. F. Drayson; "Sweet Peas in Small Gardens," by S. M. Crow. The Annual Outing of the Members is described, and full accounts are given of the London Exhibition, where the most coveted prize, the Henry Eckford Memorial Cup, was grandly won by Mrs. Maenamara, of Ennistymon, of the Official Trials of "Streak Cures," and of the Trials held at Major Hurst's Grounds at Burbage. These Trials are about the most important work carried out by the National Sweet Pea Society for testing the reliability of the Seeds of new varieties and the eliminating of "too much alike novelties." Irish exhibitors of Sweet Peas should be encouraged by the magnificent success of Mrs. Maenamara in winning against all comers the Eckford Memorial Cup, with most beautifully fresh, brilliant and fragrant blooms, which had so well stood the long journey from County Clare to London. The National Sweet Pea Society, from the valuable work it has so successfully accomplished, deserves the hearty support of all Sweet Pea growers in this country, where blooms can be grown second to none. The Annual Subscription, which includes right of free entry to the Shows and a copy of this Annual, is only 5s. Mr. Henry D. Tigwell, Greenford, Middlesex, the Secretary, will send all particulars.

Hints to Novices.

By R. M. POLLOCK.

FROM this on the Sweet Pea grower will be kept busy. The seed should be ordered as soon as possible from some good reliable source. Where there are such a number of already first class varieties, and when new sorts are continually being put on the market, it is quite impossible to recommend any one variety more than another. It is entirely a question of personal taste. The following are six varieties which may help someone in making a start: "Asta Obin, manye, large-flowered, slightly waved; Clara Curtis, one of the best creams; King Mincee, a deep maroon, which with Clara Curtis makes a very pretty table decoration; Marjorie Willis, bright pink; Mrs. C. W. Brendmore, cream with pink edges, a good doer with large flowers; King Edward VII., bright crimson." "None of these are novelties," and they are all good free-flowering kinds and not expensive. The ground should be prepared now. This might with advantage have been done before, but whether the plants are to be in lines or single clumps the ground should be opened to the depth of at least two feet, and in the bottom of this place some rich farmyard manure, cover with good garden soil and fill in. If the seeds are to be sown in the open ground it is time enough to put them in during the last week in the month, as seedlings out of doors in early March are apt to remain stationary and lose some of their vigour owing to the cold harsh weather. If in pots, a first batch may be put in as soon as the seeds are procured. The usual method adopted is to put 5 or 6 seeds in a 5-inch pot, but one seed in a thumb pot is also practised. Put plenty of drainage in the pots, and firm the soil well before sowing. This makes it much easier and safer for the young roots when turning out the seedlings at planting time. When sown the pots should be watered and placed in a bright frame or greenhouse.

Antirrhinums for summer flowering should be sown at once. These can be had in all sorts of gorgeous colours, and can be relied on to come true to name. The seeds can be sown in pots or pans, and when fit to handle can be pricked out. Other annuals for early flowering which will stand transplanting may also be sown. White Spiral Candytuft, Clarkia, Annual Delphinium, *Vividium calendulaceum*, a low-growing plant which requires plenty of space, with brilliant orange flowers. It must be planted in full sun to show to best advantage. It seems to stand any amount of transplanting. *Brachycome*, the "Swan River Daisy," in white and blue; "Sweet Sultans" in several shades. These and many more can be transplanted from boxes or pans without fear, and they will come in useful in filling up spaces in the borders where spring flowers have been. *Mignonette* is an annual which resents transplanting, and should be sown where it is to flower. There is often difficulty in getting it to germinate, and some gardeners recommend mixing lime rubbish with the soil. Perhaps some readers can suggest other methods, as it is an annual we cannot be without. *Linum Flax*, Corn flower "Love in a Mist," *Godetia*, *Gilia*, *Eucharidium*, *Shirley Poppy*, *Mallow*, *Bartonia aurea*, *Candytuft*, and many more will germinate freely in the open ground, and can be sown broadcast.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dundee, Ballywalter Park Co. Down.

THE present is a good time to increase some of the "rare" varieties of perennials from root cuttings, also varieties which are quite easily raised from seed, but do not always come true to colour, as for instance *Gaillardias*, which may be raised abundantly from seeds, but the seedlings cannot be depended upon to come true. The operation is a very simple one, though a little care will be needed in carrying out the details, and whether few or many are required. The best plan will be to lift as many plants as may suffice from the border and carry these, roots and all, to the potting shed. Here the roots may be severed from the plants, always taking care that the part of the roots which was uppermost when attached to the plant should still occupy the same position, and be thus inserted as cuttings, otherwise many of the cuttings will be inserted upside down. The roots may be cut about 1½ inches in length. The next thing necessary will be some well-drained pots, and filled to within 1½ inches of the rim, making the soil moderately firm, and giving a sprinkling of silver sand for the base of the cuttings to rest upon. Now arrange the cuttings in a nearly upright manner round the interior of the pots, allowing the top of the cuttings to be just above the rim. The root cuttings may be placed sufficiently close, that of a five inch pot, according to the size of the roots; from twenty to fifty cuttings may be inserted, and when completed the centre may be filled in with soil and the cuttings duly labelled. When all are ready place the cuttings beneath the stage in a moist, warm greenhouse, but not close to the pipes; the semi-darkness will for the time being be the best, giving a good watering at the time of insertion.

In gardens where bottom-heat can be secured, and if the cuttings can be accorded not more than 65 as a maximum, so much the better. It is, however, not absolutely essential, while an excess of heat is decidedly injurious.

DAHLIAS. The old stools should now be taken from their winter quarters and placed in light sandy soil, in a warm moist house, to furnish cuttings. The newer Paony-flowered Dahlias are very beautiful. They carry their flowers well above the foliage, on long stems, and are excellent as cut blooms for house decoration. The single varieties are very profuse bloomers, and are very effective in large borders, while the Pompons are excellent for bedding purposes.

LILY OF THE VALLEY. A few beds of these should be broken up every year; the stronger crowns may be used for forcing if so desired, and the weaker crowns planted in well-manured ground, and when completed cover the beds with about 1 inch deep of sifted leaf-mould. The old beds should also receive a topdressing of leaf-mould, it helps to produce good strong crowns and large spikes; *Tortius* Giants produce the largest beds, but soon get small if the beds are kept long in one place.

Bedding stocks of *Salvias*, *Heliotrope*, &c.,

should be placed in heat and propagation, proceeded with at once, a brisk bottom heat being necessary to success.

Tuberous-rooted Begonias should be placed in shallow boxes in sand and leaf-mould. A vinery just started is very suitable; when the shoots are about half an inch long the tubers may be cut to increase the stock. Begonias always do best in very old rotten manure and leaf-mould, with the soil rather on the loose side. All through their indoor stages great care should be taken to keep the plants from a hot, dry atmosphere, it always spells ruin.

The Fruit Garden.

By ALFRED BAKER, Gardener to Lady Fitz-Gerald, Carrigoran Co. Clare.

THAT most important factor in all outdoor operations "the weather" has, in this locality, during the past couple of months quite disorganised all operations in fruit grounds; it seems also to have quite upset all rainfall averages both in this and most other localities. During the past seven weeks here we have recorded over 13 inches of rain, more than double our average, and during this time only had four days without rain to record, consequently all kinds of outdoor work is very much in arrears. I am afraid a similar condition of affairs is very generally prevalent throughout the country, judging by reports from various districts. With such conditions prevailing it is necessary for all to push on the various kinds of work quickly and in the most methodical manner possible, and even where weather conditions may be near normal; arrears of pruning and the nailing in and training of fruit trees on walls should have precedence, as it is near time now that all such work should be completed, so that the trees may have time to recuperate before the flow of sap commences again. New planted orchard or border, &c., fruit trees, and such trees as may have been lifted, should be pruned about the end of this month or a little later in cold, late localities. During the early part of this month trees that are to be cop-grafted should be cut back; when sawing the branches, make the cut a few inches above the joint where the scions are to be inserted; those few inches must be sawn off at time of grafting, thus ensuring a clean fresh cut on the branch. The system of top-grafting does not seem to be carried out to the extent that it merits or used as a means for substituting superior and up-to-date varieties for poor, comparatively worthless sorts. Where large trees of the latter kinds exist they may be brought, in the course of two or three years, to carry crops of most useful fruit, providing the constitution of the tree is not too far worn out for renovation. In damp localities and heavy soils some varieties of apples may prove quite unsatisfactory or persistently scanty in spite of annual spraying; trees of such varieties, whether old or young, might be headed back and grafted with more satisfactory variety, suitable to local requirements. Trees in orchards or rows that have, through more or less improper management, overgrown their head room, and being too old to transplant, might advantageously be headed back and re-grafted. A disadvantage of

scions should, without any further delay, be provided (if not already done) for any contemplated grafting, tied in bundles, labelled and laid in, where they will not be exposed to sun, until such time as required for use; about two-thirds of the scions should be under-ground.

The time is quickly drawing near when caustic or winter washes may be safely used on fruit trees, and no favourable opportunity should be let pass for carrying on this work to a finish by the end of this month, bearing in mind "well done is twice done." Be careful to wet every part of the trees, and always have good pressure on while spraying to ensure that the wash may penetrate thoroughly any moss, snaggy parts, or lurking places of insects and fungus. Supplementary to my remarks on spraying last month I may add, gooseberry and all kinds of currant bushes that are moss-grown or covered with lichens may be sprayed with caustic washes, such as are recommended for larger fruit trees. Lime sulphur wash is also recommended for this purpose, and also has the reputation for preventing birds destroying the buds on bush fruit trees.

It may safely be assumed that, for planting on any extensive scale, the ground would be properly prepared, and all necessary arrangements made for autumn or early winter planting; though, with the best of intentions, it frequently happens that more or less of such planting has to be deferred over the depth of winter, and in any such cases advantage should now be taken of earliest possible opportunities to complete this planting, though do not be tempted by seemingly good overhead conditions, but wait until the ground is in such condition as to allow of being well trampled without sticking to the feet, as thorough firming of roots in the ground is most important. It is not, generally speaking, well to advise postponement of planting to end of this month or into March, but rather do this than plant under improper conditions, especially in heavy soils or badly drained positions.

Overcrowded trees may be removed to extend plantations, or be planted in any suitable position; new trees may be planted in fruit borders where ground is in reasonably good heart without any further preparation than to see that there is sufficient depth of suitable soil, say from 2 to 3 feet deep, with satisfactory drainage; if the subsoil should be poor and retentive of moisture, dig it over and work in a quantity of half-decayed stable manure and a little basic slag, with old mortar rubble or any material, which tends to lighten and render the soil more porous; in light or gravelly subsoils add some good rich decayed manure. Do not plant new trees in exhausted ground or in stations previously occupied by old trees without providing such material as new loam, or good manure, to enrich and bring the soil into good fertile condition. Trees such as are growing an excessive amount of young wood and are unfruitful, or young trees a few years planted making undue wood growth and failing to produce any fruit, may be lifted and replanted in same position; any strong fibrous roots should be shortened, more or less, according to age and size of trees, and any roots having a straight down tendency should be cut; this will cause them to make only useful roots and prevent perhaps getting into unsuitable subsoil; jagged or broken ends of roots should be given a slant. After this replanting the trees should be covered

disturbance for a number of years, so avail of the opportunity to ensure that there is a sufficient depth of good soil under your trees. If the sub-soil is too heavy and poor, dig down to such a depth as will allow of throwing out a quantity of the bad sub-soil, and cover the bottom of hole with any available drainage, such as rough stones, broken bricks, &c., spreading stable or livery manure over these, and then fill up to required depth with good soil; this treatment may be applied to all kinds of trees either in open garden or trees trained against walls. Trees trained against walls should only be temporarily fastened up after replanting, until the ground has had time to settle down, when they may be fully nailed in again. When replanting trees against a wall keep the base of tree a few inches away from the wall to avoid hereafter any injurious pressure against wall as the tree expands. Trees in the open with bulky heads should, in addition to being made very firm in replanting, be secured against loosening in the ground by high winds; a good strong stake placed slanting against prevailing high winds and tied against stem, or one or two stout branches of tree, is generally sufficient.

During this month, or on to mid-March, new plantations of currant and gooseberry bushes may be made; these should be planted on ground previously prepared for this purpose, or on a plot rendered fertile and rich by previous cropping, or if in isolated positions, such as by garden walks, &c., some manure may be incorporated as planting proceeds.

According as pruning is finished off amongst fruit trees of all kinds, clear away and turn all prunings or rubbish of any kind that may be lying about; it is also very advisable to collect and burn the fallen leaves of fruit trees where scab has been prevalent during previous summer; then, on all favourable occasions, proceed with the digging of borders and plots, applying—as the work proceeds—such manures as it is intended to use; good farmyard or stable manure is very generally conceded to be the best. Chemical manures should only be applied according to instructions after being thoroughly tested and experimented with. Many admirable fruit tree manures are manufactured as a substitute or an auxiliary to farmyard manure; these, of course, must be used according to the directions of makers. All fully developed fruit trees in robust fruitful condition should receive an annual dressing of farmyard or stable manure with basic slag, as advised in my notes last month. Younger trees should be manured according to their size and bearing conditions. A light dressing of unsifted lime on all fruit quarters once in three or four years is very beneficial; sufficient to whiten the ground is enough, or at the rate of a ton to a statute acre.

Where peaches and figs are grown outdoors these should be pruned and nailed in during this month. All nailing and training of trees on walls should be completed during this month, and the borders dug, as above advised. In these gardens we never plant any crop whatever over wall tree roots, but allow a space of one yard from base of tree altogether to fruit trees, a plan that should be followed wherever at all practicable, as by this means there is less ventilation of roots and an opportunity is allowed for mulchings of manure, also watering in very dry spells of weather, which is very important to the production of first class crops.

The Vegetable Garden.

By ANDREW PEARSON, Gardener to A. F. Shannon-Crawford, Esq., Lota Lodge, Glanmire, Cork.

The weather is the controlling factor this month, and as every fine hour is precious, arrears in work should be disposed of.

BROAD BEANS.—If in demand, may be sown; the Longpods for early use on a light soil, the Windsor section for maincrop on good heavy soil. Let the early Longpods stand 2 feet between the rows, the Windsors 3 feet; the latter are of superior quality. Most people will find a March sowing the best for the maincrop.

PEAS.—First and second earlies may be sown, according to the needs of the household, dwarf varieties in rows from 1 to 2 feet apart, as their heights necessitate, but tall varieties, such as the Pilot, Gradus, &c., should be planted far enough apart, say 16 to 18 feet, to permit of five lines of early potatoes being planted between. This plan gives a maximum crop of peas and provides shelter to the potatoes.

BRUSSELS SPROUTS.—Sow in heat or on a south border to produce an early autumn supply.

CABBAGE.—Sow for succession, and where autumn sown plants still stand in seed-bed make fresh plantings and fill gaps.

LETTICES.—Sow a pinch on an early border and plant out the early sowings on a hot-bed or frame. Golden Ball is an excellent variety for this work, making compact little heads in a very short time.

CELERY, LEEKS and ONIONS, if desired early and large, may be sown in boxes or pans in heat, pricking off when ready and growing indoors until hardening time arrives.

PARSLEY, of a good strain, grown similarly and given liberal room when planted in its quarters, will give much pleasure and prove a thing of beauty all summer. Those who once grow it this way will never return to the old rigidly packed lines of thick sowings.

POTATOES for early use are planted by many this month. We prefer to sprout them in boxes, in a shed or cool house, and plant out in March. The advantages of sprouting early or maincrop varieties are many—for example, the months of February and March, 1911, were very wet, having here 26 and 29 wet days, with a total rainfall of 6.76 and 5.21 inches, respectively. Our potatoes were therefore not planted until April 6th. On Whit Monday, June 1st, or 56 days after planting, we dug Midlothian Earlies fit for the table, the average yield being twelve potatoes to the stalk. They were grown on a south border on a south-eastern aspect, 250 feet above sea level, and having little, if any, natural shelter from the southerly gales. I merely mention this specific instance in favour of doing early potatoes this way, but may add that maincrops in the field are equally benefited by sprouting, producing a greater yield of uniform quality, and paying for boxes and extra labour very quickly.

RHUBARB for fresh plantations may be made by cutting old roots into single crowns and planting in well trenched and manured ground, planting 3 feet apart. Dressings of bone meal helps rhubarb growth considerably.

SEAKALE now pushing naturally will require a dressing of ashes over the crowns.

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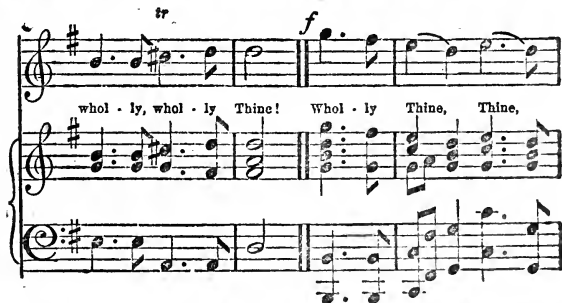
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A MONTHLY JOURNAL DEVOTED TO THE
ADVANCEMENT OF HORTICULTURE AND
ARBORICULTURE IN IRELAND

MARCH
1915

EDITED BY C. F. BALL

Pot Roses under Glass.

By D. McINTOSH, Danum Gardens, Rathgar

AMONGST all flowers produced under glass during March, April and May the Rose well deserves a prominent place of honour. There are few flowers more admired and appreciated throughout these early months, therefore it is only right to say that the Rose is thoroughly qualified to receive the highest possible culture. A suitable house is not everything, but it certainly gives a decided advantage over others that happen to be less favourably situated. The ideal structure in which to grow pot Roses successfully is a light and airy span-roof house, running north and south, with ventilators extending the whole length of the house on both sides, at top and bottom. A four-inch flow and return hot water pipe, running along both sides and round the ends, must be included in the interior, so as to command an adequate supply of heat during the dull and sunless days of winter. Staging should be erected in the centre, along the sides and at the ends, with a path intervening. A tank for the reception of rain water should also be included for spraying and watering purposes. Assuming the plants have been plunged in the open during the summer and autumn months, the pots should be lifted, thoroughly washed, and stood inside upon the staging by the 1st November. From now onwards full ventilation must be given, both day and night, until the pruning takes place. No water need be applied to the plants unless signs of severe shrivelling are noticeable on shoots that are meant to be retained.

Commence to prune about the 20th of December, so that all can be got in order by Christmas week, which is always a reminder of the fixed date to close the house. To set about the pruning operation wisely and well, the cultivator must be painstaking and intelligent, with a sound knowledge of his business, because

the pruning is essentially an operation of paramount importance in Rose culture. A great deal of future success will be largely due to the skilful handling of the knife. Cut clean away all dead and unripened wood. On the hard, well-seasoned shoots plump, dormant buds should be selected, one of two or three eyes near the base of the current year's growth; but, failing to find the right bud on the young wood, the pruner will have to look further down on to the old wood, where good buds will lie dormant for years unless induced to move by hard cutting back with the knife. Always select a bud looking outwards if possible, so that the centre of the plant will remain open to receive every advantage of sun, light and air.

The pruning finished, remove all refuse from the house to the burning heap without delay. The house should now be closed and the pots well filled with water at least twice over. In a few days fumigate to allay all suspicion of green-fly and other insects.

A temperature of 40° and 48°, night and day respectively, is ample to commence with. With clear water, spray between the pots and plants every morning about nine o'clock, and, from the top ventilator only, admit air when the thermometer reaches 50°. When the buds have lengthened half an inch, rub off all weak and undesirable growths, taking care to remove only one or two at a time from a shoot, on alternate days. Pull up any suckers that may appear from the roots. As the shoots develop, a slightly higher temperature must be maintained. When the first leaves unfold, admit air with great caution, as the least cold draught will be liable to bring about mildew. By the end of February many of the young growths will be showing bud. At this stage, weak applications of farmyard liquid manure, soot water and approved arti-

ficial Rose manure should be given at alternate waterings twice a week until the buds have expanded as much as to show colour. Auxiliary buds on the main stem will also appear, but these must be removed early to prevent any loss of nutriment to the terminal bud.

A small box of flowers of sulphur must be kept near at hand, and whenever mildew makes its presence apply a pinch of the good stuff to the affected parts, rubbing it on gently between the finger and thumb. An irregular temperature and the effects of a cold wind are frequently two main causes of mildew. Another torment the cultivator has often got to cope with is the "worm in the bud," but an observant eye will quickly keep this enemy at bay. As the flower buds will now be filling up and signs of colour showing, a gradual increase of air must be given at the top to inure the buds and foliage to more hardy conditions.

When the flowers are fit to cut, always cut them with a good length of stem where possible, as they can then be made more decorative in vases, and the plant is induced to break lower down for the production of shoots for secondary flowers. It is important that the flowers should be cut in the early morning, before the sun shines upon them, or it may be done late in the evening. They will be found to last much longer if this rule is carried out.

As soon as the flowering period is over, the time has arrived when the plants should be repotted. Other pots, eight and nine inches in diameter, must be looked out, thoroughly washed and allowed to dry. Ensure good drainage in being particular that fibrous pieces of turf are neatly laid compact over the layer of crocks. A good rich, heavy loam, preferably that which has been stacked for several months, is the principal ingredient the compost should contain. Dried cow manure, leaf mould of the best quality, wood ashes, lime rubble and bone meal should also be included in small quantities. Mix the whole well together, and the actual repotting operation may then be commenced. Shake most of the old soil from the roots, and use a rammer to ensure firm potting. Return the plants to the house, in which a close atmosphere must now be maintained for a few days. Spray the pots and plants morning and afternoon to keep the foliage as normal as possible. When signs of fresh root-action appear, ventilate the house more freely, until the plants are thoroughly hardened. About the first week in June remove the plants to a sunny, but rather sheltered, position outside. Plunge the pots over the rim in soil or ashes. Their future attention afterwards, until November again, will be to make sure the plants do not suffer from drought. They

will grow and flower a secondary crop, while increased root action will be developing for next season's result. The above summer position gives them an ideal opportunity of ripening their wood and buds, which is essentially a very important factor towards the production of the finest bloom.

There is almost an endless variety of good Roses to choose from, but my selection of thirty would include the following: Hybrid Perpetuals—Hugh Dickson, F. K. Druschki, Horace Vernet, Mrs. J. Laing, A. K. Williams, Mrs. R. G. Sharmun Crawford, Hybrid Teas—Caroline Testout, Bessie Brown, Countess of Caledon, Dean Hole, G. C. Wand, George Dickson, La France, L. C. Breslau, Lyon Rose, Mad. M. Soupert, Mrs. W. J. Grant, William Shean, Teas—Bridesmaid, Catherine Mermet, C. de Nadaillac, Mad. C. Soupert, Maman Cochet, Medea, Molly S., Crawford, Mrs. Ed. Mawley, Mrs. M. Kennedy, The Bride, Muriel Grahame and White Maman Cochet.

Calanthes.

By T. W. BRISCOE.

THESE are such valuable plants for winter work, and they are often grown where a general collection of Orchids are not attempted, that a few hints on their culture may prove interesting and, I trust, helpful to some readers of IRISH GARDENING. For the last few weeks they have been resting. Where the atmosphere has been fairly dry and the average temperature 55° F., growth will soon commence, and then the annual repotting must be carried out. All the old soil is removed and the dead roots cut away, with the exception of a little tuft to hold the bulbs in position. Some growers place several bulbs in one receptacle, but, personally, I have found it more convenient to give each bulb a separate pot. The bulbs must be graded, and the largest and full sized may be given a pot six inches in diameter, and the smaller ones in proportion. Each pot should be filled one-third of its depth with drainage, over which is placed a thin layer of rough fibry loam to secure a free outlet for water. The principal ingredient in the compost is the best fibrous loam, with a little good peat, sphagnum moss and crushed crocks added. If the loam is deficient in fibre a portion of Osmunda fibre may be incorporated. The shoot or growing point is placed in the middle of the pot, and the soil is pressed moderately firm, but it must be just below the rim, to allow space for watering.

When the repotting is finished, arrange the pots in the plant stove, cucumber house, or

similar structure, where an average temperature of 60 degrees can be maintained.

For a few weeks very little water is needed, and I should like to emphasise this point, because at this stage many growths are often lost by the uninitiated.

Then, again, tepid water must be used at all times. As growth and root action advances the supply can be increased in quantity and frequency, and the plants kept well supplied until the bulbs are fully matured. During the growing period keep the atmosphere moist by occasionally syringing between the pots and sprinkling the floor with water. A thin shade will be needed when the sun is bright, but as autumn approaches and the bulbs show signs of maturity by the foliage turning yellow full sunlight must be allowed to thoroughly ripen the bulbs.

In some establishments a little liquid cow manure or soot water is given during active growth, and the best time to apply this is directly the new bulbs are formed, but where the compost is of good quality, it is not needed. Ventilation must receive attention, for unless this is done the black spot disease may appear. Overhead spraying may be indulged in on bright, sunny days, but it ought to be practised sufficiently early for the foliage to dry before night. *Calanthes* are splendid for cutting and dwellinghouse decoration, and a few of the most noteworthy are *C. Veitchii*, *C. Harrisii*, *C. vestita rubro-oculata*, *C. vestita luteo-oculata* and *Reyneirii*, which flowers a few weeks later than those just quoted.

Streptocarpus × Blythinii.

In *Streptocarpus Blythinii* we have a new hybrid, recently raised at the Cambridge

Botanic Gardens, which owes its origin to *S. Wendlandii* crossed with *S. cyaneus*, the former being the female parent.

The hybrid is named for the raiser—Mr. J. J. Blythin, chief assistant in the plant houses at Cambridge.

S. Blythinii may be described as possessing a more graceful habit than the decorative hybrids so popularly used for greenhouse decoration. The flowers are continually being produced for some months; each inflorescence having its individual flowers, varying in number, some inflorescences having as many as fifteen flowers; the colour of the petals is a bluish-purple, with stripes of a darker colour.

The leaves of the hybrid are allied to *S. Wendlandii* in regard to their size, but differ in their number—*S. Wendlandii* producing only one leaf, while *S. Blythinii* produces two to five. *S. Blythinii* appears to be practically self-sterile, and only a very few seeds have been obtained.

H. C. ELSDON



STREPTOCARPUS × BLYTHINII.

Crocus Imperati in Grass.

For a fortnight or so a group of this pretty little Italian species has been very beautiful in the grass close by the Yew Walk in the Botanic Gardens at Glasnevin. When fully open in the sunshine, the bright orange stigmata are conspicuous. The white variety is even more beautiful, and is now flowering by the Palm House.

The Hamamelis.

By A. OSBORN, Kew.

IN midwinter, during the mild periods, the Hamamelis or Witch hazels are one of the treasures of the outdoor garden. Five species and one variety have been introduced, four from Asia and two from North America. They are deciduous shrubs or small trees, the wood and foliage rather resembling the hazel family, hence presumably the name Witch hazel.

The Hamamelis thrive in ordinary garden soil of a light, rather than a heavy, nature. At planting time mix in a little leaf mould or peat with the soil among the roots. October and March are the best months for planting. Seeds and grafting are the methods of propagation generally practised. Flowering in midwinter is not favourable for fertilisation and the maturing of seeds, but 1914 was an exception, and yielded quite a good harvest. These

should be sown in a heated pit or frame as soon as ripe, for germination is very erratic, the seeds lying in the soil sometimes for a year or two. Following a year under glass, plunge the pots to the rim in ashes outside in winter. This will frequently excite the seeds into growth. Grafting is done under glass in March and April, using the North American *H. virginiana* as the stock. These should be potted up preferably for a year before required for grafting.

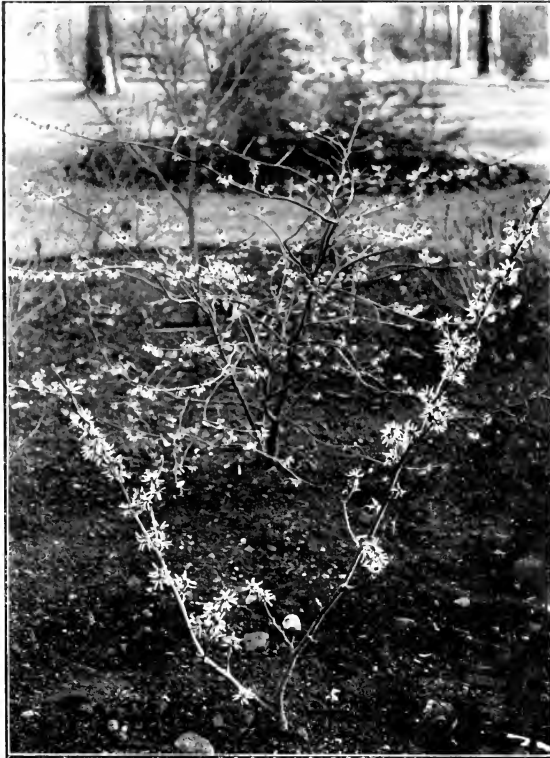
H. ARBOREA. With a little attention during the early years of growth this species may be trained into a small tree up to 20 feet or more in height. The narrow twisted petals are golden yellow in colour, a pleasing contrast to the claret brown calyx. This species was first introduced from Japan by Siebold in 1862. The native name is the Monsak.

H. JAPONICA.

This is a spreading bush, and is especially effective grouped in the shrubbery border with a background of evergreens. The twisted petals are thin and narrow, yellow in colour, while the fragrance of the flowers is pleasing. During open weather in January and February the plants blossom freely. *H. japonica* is a native of China and Japan. Quite distinct from it, and more upright in growth, is the variety *Zuccariniana*, with pale lemon-yellow flowers.

H. MOLLIS.—

This is the most beautiful of all the Witch hazels we cultivate. Naturally a free-growing bush, it is not much trouble, with a



HAMAMELIS MOLLIS AND *H. ARBOREA*
Flowering at Glasnevin in February.

little training of the leaders, to obtain small trees of this species when they are most attractive as lawn specimens. The petals are rich yellow, longer and rather broader than the other species, with a hook-like curve at the apex, not twisted as in the other species. An additional feature is the powerful fragrance, while in summer the hazel-like leaves are the most ornamental of the family. *H. mollis* is a native of China, and was first introduced by Maries

about 35 years ago. For some years the plant was grown by Messrs. J. Veitch & Sons, Coombe Wood Nursery, unrecognized, until the late Mr. George Nicholson, of Kew, drew attention to its distinct character and beauty. The flowering season extends from December to February.

H. VERNALIS.—This is the most recently introduced species. It is a native of Arkansas, Louisiana and Missouri. The first record of *H. vernalis* flowering in this country was at Kew in January, 1912, the plants being obtained from the Arnold Arboretum, U.S.A., two years previously. It may fittingly be described as an early spring-flowering *H. virginiana*, but for garden decoration the bushes are not so valuable as the Asiatic species.

H. VIRGINIANA.—This is the best known Witch hazel in our gardens, largely due no doubt to its being introduced as long ago as 1736. The plants form bushes or trees of comparatively small stature with wide-spreading heads. The most valuable quality is that the yellow flowers are freely produced from September to November. Were the flowering season January we should consider the Virginian Witch hazel a less desirable plant than the Asiatic species, as the flowers of the last named are more showy. As it is there is much to admire in the flowers and the yellow autumn tints of the leaves of *H. virginiana*. This Witch hazel is a native of eastern North America.

Balsams.

(*Impatiens Balsamina.*)

At one time the common Balsam was largely grown for pot work, and in these times there is a possibility of many of the older favourites dropping out of cultivation. Few individuals write about them, and in consequence the younger generation of gardeners do not know of their existence. Most seed catalogues, however, quote selections and assortments of distinct colours under such names as Camellia-flowered, Rose-flowered, and Carnation-flowered, which resemble more or less the flowers after whom they are named. The Camellia-flowered are very good for pot culture, while various seed houses of repute have their own special strain. A first-class strain is of most importance, and it is no more trouble to grow good varieties than those of an inferior quality. March or April are suitable months in which to sow the first batch, and again in May, for a succession. Sow the seed in light soil, and then place the boxes or pans in a cool greenhouse, pricking out the seedlings into small thumb pots when large enough to handle. Cool treatment must be practised throughout, and a frame will be suitable for them about the middle of May, and until they commence to flower, when the conservatory or greenhouse should be chosen for them to display their beautiful colours. Balsams are very hungry subjects, and they will pay for generous treatment. At each potting the soil can be further enriched with some rotten or artificial manure, and after the final potting frequent supplies of soot-water and liquid manure may be

given with advantage. Plenty of moisture at the root is essential; for if permitted to become really dry a few times, their progress will be retarded and the quality and size of the blooms will suffer. A constant watch must be kept for slugs and small snails, which will soon do such succulent plants a lot of harm. Beyond a little greenfly occasionally, few insect pests trouble Balsams. It should be stated for the benefit of the beginner that pots 8 inches in diameter will be required for the strongest and best plants to flower, but many of them will make nice decorative stuff in 6-inch pots.

Balsams are showy, half-hardy annuals of easy culture, and may also be employed for beds and groups in the flower border. Our object should be to secure strong sturdy plants, then there is little to fear of the result, providing a good start was made with an excellent strain. T. W. B.

Primula malacoides.

Most gardeners are now acquainted with this desirable *Primula*, and it certainly deserves the popularity it has attained. By sowing a pinch of seed occasionally a stock of strong flowering plants are secured over a considerable period, and it is an ideal subject either as a pot plant or in a cut state. The delicate marve and lilac shades of colour in the flowers render them most suitable for rooms where bright yellows and reds would not be tolerated. Although such a gem for the greenhouse, it is as a "hardy" plant that I now recommend it, especially in favoured localities. There are many spots where it would thrive, such as under the shelter of a wall or hedge facing south, and ledges or protected positions in the rock garden.

Since Christmas it has been making a brave show in a garden that I am acquainted with, and has withstood the rain and frost (8 degrees so far) to a remarkable degree. The seed was sown early in September, and when the seedlings were large enough they were pricked out in boxes and stood in the open. Here they made nice plants, and in November were planted in such positions as quoted above, with pleasing results. It may have been done before in other gardens, and I merely give my experience for what it is worth. At the same time there are perhaps suitable gardens where it has not been tried, but to those I would suggest that only strong healthy plants which have not been coddled in any way should be planted out. Weak, sickly examples have no chance whatever.

T. W. B.



KNIPHOFIA ALUIDES ERECTA SUPERRA.

In most *Kniphofias* it is noticeable that the flowers toward the bottom of the spike are quite withered before those at the top have opened, which greatly detracts from the beauty of the spike. In the variety under notice, however, the flowers possess good lasting qualities, so that those at the bottom of the spike are in good condition when the upper ones open. Another peculiarity lies in the fact that while in other *Kniphofias*, or Red-hot Pokers, as they are popularly called, the individual flowers when open hang downwards on the spike, but in this variety they on first opening assume a horizontal position and then gradually turn upwards, giving the spike a most distinctive appearance.

Vegetables all the Year Round.*

The production of vegetables all the year round is a very large subject, and some of the varieties would require a paper of considerable length to themselves. Therefore, when the whole subject has to be dealt with, my paper can only be a superficial record of the various operations. It is difficult to make one's remarks applicable even to a small majority of this meeting, as no two families require the same vegetables. Every gardener has to study his employer and grow such as will be most esteemed and in demand. I am not going to advocate forcing vegetables under artificial conditions, only such as will assist in maintaining the supply during the year round consistent with the accommodation and means available for this work. I am of opinion, if it were only known how much more delicious all vegetables are when in season than when forced, the greater bulk of employers would discard the use of forced vegetables. There is probably another point on which there might be a diversity of opinion—*i.e.*, the variation in soils, situations and temperatures.

Here in South Dublin you are admirably situated, well sheltered from the north and west, with the warm ebb and flow of the tide bathing your atmosphere into a congenial climate suitable for the growth of plants. Again, you are favoured in being situated in the driest province in Ireland, with an average rainfall of 26" and mean temperature of 12°, while in Co. Down the average rainfall is 32", while the mean temperature is 10°; therefore it cannot reasonably be expected that the lower temperature and heavier rainfall of Co. Down could compare in earliness to the lighter rainfall and higher temperature of Co. Dublin.

When it is desired to grow plants in the open air, the first question of vital importance which asserts itself is: "What are the climatic conditions which prevail in the locality?" When I say climatic conditions, I mean the rainfall, temperature and prevailing wind.

It is quite evident that some districts are more favourable for horticultural developments than others—for instance, in the Suir Valley, Co. Kilkenny, orchardists can grow excellent dessert apples, while in Co. Armagh they do very poorly—we must, therefore, remember that we are in two distinct counties and in different degrees of latitude. Your climate and situation is superb, being warm and sufficiently moist during most seasons; there are, of course, exceptions, such as an extremely wet or dry season.

I cannot pass on further without alluding to that most important factor "the soil." I may take it as a foregone conclusion that the great majority of you gardeners are dealing with "old garden soils," and, to my mind and experience, they require more consideration and attention than new gardens attached to modern residences. These old garden soils may originally have been clay, loamy or light sandy soils, but by the constant application of manure, compost materials, &c., their texture and constituents have greatly

changed, and very often become what is known as a sick soil, and plants fail to grow in them. The cause of this sickness is an excess of humus, which makes the soil sour and destroys the nitrifying soil organisms that were present. An application of quicklime and cease applying any kind of organic manure is the only way by which fertility is restored. I have seen gas-lime used for this purpose with no appreciable benefit; quicklime is more suitable, as it has a mechanical, chemical and biological action on the soil, changing the texture, making stiff soils more friable, and giving cohesion to loose sandy soils.

Probably the next most important operation that requires serious attention is the working of the soil. This can only be attained by digging and trenching. A word or two on the best way of performing those operations will not be out of place. Digging is merely turning over the top twelve or fourteen inches of soil with a spade or fork, while trenching, if we are to be successful in gardening, is not difficult when properly carried out. The following method is simple, yet effective: Dig a trench two or three feet wide and one spade deep across the end of the plot of ground it is intended to cultivate, removing the soil taken out to the further end of the plot, then with a spade or fork thoroughly pulverise the subsoil in the trench to a depth of twelve or fourteen inches, place a layer of manure on the top, covering with the top spit of the second trench, and so on until the plot is finished. If the work is evenly and properly done the last trench will be filled exactly with the soil taken out of the first trench. The importance of trenching in this way cannot be over-estimated. The soil is opened up, water percolates downwards freely, air so necessary to plant life—gets down to the roots, and the plants are able to withstand drought and heat. I am no longer an advocate of true trenching—that is, bringing the subsoil to the top and burying the top spit in the bottom, even if a soil is known as soil sick, the rectifier or medicine required in this case is an application of quicklime and no manure.

Rotation of crops deserves some attention, as this facilitates the clearing of certain plots at a time suitable for the reception of the crop to follow. If we are to keep up a supply of vegetables during the round of each year, an arrangement of this kind is essential. I usually divide my crops as follows:—

Tuberous crops—potatoes.

Pod-bearing crops—peas and beans.

Fibrous rooting crops—spinach, lettuce and turnip, and sea-kale, beet or silver.

Leaf-headed crops—all the cabbage family.

Deep-rooted crops—Tripoli and spring onions, carrots, beet, parsnips, celery and leeks.

Permanent crops.—Rhubarb, sea-kale, asparagus, Jerusalem and Globe artichokes and herbs.

Early borders are utilised for early spring vegetables, such as early potatoes, cabbage, lettuce, parsley, beet, turnips, radishes and seed beds, and in each case, as the crop is matured and cleared, the borders are again filled up with French beans, marrow, autumn lettuce, winter spinach, parsley and autumn seed beds.

A great deal of preliminary work has to be gone into, as you may observe, before the actual

* Read by Mr. Jas. Springour, Albert Agricultural College Gardens, before the Kings-town Gardeners' Association.

calendar of work can be touched upon, and it is not an easy matter to say where the beginning or the end lies. Taking the seasons by the calendar is hardly practicable, but any other method might lead to confusion, therefore I will start with January. During the dull days of this month very little can be done to increase or vary the vegetable supply. I would at least advise that the seed order should be made up and sent off, so that the seeds may be always at hand when required, as this very often spells the difference between success and failure. Batches of rhubarb and seakale must be put in to force, as they are both very much appreciated. To those who have not accommodation for this work, a few bottomless barrels placed over the stools outside and covered over with fermenting material usually has the desired effect. Many ingenious plans for this work are adopted—viz., boxes placed on hot water pipes or under the stage in a moderately warm house. The stools must always be kept moist and light excluded, especially from seakale. Mustard and cress should be sown every week in boxes and placed on a shelf; being the first green stuff of the season, both are much appreciated. Tomatoes sown during this month and grown steadily on in moderate heat near the glass make the most profitable plants. Cauliflower in frames must have all the light and air possible. Those who prefer good large onions must sow during this month and place in a heated house near the glass. The digging of vacant plots should be proceeded with during dry weather. We have in season during this month such useful vegetables as celery, leek, onions, cabbage, parsnips, beet, Brussels sprouts, parsley, broccoli, rhubarb, artichokes, carrots and pot herbs.

The month of February ushers in a busy season for the vegetable grower. Where cauliflowers and lettuce are scarce or have not stood the winter well, sow a pinch of each indoors as early as possible in this month; provided the soil is dry for working, a plantation of cabbage should be made, also a sowing of three or four of the earliest varieties of peas and broad beans, which ought to be ready in the second week of June. Transplant Tripoli onions, choosing a well manured space in that division allotted to deep-rooting crops. If possible get the soil in that fine dry state for working so necessary to prepare an onion bed, which requires to be rather firm and fine on the top. I would recommend sowing seed onions, spinach and parsley at this time. Jerusalem artichokes ought to be planted, if possible, during this month, as they require a long season's growth. Early potatoes are quite early enough if planted during the last days of February, and now that sprouting is carried out by the vast majority, I think it is a mistake to plant too early in the open, as there is the danger of a later frost just when they are above the ground, but on the warm sea-board of South Dublin you can easily plant much earlier than we do on the north side. The vegetables in season during this month are identical with those I enumerated for January, with the exception of cabbage, but a very good substitute takes its place in savoy.

In March gardeners require to bestir themselves, as everything wants doing at once. We require to prepare a seed bed for such as are grown and transplanted into permanent quarters later on—viz., cabbage in variety, cauliflower, Brussels

sprouts, savoy, greens, leeks, lettuce, parsnips and carrots. Second early peas and beans should be sown in their permanent quarters, also radishes, spinach and turnips, to form a succession to those already sown. Attention must be paid to the permanent bed of seakale by placing pots over crowns and covering the hole on top with a piece of slate. I consider it a better method to cover the crowns with dry moss and place the earth up over it in the same way as celery is earthed up. If every opportunity during the winter has been availed of, in the way of preparing the soil by digging, trenching and manuring, it is surprising how quickly the ground dries up during the lengthening days of March, enabling the work to be proceeded with simultaneously. Indoor we ought to keep the supply of mustard and cress fresh by sowing every week. Celery also requires artificial heat, and the main crop may be sown about the middle of the month and grown on, pricked off into boxes or frames preparatory to being planted out in trenches. During March we have still a good variety of vegetables, such as seakale, rhubarb, broccoli, Brussels sprouts, carrots, leeks, parsnips, parsley, beet, celery, onions, and greens.

April, probably, is not so important for seed sowing in the kitchen garden, yet it has its full share of work in store if we are to maintain an unbroken supply of vegetables. The first days of this month can be profitably spent in hoeing and breaking the surface soil through all the crops in the garden; the first crop of spring weeds are cut down and the surface soil stirred, aerated and mulched by the one operation. The Buco hoe cultivator is an excellent tool for this work. Successional sowings must be made of peas, beans, carrots, turnips, spinach, lettuce and radish. Carrot and beet might well be delayed until the last days of the month. By sowing a pinch of celery during this month and giving it the usual attention it comes in very useful as a late row or two, where it is esteemed in the late spring. Cauliflowers protected in frames during winter and hardened off ought to be planted, also another plantation of cabbage. Onions raised in heat may also be planted towards the end of the month. Another sowing of the Brassica family should be made about the 20th, such as early and mid-season broccoli, kale, savoy, Brussels sprouts and cabbages; these always come in useful, as the March sowing is uncertain. Vegetable narrows will be much earlier if started in heat and hardened off before planting out. Spring cabbage is again making its appearance, while other vegetables are gradually disappearing, yet we have onions, beet, parsnips and carrots in store to draw from, while celery, parsley, leeks, Brussels sprouts, broccoli, rhubarb and seakale remain with us yet.

May.—In this month vegetable crops make rapid growth, and early turnips, carrots, parsnips and spinach may require thinning. Keep the hoe at work between crops and on all vacant spaces; it is not only desirable for the destruction of weeds, it also helps to retain moisture in the soil, a matter of great importance in dry situations. Peas will require staking as growth proceeds, and two sowings may be made, one at the beginning and the other at the end of the month, for succession. Sow kidney beans every fortnight till end of June, and one sowing of runner beans. Late broccoli, cauliflowers and cabbages ought

to be sown about the third week, for planting out after early potatoes and early peas. Vegetable marrows, if well hardened off, may be planted out and well watered from time to time. Spring sown cabbage, cauliflower, kale, savoy and sprouts will be ready for planting by the end of the month. May seems to be the hinges of the gardener's calendar, as we are often cleared of winter vegetables, and new ones are slow to come in; yet there are a few in store, as turnips, spinach, asparagus, lettuce, seakale, rhubarb, broccoli, parsley, pot herbs, sea lions and cabbage remain with us.

June. Successional sowings of spinach, turnips, carrots and parsley are necessary to keep up the supply. Letts and celery are ready to plant out during showery weather, and the same applies to asparagus, as if transplants exceedingly well under these conditions at this season. Continue planting any of the Brassicas unfinished last month, and, as we have crossed the bridge, our basket can be filled with dishes of beans, potatoes, peas, turnips, spinach, asparagus, seakale, beet, rhubarb and lettuce.

July.—It is necessary to advise hoe! hoe! hoe! during arid July. Sow cabbage for early spring use about the middle of the month in an open situation, where the plants will get plenty of light and air. Plant broccoli as space becomes available when potatoes are dug out. Sow lettuce, spinach and turnip for succession. Earthing up of everything requiring it should be done, as it assists cabbage, cauliflower, &c., if exposed in any way. We may add to the June list French beans, cauliflower, tomatoes, vegetable marrows, &c.

August.—During this month Tripoli onions, to stand the winter, must be sown and transplanted again in spring. The present crisis has given the month of August a stimulus in the horticultural world, as extremely good reports are coming to hand of vegetables sown this month from all parts of the British Isles, although I am rather sceptical as to how they will fill up in the spring; however, it is worth noting as the month of May is our scarce season. Carrots, turnips, spinach, lettuce, radish, mustard and cress can easily be sown, and give a very good return in November and, together with some of the late planted cabbage, cauliflower and Brussels sprouts, would form a very nice collection at the end of October or early November. A sowing may also be made of cabbage, savoy, greens or kale, red cabbage, sprouts, cauliflower and prickly spinach to aid the extension of variety well into June. During August we are well supplied with vegetables, such as marrow, French beans, runner beans, broad beans, turnips, cauliflower, peas, tomatoes, spinach, lettuce, carrots, onions and cabbage.

September starts our harvesting, and onions deserve our attention as early in the month as possible, bending the stout-necked ones down carefully, in fact all tops should be laid down to wilt a little and allow the bulb to swell. About the 15th they should be pulled up, dried in sunlight as much as possible, and when thoroughly dry brought indoors, hanked and hung up in a cool, dry, airy place for winter use. The last of the garden potatoes should also be lifted and stored. Carrots are also matured by this time and may be lifted. Cabbage sown in July will be fit for planting; these can be planted fairly close, say 15 inches apart. Turnips and carrots sown

early last month will be ready for thinning. Keep the hoe steadily at work in dry weather, so as to keep down weeds. Celery and letts will require earthing up. I find it an excellent plan to cut down parsley in order that the young leaves may have time to start before winter. All vacant ground should be cleared and dug, as it looks much tidier than having some of the crops running to seed, and being dug at once has the advantage of being ready for the next crop. In this month there is still a good variety of vegetables finishing up the most tender lot, such as kidney beans, marrows, &c.

In October it is advisable to continue harvesting by lifting and storing beet and carrots; herbs must be cut and hung up to dry; finish planting cabbage for spring use; place early cauliflowers in frames; give second earthing to celery; remove flowering stalks from Globe artichokes, and cut away all weak suckers, this will strengthen the crowns left for next season; dig through them and manure on surface with litter. Begin early to clear all vacant spaces, and manure and dig for next season. During October winter vegetables are coming in season and can be utilised for variety to keep up a supply.

November brings us to the shortening days, and all crops will require attention. Rhubarb and asparagus should receive a good covering of manure; lift some of the roots for forcing, exposing them for a time to the weather, a little frost will do no harm. All crops sown and planted should have the soil stirred, and during dry weather look over stored potatoes, onions, &c., and remove any decaying bulbs and tubers. If every attention has been given to the sowing, planting and hoeing a full supply of vegetables will be available.

Full December brings its surly blast, and during these cold days it is well to plan out the work and garden arrangement for next year's cropping. Vary the crops as much as possible, or move the divisions, which I have already mentioned, one step forward. Rhubarb, seakale and asparagus may be placed indoors for forcing. Take notes from time to time of the varieties that are doing well.

I have not in this paper touched upon varieties, storing, manuring or diseases, but, should anyone inquire for information, I will be glad to do my utmost to supply it.

The Gathering and Storing of Apples.

(Read by Mr. J. HAGAN at a meeting of Ulster Fruit Growers in Portadown.)

Up to the present we have devoted all our time and attention to the selection of varieties suitable for planting, the cultivating of orchards on the most economic lines, combating the different diseases, and the growing of fruit to a high standard of perfection. Although all this work is absolutely essential, the fruit-grower cannot rest here and consider his responsibility is at an end. He must remember we are facing keen competition from both home and abroad, and not alone can we be content with placing our apples on the market carefully graded and packed in standard packages, but we must also study the steady

feeding of our markets from August to the end of April, avoiding glutting as far as possible. This can only be done by a better system of storing of our late keeping varieties. The great bulk of our Bramleys are, year after year, sent to market before the end of February; very often the market is glutted and small prices realised. This means the consumer has to depend principally on foreign fruit for his supply from the end of February to April; in other words, we are leaving our markets open for practically three months to growers in other countries, who not alone capture the markets at our own doors, but realise much higher prices than we obtained for our fruit. The home prices offered for Bramleys this year, during the month of November, was 5s. per cwt. for first grade; now the offer is raised to 10s. per cwt. Last year at the end of March good Bramleys from this county fetched as high as £2 per 10 stone barrel in the Dublin market, although in the early season the prices obtained were not satisfactory. These figures show the urgent necessity of giving more attention to the storing, so as to extend our marketing season over a longer period, and give a wider distribution to our produce. This can be done by adopting a better system of storage.

It has been proved by practical experience that if we are to keep our late apples until March and April we must attend to several items. First, the fruit must be well matured on the trees before gathering, selecting dry days for doing so. Second, it must be handled most carefully, not causing the slightest bruise. Third, it should be graded immediately, when gathering, into select, first and second grade.

The grading is of the utmost importance, as the select fruit is always the first to decay, and should be sold off when showing signs of over-ripening. The first and second grade can remain for a later sale; whereas if we do not grade when gathering, all must be sold off early as we are in the habit of doing.

There have been many controversies as to the best methods of storing. Some recommend trays, more lofts, others pits, barrels, earthen floors, and egg cases. From careful observations for a number of years I find the latter the most satisfactory. It has several advantages over any other method, particularly when dealing with large quantities of fruit. The cases hold about 10 stone each, and are easily carried on a handbarrow from the orchard to the store-room, thus avoiding all jolting and bruising; can be tiered over each other 5 or 6 deep, therefore a large quantity can be fitted into a small space.

The case, being provided with divisions on the bottom and sides, admits a free circulation of air, and the fruit can be examined from time to time without handling. Many growers store their fruit on earthen floors. Although this method is successful for early marketing, it cannot be recommended for apples that are to be kept over until March and April. Fruit stored in this way has always a tendency to become coated over with moisture in frosty weather, and owing to the lack of a free circulation of air will become mouldy, and consequently lose its bright appearance and crisp flavour. Storing in pits has died out, and is not likely to be revived. Fruit stored in barrels will often keep quite firm, retaining both flavour and colour into May, but as it cannot be examined from time to time, the risk of decay setting in unknown to the owner is so great that this method cannot be recommended.

The system of storing in trays and permanent benches is very suitable for a grower who has a number of varieties to deal with, or for private gardens where the supply for table use has to be kept up from August to May, but it would hardly prove economical for the large market grower.

The next item we must take into consideration is the store-room. Many kinds of structures have been tested. Those that have given the best results are thatched roofs with sound clean walls, and either earthen or cement floors, furnished with ventilators on both ends or sides. Slate roofs will also suit the purpose, providing the room is well ceiled. For the first fortnight the fruit is stored, the door and the ventilators should be left open to allow the moisture to pass off during the sweating stage. Afterwards the door and ventilators should remain closed, and the temperature of the room should be kept as near as possible between 40 and 45 degrees Fahrenheit. Equability of temperature is most important, as excessive heat or dry atmosphere will cause shrivelling, whereas too much moisture will cause the fruit to become covered over with mould, and decay will set in. During the ripening stage, apples are easily contaminated, therefore the fruit-room should be thoroughly lime-washed before using, and kept free of moist hay and straw and other heavy-smelling material. Fruiteers have repeatedly told me that their customers will only buy our apples for cooking purposes. I have no hesitation in saying that if we place our fruit on the market free from the musty flavour, which is due to bad storage, we can compete and hold our own against the great bulk of foreign fruit which is sold for dessert purposes. Consumers have a growing tendency to purchase apples of good flavour; and our aim must be to place them on the market in sound condition, good colour, and crisp flavour. Such fruit will always meet a big demand for both cooking and dessert purposes. By attending carefully to these details we would be giving more satisfaction to the consumer, creating a greater demand and wider distribution for our produce, adding our mite to build up a more prosperous fruit-growing industry, and placing our marketing on better lines.

Several samples of apples were exhibited, and Mr. Haagan pointed out that when they were allowed to remain on the trees till they were ripe they had a nicer appearance, were much firmer, and kept better than fruit that was pulled earlier. There was a tendency, he said, to pull fruit when a little unripe, but this was not a wise thing to do. The method of storing apples in egg cases had great advantages over the method of storing on floors.



SAXIFRAGA "CHERRY TREES."

This delightful plant seems in danger of being lost to cultivation, as it is now rarely seen in gardens, and few nurserymen catalogue it. Exactly what its requirements are never seems to have been discovered. This is a pity, since it is certainly one of the best of its class. Mr. Murray Hornbrook, in one of his delightful articles, alludes to *S. Cherrytrees*, remarking on its capricious nature. If readers of IRISH GARDENING who have grown this plant would give their experiences in different soils and situations, perhaps yet the secret of cultivation might be found out.

ALPINE.

Celery Seed and Celery Disease.

For the past eight or ten years or so a disease of celery, known as "leaf spot" or "blight," has unfortunately, been becoming more and more prevalent not only in Ireland, but also in Great Britain and on the Continent.

Many gardeners are already familiar with the



Fig. 1.

disease and have experience of the losses caused by it, but, judging from the number of examples of it which continue to be sent in for report (usually, it may be stated, in the autumn, when it is too late to take effective measures against the disease), there must still be a considerable number who are unacquainted with it.

The Department of Agriculture have published an illustrated leaflet (No. 5) dealing with the

disease, and an account of some research work done in their Seeds and Plant Disease Division in connection with it will be found in a recent number of their Journal (Vol. 11, No. 1, July, 1911). We are indebted to the Department for the loan of the blocks illustrating this article.

As is so frequently the case with plant diseases, the earliest stages of attack are apt to be overlooked. A celery plant badly affected is shown in Fig. 1, where, it will be noted, the older leaves have been almost totally destroyed, whilst

the younger ones are also in process of decay.

The early attacks

take the form of more

or less isolated dis-

coloured areas on the

foliage and leaf-stalks,

which later increase

in number and be-

come confluent to a

greater or less

degree. On these

brownish, discoloured

and dead areas numer-

ous minute black

bodies are only

just discernible with

the naked eye, but

they are easily seen

with a pocket lens.

Each of these is a

hollow fungus fructi-

fication containing

in its interior my-

riads of small spores.

If a portion of a

spotted, infected leaf,

such as is shown in

Fig. 2, be kept

covered in a moist

dish for a day or so

it will be seen that

there is extended

through a minute

pore at the apex of

each of these fructi-

fications (*pycnidia*) a

worm, or tendrill-like

mass, consisting of

such spores. These

masses are broken up

by rain, and thus the

spores become distrib-

uted over the plant.

If affected foliage

or leaf-stalks be al-

lowed to remain on

or in the soil or com-

post heap over the

winter, the fungus

does not die, but re-

mains capable of pro-

ducing fresh spores

and of infecting a suc-

ceeding crop in the following

season. Hence the necessity of carefully collect-

ing and burning every trace of affected celery

plants in the autumn.

The fungus, however, not only attacks celery

foliage, but it is also found on the fruit, and since

each celery "seed" consists of a half-fruit it is

therefore to be found on commercial celery seed.

Fig. 3 shows some celery seeds which have the

pycnidia of the fungus upon their surfaces in the form of minute black specks.

The presence of the fungus on the seed naturally suggests at once that the disease may be transmitted by the use of affected seed, and this has now been demonstrated to be the case. Fig. 4 shows a celery seedling raised from an affected seed. The left hand seed-leaf or cotyledon has become infected towards its free end with the disease by means of spores of the fungus derived from pycnidia on the seed coat.



Fig. 2.

At this time of the year gardeners will be thinking of purchasing and sowing celery seed. They should bear in mind that a very great deal of the celery seed on the market carries the disease with it, and they should insist on being supplied with a written guarantee by the seed merchant that the seed offered for sale has been subjected to expert examination and has been pronounced to be free from the fungus.

The Department of Agriculture have made arrangements by which seed merchants and others can have their stocks of celery seed examined and reported upon for the sum of one shilling per sample.

If for any reason nothing but affected seed be available, it is possible to treat such seed with a fungicide in such a way that the disease-producing fungus is killed without impairing the vitality of the seed. Such seed should be soaked for a period of three hours either in commercial hydrogen peroxide (sold by chemists under the name of "Golden Hair Wash") or in a dilute solution of formaldehyde (1 part 10 per cent. formalin in 600 water). The seed should be thoroughly shaken up with the liquid to ensure that it becomes thoroughly wetted all over its surface, and at the expiration of the period of soaking the

liquid should be poured off, the seeds roughly dried upon clean blotting paper, and then placed in a shallow layer in a warm place to ensure rapid drying.

A careful watch should be kept when the celery seedlings are planted out in the prepared trenches for any signs of spotting of the foliage. Even if the disease makes its appearance it is possible to keep it in check by spraying with the same mixture as is used against the potato blight.



Fig. 3.

Such spraying should be commenced in good time, and should be repeated two or three times during the growing season.

It ought not, however, to be necessary for the gardener either to treat his celery seed or to spray his plants (unless the disease be contracted from a previous crop). Gardeners should *insist* on being supplied with disease-free seed by the seed merchants, and the latter should insist that the growers of celery for seed should supply them with clean seed. It is for the growers of the seed to spray their crops and produce seed free from disease, but, naturally, they will not do so until compelled by the gardener and seed merchant.

Many people object to spraying celery through

the fear that it might be rendered dangerous for human consumption.

If spraying be commenced early, however, it will not as a rule have to be continued so late that, at the time of using the crop, much or any of the spray still remains adhering to the plants. This objection, of course does not hold good in the case of celery grown for seed purposes, and since by timely spraying seed can be raised which is free from the disease the onus of preventing the further spread of the disease lies with those who so far have been the chief agents in disseminating it—namely, the celery seed growers.



Fig. 4.

Raising Alpines from Seed.

By E. B. ANDERSON.

THERE are so many advantages to be gained by raising choice alpine plants from seed that there should be no need to call the attention of amateurs to this interesting phase of alpine gardening. To those with a slender purse it offers an economical means of raising a stock of species which might otherwise be restricted to single plants in the garden. In addition, it gives opportunity for experimenting with capricious species in different parts of the garden, for it is only by constant study and experiment that success can be obtained with all the genus one wishes to cultivate; this requires a stock of plants which, if bought in the mature state, would result in a somewhat terrifying bill from the nurseryman. Further, I believe that in many cases success is more assured if one starts with seedlings rather than mature plants. The only disadvantage is that one has to wait longer for the plants to flower. Seedlings take at least a year to reach maturity, and often longer; but if seeds are sown each year the period of waiting is forgotten in the pleasure of seeing each year several new species coming into bloom. There is, however, one difficulty which confronts the small grower which it has been my object to overcome—that is, the annual summer holiday. During this time, be it a fortnight or a month, disaster may rapidly overtake the seed pans and seedlings owing to drought, for it must be admitted that seed-raising requires constant attention in the matter of watering. It is with the object of overcoming this difficulty that I have been experimenting for some time, and with some measure of success.

There appears to be three methods available. The first is to sow in pans or pots in the usual way, adding a small proportion of peat to the usual mixture, and finally covering the pots with $\frac{1}{2}$ to $\frac{3}{4}$ inch of silver sand; this not only prevents too rapid evaporation, but also to some extent prevents the growth of moss. The pots are then placed in a partially or completely shaded frame, which is closed and covered with mats. Under these circumstances the soil will remain quite moist for a fortnight after watering, even in a frame partially exposed to the sun, as mine is, and would, no doubt, keep so for three weeks in a frame completely shaded from the sun. The darkness in which the pots are kept is also very efficacious in preventing the growth of moss, which is exceedingly dangerous in the case of species which take a year or so to germinate. A further modification of this is to make the bottom of the frame into a small tank, fill the frame with peat, and plunge the pots in this; there is no difficulty in keeping an inch or so of water in the bottom of such a tank. I found, however, that this latter method kept the soil too damp, with the result that it rapidly became "sour." The chief disadvantage of this darkened frame method lies in the fact that seeds may germinate while one is away and be irretrievably ruined by growth in darkness before one returns.

In order to avoid this I tried sowing out of doors in a prepared bed in a partially shaded situation, covering the seeds, when sown, with chafe cloches, the inside of which were brushed over with whitening. Such a bed will, after

being well watered, last three weeks without attention, and longer if rain falls, for any rain falling runs down between the rows of cloches and moistens the bulk of earth in which the seeds are sown. Seeds germinating are perfectly safe, as the slit along the top of each cloche maintains ample ventilation. In the case of seeds known to be of slow germination, these can be sown in proximity, and the cloches covered with mats to give darkness and prevent moss growth.

The fault I found with this method was that worms constantly turned up the soil under the cloches, so burying seeds or raising seedlings in the air with resultant death. So far I have not succeeded in overcoming this grave difficulty.

My third and last method, although not completely tested yet, promises most success. It is a modification of the above two. The seeds are sown in pots covered with the sand and then plunged in a bed of sand in a partially shaded position and covered with the shaded cloches as before. Any rain that falls runs down between the cloches, moistens the sand, and eventually the pots, without giving that excess of moisture which militated against the tank method. Pots of seeds likely to be long in germinating can be grouped together and the cloches covered with mats, as before. I have had pots in a small experimental bed for four months now, and during that time they have had no watering at all. When the seedlings are strong enough the pots can be removed from the cloches and plunged in a similar situation in the open, adding, if possible, further sand on the top of the pot. Plunged and treated in such a way in a position shaded from the mid-day sun one can go away on one's holiday without a tremor in any normal season.

As regards time of sowing, I prefer to sow as soon after the seeds are ripe as possible, but this is only possible in the case of home saved seeds; otherwise one has to wait till autumn, when, in the case of, I think, a solitary Irish firm, and several Continental ones, it is possible to obtain seeds. Of course the necessity of autumn sowing only occurs in the case of species known to be of tardy germination, others can safely be left till spring.

The following sown in autumn will generally germinate freely in the following spring:—*Androsace*, *Anemone*, *Castilleja*, *Colonopsis*, *Cortusa*, *Corydalis*, *Bulbous plants generally*, *Cyclamen*, *Dodecatheon*, *Dryas*, *Edraianthus*, *Erodium*, *Heurvillea*, *Meconopsis*, *Omphalodes*, *Pentstemon*, *Potentilla*, *Primula*, *Ranuncula*, *Saxifraga*, *Viola* (choice species, such as *Comollia*, *pinnata*, &c., very erratic), *Wahlenbergia*.

Gentiana and *Ranunculus* I find very erratic, they may germinate in spring if autumn sown, or even in summer if spring sown, but they may also lie dormant for two years. Some *Primulas*,—*e.g.*, *Cockburniana*, *capitata*, *farinosa*, *warci*, *pulchelloides*,—will germinate readily if spring sown; others, such as *P. Bulleyana*, *Beesiana* and *Forrestii*, are erratic even if autumn sown.

The other main groups not mentioned above can be sown in spring, but it must be remembered that some of the choicer alpine plants are slow of germination—*e.g.*, some *Thlaspis*, *Campanula*, *Alibonii*, &c.—and may not give a full crop of seedlings till the following spring. That is why I prefer autumn sowing where possible, as the germination in spring is generally more prolific.

To all interested in alpinæ I say "sow seeds," and then you will have, among many others, as I have at present, fifty nice plants of *Ranondia pyrenaica* from one pod of seed sown as soon as ripe in 1913.

Notes.

Gardening for Amateurs.

THE concluding part—number 24—is now out, and continues the notes on vegetables. The article concludes with a very useful and complete table showing "Vegetable Growing at a Glance," an excellent and reliable guide for amateurs. Following this are several pages devoted to "Odds and Ends of Interest," dealing with such divers subjects as Soot and Bone-meal, Making Wood Ashes, Earthworms, a Simple Propagator, How to Establish Mistletoe, and other equally interesting paragraphs. A very complete and handy index occupies many pages, and when incorporated in the bound volume will be of inestimable value. We can only conclude this series of reviews by heartily commending "Gardening for Amateurs" to the notice of all who wish to have by them a complete guide to the elements of gardening.

Mr. J. Cussen.

MR CUSSEN, previous to the outbreak of war, was gardener to Mr. W. Verschöyle, Woodley, Durdum, and is well known among Sweet Pea enthusiasts in the Dublin district. War being declared he loyally volunteered and joined 131 Battery, R. F. A., as a gunner. Mr. Cussen was on leave in January, and before returning on the 21st of that month found time to send a few lines to IRISH GARDENING. Landing in France on the 11th of August, he was at the battle of Mons and in all the engagements from there to near Paris. His Battery also took part in the advance to the Aisne, and subsequently went to Flanders and assisted in checking the advance on Calais.

In spite of his severe experiences Mr. Cussen is still as keen as ever on his favourite flower, and on the eve of returning to duty recommended the following varieties as impossible to beat:—Marks Tey, Rosina, Edward Cowdy, Bolton's Orange, Dobbies' Cream, Maud Holmes, Mrs. E. Cowdy, Mrs. Breamore, The Comet, Paradise White, Pearl, and Rosabelle.

We will all hope for Mr. Cussen's safe return and an early entry to the peaceful arena of the exhibition tent.

Pyracantha crenulata.

UNDER this name, or that of *Crataegus crenulata*, we have had a Himalayan evergreen shrub growing in our gardens for some years. It is on the borderland of hardiness, and unless growing under the shelter of a wall or fence suffers during severe winters, except in the south and west.

Among the Chinese trees and shrubs is a very promising form of this *Pyracantha* which Mr. E. H. Wilson found growing at an altitude of 10,000 to 11,000 feet in Western Hupch and Western Szechuan, while Dr. Henry had previously collected specimens in Yunnan. Mr. Wilson describes it as a very common shrub, and states that the natives use the leaves when dried as tea.

The plants raised from seeds sent home by Mr. Wilson are much freer in growth and more loose

in habit than the Himalayan form. The bushes produce quantities of white flowers followed in autumn by orange-scarlet fruits, which hang on the plants when not taken by the birds until the new year. A number of plants are fruiting freely at Kew, and at a recent meeting of the Royal Horticultural Society a beautiful specimen was exhibited by the Hon. Vicary Gibbs.

We must wait for severe frosts to prove the hardiness of the Chinese form, which one hopes will be at least equal to *P. coccinea*. At all events, in the south and west of Great Britain, and in Ireland, the subject of this note will be a welcome addition to the evergreens in the pleasure grounds.

A. OSBORN.

Ruellia macrantha.

THE *Ruellias* are soft wooded plants having a somewhat erect habit of growth and trumpet-shaped flowers, and in the case of the plant quoted above are produced during the winter months.

The colour of *R. macrantha* is rosy-purple, prettily veined in the throat, and a small batch is very desirable and interesting through the dull period of the year. After the plants have flowered, they are cut back slightly, and then if sprayed over occasionally will soon form nice sturdy shoots which make ideal cuttings. These are taken during the present month, and are inserted in sandy soil, and if placed in a warm moist frame, such as is found in most stoves, they will readily form roots. When this stage is reached, each cutting should be given a separate existence, using 60 size pots for the first potting. As root action increases a larger receptacle must be provided, until a 32 or 24 size pot is required, in which the plants will bloom. The compost consists of fibrous loam three parts and leaf-mould one part, to which is added a generous sprinkling of silver sand. Throughout the summer months a light position near the glass should be chosen, but a slight shading will be necessary when the sunlight is exceptionally strong. The young plants must be pinched in the early stages of their career, to encourage side shoots and to prevent them becoming tall and leggy, when their beauty to a great extent is lost.

Keep the plants free of insect pests, then little difficulty will be experienced in growing *Ruellias* to perfection.

In addition to *R. macrantha* there are *R. Baikiæ*, scarlet; *R. Herbsti*, purple; *R. rosea*, carmine-rose, which blooms in the summer; and *R. Portellæ*, rose-pink, but they are more rare than the subject of this note.

T. W. B.



CORONILLA CAPPADOCICA.

THE interesting note by T. W. B. leads me to speak of *C. cappadocica*, rarely seen in gardens, and which is certainly the best species for rock gardens. The plant is very low and spreading, creeping over the soil. In the months May to September it is covered with dense capitules of deep yellow flowers, which are one of the beauties of a garden. As the plant is very hardy, and as easy to grow as its near ally *C. montana*, it is to be recommended to everybody. From seeds it comes quickly, and flowers the first year. *C. montana* is a higher plant, very floriferous too, and flowering from May to August.

H. CORREYON.

Hints to Novices.

By R. M. POLLOCK.

ALL fruit growers should now be on the look out for the "mite," or what is more generally known as "big bud," on black currant twigs. It is a most destructive pest, and in some localities a very common one, but it is also one which can be very easily noticed, and about which there can be little doubt. The buds on the twigs which are affected will be noticed fatter and swollen out to an unusual size. If opened these will be found to contain a tiny little grub, which will eventually leave these buds and take up residence in the new buds on other shoots, and thus spread destruction through the whole plantation. All twigs so affected should be removed at once and burned. It is very essential that the twigs should be burned, and not thrown on the burning heap to await the next day for lighting. Any delay is a fatal mistake, and I fear one which is often allowed to occur through pure thoughtlessness, and which in some cases may be the cause of spreading diseases which might otherwise be located and checked before they have done much harm.

Roses. All outdoor Roses, bushes and standards may be pruned this month, but the Teas should not yet be touched; the last week or, better still, the first week in April will be time enough for them. In cold districts, where the Teas have to be protected, their coverings may be removed as soon as the weather gets milder. Any growths which may have been produced under these coverings will have to be removed at pruning time. It is a mistaken idea that the protection forces them into growth. This is not the case. It is the natural state, but being covered the growths have been unchecked and so have grown long. Sharp secateurs—and they must be sharp, otherwise they injure the wood by tearing, and a good sharp knife—are the necessary implements, together with a pair of gloves. Many people think that gloves are unnecessary and that the work cannot be properly done in them, but surely there is enough to think about without considering one's hands and being torn by sharp thorns. Clear out all dead and weak wood, and have the centre of the bush open and free. Low shoots should be cut off, as during wet weather flowers produced on them would only be spotted with mud splashes. It would be impossible to give full directions in these notes, as every variety requires separate treatment, but two standard methods prevail—the pruning severely, and so producing quality without quantity, or to prune for quantity principally. Exhibitors will adopt the former method, but for ordinary garden work the latter will answer admirably.

See that all wall plants are carefully and securely tied in. The strong winds of March and April are disastrous, and tear plants away from supports in a very short time.

Has anyone noticed that where *Iris stylosa* is planted in very poor, hot, dry soil it flowers much earlier, and that planted in richer material seems to come into flower much later? In this way the period of blooming may be very considerably prolonged.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath, Bally-walter Park, Co. Down.

FINISH removing shrubs where not already done as soon as possible, and lose no time in getting alterations involving the relaying or putting down fresh turf completed. It is a great advantage and a saving of labour to have this work completed before drying winds set in. If not previously done, get Pillar Roses pruned and tied, and where wooden poles are used for the pergola have them examined carefully, letting none be left that are not likely to last the season. Give the Pillar Roses a liberal supply of manure water when it can be conveniently obtained, or failing that, a good dressing of solid manure. Dwarf Roses may now be pruned, and where the beds have not been trenched in the autumn, they will require a good dressing of manure; the latter is better covered with a few inches of fresh soil to prevent the blackbirds from scattering it about. Look over all recently transplanted shrubs and trees for the purpose of ascertaining whether they are securely staked, for if they are allowed to roll about with the wind the tender roots are broken off, and the plants are consequently deprived of their only means of obtaining nourishment. Mowing will soon require attention, therefore the turf should be swept, well rolled, and made thoroughly firm without loss of time, remembering that if the first mowing is deferred till the grass has got long, it will require much time and labour to get the turf again in proper order. With the lengthening days of March preparations for the summer planting of all those parts of the garden requiring annual treatment may now be advanced a step. Specimen plants such as Fuchsias, Ivy-leaved and other Pelargoniums, as well as Heliotropes, &c., are now starting away nicely, and if they are on balloon or other trellis, they want looking to occasionally to direct the young growths, so that the plants when required may be well furnished from base to top. It is nearly impossible to overfeed such plants as the summer advances; as they remain in the same pots year after year, there must necessarily be a mass of roots requiring stimulant to keep the plants healthy and the supply of flowers abundant till the end of the summer. Boxes or baskets that are to occupy prominent positions should be filled some time this month, so as to allow plenty of time to furnish them well, and also to thoroughly harden off the plants before the end of May.

ANNUALS FOR CUTTING.—It is very disheartening after a lot of thought and care, and when the beds and borders are at their best, to be obliged to cut the flowers from them, therefore a space should be reserved in the kitchen or fruit garden for a few annuals for cutting. The spot selected should get a fair amount of sunshine and be fairly well manured, in the autumn if possible. The choice is very large, but I may mention a few of the most useful varieties:—Asters, in varieties, especially the Single; Cornflowers will furnish an unlimited supply of bloom, the blue is the best;

Annual *Chrysanthemum*, *Dianthus*, *Godetias*, *Mignonette*, *Salpiglossis*, *Scabious*, *Coreopsis*, *Cosmos*, for its foliage; the small *Sundflowers*, and some ornamental grasses. **Violets.**—The ground for **Violets** should be well stirred, and if of a heavy nature, should have a liberal dressing of leaf-mould or light manure; the remains of old hot-beds make excellent manure for **Violets**. The middle of the present month is about the best time for planting: select well rooted, strong runners, and plant carefully with a trowel, 9 inches apart each way over the whole ground, making all firm as the work proceeds. If the weather be at all dry they will require to be sprinkled daily with a fine rose-watering can.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitz-Gerald, Carrigoran, Co. Clare.

GIVES normal weather conditions through the winter months, when March comes round the bulk of work in connection with hardy fruit growing outdoors has been satisfactorily completed, but during this season it is not "February alone," but each month seems to have been literally a "fill dyke," and each combined to retard in a most disagreeable manner all kinds of fruit growing operations, and, excepting in a few highly favoured districts, this will consequently prove an abnormally late season. It is quite obvious that the most pressing work will take precedence: thus planting of young fruit trees must now be finished at the earliest possible opportunity, and should be carried on with the greatest care to avoid undue exposure of roots to wind and sun. In case of consignments from nurseries, &c., if there is any doubt as to roots being in a sufficiently moist condition, place them in a tub or a cistern of water for a couple of hours previous to planting or to being heeled in to await planting. In all kinds of planting during this month special care should be taken with filling in earth amongst roots and trampling well as the work proceeds. On heavy land it is a considerable advantage if a quantity of light, dry compost is available to sprinkle amongst roots of trees; such precautions will considerably facilitate new root action and minimise the risks of failures. Care should also be taken to have all broken and jagged ends trimmed off the roots before planting. As planting is finished, a mulching of stable manure, or half-decayed farmyard manure, should be spread around the tree to width of roots to prevent evaporation of moisture in case of ensuing drought. A similar mulching should, if possible, also be applied previously to newly planted trees, or any such as may have been removed or lifted. This is a good time also to look round all previously planted trees or bushes, and re-trample any that may have become loosened by gales or high winds.

Late digging or cultivation of borders and fruit plantations should receive special care, particularly on heavy soils, where the ground should be well broken up, leaving the surface quite fine, to lessen evaporation and the ill-effects of subsequent drought or parching winds. Avoid injury to roots by over deep digging as far as possible; it is sufficient to dig to such a depth as will allow of covering over any manure or dressing which may be applied to the trees.

Any arrears of planting of bush fruits, raspberries and loganberries should be promptly completed; with these subjects any requisite pruning should be done at once after planting. Cut out any weakly shoots, also any excess of stronger growths, over such as are required to form the basis of a good bush; the remaining shoots should be cut back to half or rather less than half their length. Raspberry canes should be cut to within a foot of the ground level; also cut down raspberry canes that may have been previously planted in a similar manner, to induce growth of good strong canes for fruiting next year. If the canes in permanent plantations of raspberries were left full length at time of annual pruning, these should now be shortened to the height of wires supporting canes, or to stakes to which they may be tied.

Where black currant bushes are mite infested it is very advisable to look through the bushes carefully to detect and cut away any big buds which may have been missed or become more developed since annual pruning. Any such buds should be brought to some fire and destroyed.

Towards the end of this month and during the early days of April grafting will call for attention.

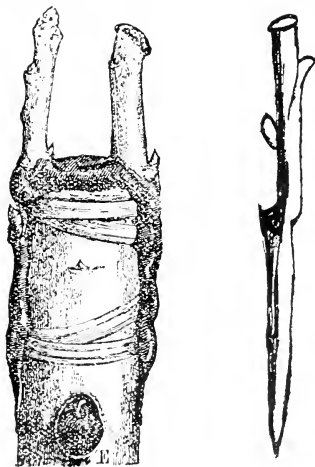


Fig. 1.

Fig. 2.

For trees headed back, as described in last month's notes, crown grafting (see Fig. 1) is the most efficient method to adopt: it is quite a simple operation, and with a little practice an operator may soon become quite adept. When a favourable day presents, try one or two stocks by slitting the bark a little, at a point where no scion is to be inserted; if the bark parts clean and readily from the wood grafting may proceed. With a good sharp saw cut the stock at a suitable point, making a slightly slanting cut downwards, being careful not to split or tear the bark; prepare the scions, as at Fig. 2, from 6 to 8 inches long when finished (the longest ones for stout stocks); commence below a bud, making a splice-shaped cut on the scion, and cut across to make a shoulder, with a clean square cut; this

shoulder assists materially in making a more complete union, and keeps the scion steady and firm; now slit the bark on the stock to a depth slightly greater than the splice cut on the scion, raise the bark with the handle of a budding knife or a piece of wedge-shaped wood made quite smooth, then push the scion down under the raised bark until it rests with the shoulder on top of the stock, afterwards binding the scions sufficiently tight to keep them in contact with the wood and without injury to the bark, with stout strips of raffia or two or three strands of worsted twisted together. Fig. 2 shows the scions finished off with grafting wax, which is quickly applied, and makes a neat finish, though I very much prefer the ancient method of finishing off with clay, and always use this material. A suitable quantity of good adhesive clay should be procured a few days previous to being required; it may be spread out on some hard floor and kneaded with a stick; any stones must be picked out, if there should be any mixed in the clay; after kneading the clay, mix in through it about a third (or less) of horse-droppings, which must be made quite fine by rubbing through a $\frac{1}{2}$ -inch mesh sieve, giving this a further kneading, and now dumping the mass sufficiently to bring it to about the consistency of glazing putty; when closing up the grafts with clay, gradually apply the clay overhead of stock and all round, until a good sized egg-shaped ball has been applied, and smooth it over with a damp paint-brush or the hand, wetted.

The Vegetable Garden.

By ANDREW PEARSON, Gardener to A. F. Sharman-Crawford, Esq., Lota Lodge, Glanmire, Cork.

MARCH is the most important seed-sowing month of the year, almost every vegetable may be sown, and it is still possible to make good earlier sowings which may have failed, but every fine day must be taken advantage of in the preparation of seed beds. Should the soil be wet and pasty defer seed sowing until in proper condition, as seeds will neither germinate evenly nor grow vigorously in a concrete or sodden soil.

Asparagus beds may be tidied and straw mulchings removed, pointing in short manure with a fork, and dressing with nitrate of soda or salt towards the end of month; prepare seed beds for April sowing.

Brassicæ of all kinds may be sown in quantity, the much wanted cabbage taking precedence, gaps require filling, and good heads—even if not required for household consumption—never go amiss. Brussels sprouts, autumn broccoli, cauliflowers and winter greens should be sown also, and to make doubly sure of success preserve seed enough of all the winter stuffs for a sowing next month. Dry, hot summers, and even wet ones, at times rush or retard plants towards maturity, and the additional sowing may just save such an occurrence. On no account plant the cabbage family on the same ground twice in succession; give early spring cabbages a dressing of 1 oz. nitrate of soda to the square yard, hoeing the ground after the application; the crop responds to this treatment in one week, and yields a tender, well-flavoured head rarely found in the slower grown coarse tissue of the ordinary cabbage.

BROAD BEANS.—Sow the main crops as advised

in last month's notes, and plant out any which may have been brought on in pots or boxes.

CARROTS.—Sow Early Horn varieties on a south or sheltered border for early drawing.

CELERY and CCELERAC, for early crops, should be sown in heat, pricking out when ready into rich soil, three inches apart; give plenty of water, and grow on sturdily without check.

CUCUMBERS.—Sow singly in pots, and where hot-house space is not available high class cucumbers can be grown in hot bed frames; indeed, for an every day supply frame-grown stuff is invaluable.

LEEEKS.—Sow on rich soil, and draw the stronger plants for the first plantings; by adopting this practice successive plantings can be made from one thick sowing.

LETTUCE.—Sow now, and continue to sow at intervals throughout the year. The finest quality lettuces are grown where sown. The Cos varieties are considered superior in flavour to the cabbage, but many growers prefer the cabbage varieties, which heart and blanch naturally without the need for tying. Without any desire to be invidious I would recommend for summer use the Cos variety Prince of Wales and the cabbage variety Iceberg, both fine flavoured, long standing sorts.

ONIONS.—Sow on a well prepared seed bed consolidated by tramping or rolling; scatter a dressing of soot, salt and wood ashes over the whole, rake in and sow in shallow drills 9 inches apart. A few lines may have a sprinkling of Early Horn carrots sown with the onions; these will prove useful for early drawing at the season of thinning the onions for salads. The variety Ailsa Craig and its many selections, although generally looked on as only fit for exhibition, are nevertheless excellent main crop good keepers.

PARSLEY.—Sow summer crop 18 inches apart. PARSNIPS.—Sow in drills 18 inches apart in deeply dug soil where the manure has been placed at some depth.

PEAS.—The choice Marrowfat varieties should be sown thinly, allowing plenty of space between the rows; the intervening spaces may be filled with potatoes, spinach, cauliflowers or similar dwarf-growing vegetables. Should slugs be cutting off early sowings, cover the rows with coal ashes. Stake all peas above ground.

SEAKALE.—Thongs saved from roots lifted for forcing should be planted in their quarters; insert the thick end uppermost, about one inch below the surface, $2\frac{1}{2}$ feet between the rows and 2 feet between the roots, or plant three roots in triangles 2 feet apart and 3 feet between the rows. This plan permits forcing in the growing quarters and enables the grower to cover a set of three crowns with one 12-inch pot. Seakale reciprocates generous treatment.

TERNIPS.—Sow the white and yellow varieties towards the end of the month on fine rich soil 12 inches apart.

TOMATOES for outdoor fruiting should now be sown in heat; avoid too high a temperature, and keep the growing plants stocky by keeping close to the glass. These will be ready for planting out about the end of May. Choose a good open air variety, such as Laxton's Open Air or Fillsbasket.

POTATOES.—Plant all maincrop varieties, giving liberal space, according to their respective growths, and if time permits remove all but one strong bud from the seed tuber.

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Irish Gardening

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IRISH GARDENING

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

APRIL
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EDITED BY C. F. BALL

Some Gardens and Nurseries in England.

FRIAR PARK, HENLEY-ON-THAMES.

To the gardener, whether amateur or professional, Friar Park is surely one of the most interesting places in England. It is what one frequently hears called an "all round" place. Although perhaps the rock garden has claimed most attention from visitors of late years, it is by no means the only feature of a wonderful garden or collection of gardens. Trees and shrubs are numerous and well grown; indoor plants are represented by scores and hundreds of species, many of surpassing beauty, others quaint, and still others weird and wonderful. The chief object of my visit, however, was to see the famous rock garden, which has been in course of construction for many years, and is still progressing. As many rock gardening people are aware, the plan of the garden is a replica of the Matterhorn, and so faithfully has the design been carried out that the Henley Matterhorn is a term in frequent and justifiable use. I am not going to attempt to describe all the wonders of this wonderful work of art which is not less wonderful below the surface where caves and grottos of marvellous construction and weird beauty have a story of their own. My chief desire was to study the rock work and examine the plants growing thereon. There is satisfaction in doing so, knowing one is studying something which is the outcome of years of patient labour and many visits to the original Matterhorn. Thus one can safely note many points which often puzzle when structural work has to be carried out and no opportunity of visiting the Alps is forthcoming. To my mind the most interesting thing about all rock gardens is the plants, and the measure of their health and vigour is, in my opinion, the measure of the rock garden's success; and it is not to the commoner kinds which will grow anywhere one must look, but to those less frequently seen in healthy luxuriance. July is not an ideal month to see alpine flowers in bloom, but in some ways it is a good time to visit a rock garden where a large collection is grown, for those in flower then are doubly valuable as extending the season of beauty, which is what most gardeners are continually trying to do.

To accommodate a large and varied collection of alpine plants it is necessary, of course, to have a variety of aspects, a matter of no difficulty at Friar Park, where the area covered is so large and the rocks used vary in size and shape, and many weigh several tons. Every yard, as one progresses slowly from the base to near the peak of the "Matterhorn," is full of interest and instruction: ridges and hollows, screes and mountain pools and torrents all combine to render a day spent among them one of the utmost enjoyment and value to a gardener. Here on the shady side of a ridge one meets perhaps a colony of Primulas, there across the ravine on sunny shelves *Wahlenbergias* or *Campanulas* are revelling in sun above and deep gritty soil below, wandering into chinks and crannies and tumbling over the friendly rocks in rudest health.

Near the base *Seseli gummiferum* was conspicuous by its much cut glaucous leaves. This is a meadow plant reaching 3 feet high when in flower, and is biennial only. *Aplopappus Parryi* in habit resembles a dwarf *Solidago*, and is useful on large rock gardens where a representative collection is aimed at. *Primula floridensis* was early noted in flourishing condition, though not then in flower. *Scorzonera rosea*, a pink flowered variety of the Viper's Grass, was out of flower, but of interest to those who have large collections to maintain.

Cytisus Kitaibelii, which had also been noted a Kew, is a low growing species, evidently free flowering, judging from the abundant crop of seed then carried. It resembles in habit the plant commonly grown as *Genista humifusa*, and is evidently a useful rock plant, though not mentioned in the latest works on trees and shrubs.

Eriogon hybridus roseus, a garden plant, but quite happily placed on the rockery, gives a welcome touch of colour and flowers after the main flush of spring and early summer flowers. *Veronica multifida*, a much cut-leaved Speedwell, is also called *V. austriaca*, and is suitable either for the rock garden or front of the herbaceous border. *Dracocephalum botryoides* is a very distinct woolly-leaved plant, valuable

for the grey white effect of the foliage. *Telephium orientale* is prostrate in habit, and much resembles *T. Imperati*: neither are particularly showy, but flower late, when most other things are over.

Dracocephalum peregrinum album was a mass of white flowers at the time of my visit, and is thus immensely valuable in carrying on the season. *Arenaria juniperina* is most distinct in its stiff spiny Juniper-like habit—very different to the floppy plant frequently seen under this name, and the softly hairy variety of the

the enthusiastic head gardener. *Dianthus Coezy-coch* and *D. hypnoides*, not seen in flower, were recommended. *Saponaria Boissier* was flourishing with other good things, and near by *Dianthus vaginatus* and *D. neglectus atrocarpum*, though not in flower had all the appearance of good alpine.

Phlox Vivid, so hard to keep in many gardens, is also troublesome at Henley, but the difficulty is overcome by propagating during summer and planting out in spring.

Pentstemon Davidsoni was in fine form in the



VIEW IN THE ROCK GARDEN, FRIAR PARK, SHOWING CASCADE, WATERPOOLS AND STEPS.

"Golden Aster," *Chrysopsis villosa* Rutteri, is also dwarf and summer flowering. *Viola pseudo-gracilis* was new to me, and looked promising in habit, though not in flower, and a surprise was *Merembryanthemum uncinatum* which proves hardy on the rocks at Friar Park. *Stachys Betonica alba* was in full flower, and, though perhaps too robust for a small rock garden, was singularly attractive at the time of my visit. *Boykinia major* was bearing thick spikes of white flowers over handsome foliage, and seemed at home in a cool moist bay. *Wahlenbergia serpyllifolia major* is a speciality at Friar Park, where a particularly good form is grown, and *Saxifraga oppositifolia*, Clarke's Seedling, though, of course, not in flower in July, is very much thought of by Mr. Knowles,

rock garden, and was represented in the frames by a fine batch of young plants from cuttings. *Mimulus* Friar Park is an attractive plant for a cool position, and there is also a specially good form of *Primula rosea*.

It is hopeless to attempt to give any adequate account of half the plants grown on the rock garden alone, not to mention trees, shrubs, bog and water plants, &c. Any one of the features of Friar Park would tax an abler pen than mine to describe, whether the herbaceous garden, the garden of sweet smells, the lakes, or the indoor garden, and many others. In the Orchid houses are many species quaint and beautiful, and at the time of my visit *Dendrobium Sanderæ* was magnificent.

One can only marvel at the patience and skill

which has designed and carried out the whole idea and the generosity which enables the public to share the enjoyment on fête days.

My own thanks are due to Sir Frank Crisp, Bart., for permission to study the various gardens it has been his delight to model, and to Mr. Knowles, his gardener, for courteous and kind attention during a whole day.—J. W. B.

Irish Demesne Woods.

(Continued.)

By A. E. MOERAN.

LET me take it for granted that the owner of more or less worn out demesne woods has realised that, unless some step is taken to get a stock of young trees on the ground, the end of his woods is as inevitable as the end of his poultry farm would be were he to try to run it for ten years without hatching out an egg or buying in young blood.

Now, I am going to be essentially practical, and to disregard everything but the two questions—"How is this re-stocking to be done?" and "Will it pay?"

Of course, conditions will be found to vary in every wood, and must be considered very carefully on the ground before it is definitely decided what is to be done; but let me take a very common type of wood as found in numbers of demesnes all over Ireland. To begin with, the soil is good—good enough to grow any class of timber. The wood was planted some 80 to 100 years ago of mixed species. The Scotch fir, spruce and larch have practically all either been cut out, blown down, or rotted on their feet. A few big silvers still stand, grand trees, but each year sees fresh ruin among them. Most of the ash, elm and sycamore have gone, but here and there chance trees remain. Round the fringes of the wood there is a fairly strong screen of beech, and beech is the principal tree left everywhere, but all through the centre irregular gaps appear separated from each other by little islands or peninsulas of trees, and with scattered, wide-branching single trees here and there. The gaps are filled with briars and elder, and perhaps hazel or birch. It is obvious that here is land that ought to be producing a good profit, and which is producing nothing. There is not a quarter crop on the ground, and what there is is of poor quality, and deteriorating at that. On the face of it this is wasteful and uneconomical, and the question is—can this be transformed into a thrifty, healthy young wood that will pay interest on the money it costs to put it there and a rent for the ground it stands on? Incidentally, the appearance of the place

must not even temporarily be injured by conspicuous cutting of trees. Well, let us get to work and see if it can be done. First of all, the rabbits must be killed out. No, don't shake your head and say that can't be done. Unless rabbits can come in unchecked from ground over which we have no control, they *can* be killed out. Nine keepers out of ten will laugh at this, and say it is easier said than done. I agree, but the tenth keeper will quietly set to work and do it. Of course this means some expense, as when the rabbits get scarce those killed won't pay for the labour, but it is these last rabbits that make all the difference, and the expense is trifling in comparison to the advantages gained. All holes must be kept filled in, so that any open hole means a rabbit there and instant search for him. Wire is expensive and uncertain unless constantly watched, but failing the killing out of the rabbits it must be used. Nothing less than 42-inch wire is high enough. This gives 6 inches in the ground—turned outwards of course—and 3 feet above, and it *must* be laced to a strong fence wire tightly strained to strong posts. I had far rather no wire at all were used than wire loosely propped up on odd stakes.

However, I assume the rabbit question is settled. Come into the wood and see what is to be done. We can leave that outside fringe untouched. It is fairly strong, and will last a long time yet. It is the inside of a wood that always blows down most. By leaving it as it is we preserve the appearance of the wood, even if we cut the whole heart out of it, and we secure perfect shelter. And mind you this, in Ireland far more than in England or Scotland, shelter against wind—and by "wind" I mean the west and south-west winds—is of supreme importance. When this wood was first planted it was at 3½ feet apart, and a hard enough fight the trees had to creep slowly up into timber. Now we can plant at 4½ or even 5 feet, thus saving 30 to 50 per cent. of the original cost of planting, and our young trees will riot upwards.

But all those rough, branchy trees must be cut and cleared away before we begin planting, and all over mature trees, and badly-shaped trees, and undesirable trees, and all the elder and birch and hazel and briars. If there are groups of clear-stemmed, healthy, thrifty trees that look like improving, we will certainly leave them, and clear-stemmed wind-firm trees, even by themselves, may be left if they have compact well-balanced crowns.

Now, what do we find?—an ideal planting ground. No fencing to be done. Excellent soil in excellent condition, and excellent shelter, but

best of all there are already on the ground thousands of natural seedlings, sturdy volunteers, keen for active service, which, of course, we have carefully spared in the general clearing up. Where we have cut away heavy growth the ground is bare, but if this is done before May, by autumn it will probably be found that here too lusty little ash and sycamore are coming up in scores. At $4\frac{1}{2}$ feet it takes 2,150 plants to the acre. Some 1,500 of these, which of course in ordinary planting we have to buy and dig holes for, are nurses pure and simple, and never come to anything at all. Three hundred out of the remaining 600 only reach light pole size when they have to be taken out in thinnings, and some 300 or less ever reach timber size. On this area we can use the natural seedlings to supply all the nurses, as well as that number of ash and sycamore that we would have planted anyhow, and we need only buy and dig holes for and plant such few trees as will make a healthy mixture on the ground. Ash and sycamore require a shade-bearing tree mixed with them to get the best results.

There are probably some spots on which no seedlings appear. We must fill these in, but all told, perhaps 500 trees per acre planted by us secures a complete and exceptionally promising crop, and the total cost is about £1. Double that if you like, to make sure we are under the mark, and double it again to make doubly sure, and do what sums you fancy in compound interest for sixty years, and I am not the least afraid but that one wood will pay the rent and taxes and a handsome dividend as well.

If this wood is treated in a business-like way throughout its career, there are very few businesses that would be able to show as good a balance sheet when the final clear cut comes. Of course the principal reason for this is that we are starting the wood under exceptionally favourable conditions, and at half or a quarter the cost, which is generally taken as the minimum.

The type of wood described above—a common type, as I have said—is taken as an example of what can be done to find a way where the owner has the will. And, by the way, there is a curiously common belief that young trees can not be planted immediately after cutting old ones. Immediately after cutting hard woods is the very best time to plant: the soil was never so fertile or in such good condition. After cutting Conifers the ground is likewise in excellent condition, but there is danger of injury from the pine wood for some three, or perhaps four, years. It may be worth risking immediate planting, but there is a risk.

Some Alpine Pansies.

By H. CORREYON, Floraire Geneva.

ALMOST every mountain chain in the North Hemisphere, at least, has its particular form of Pansy.

The Pyrenees have *Viola cornuta*, while the south of the Spanish Sierras have *V. Munbyana* and the Arverne mountains *V. Sudetica*. The alpine chain has a nice lot of things in that way.

In the highest summits of the Corsican Alps as well as of the maritime Alps there is the most exquisite and fine of all the *Violas*, I mean *V. nummulariaefolia*, which I never can praise enough. It is a dwarf-creeping plant, growing between the stones and bearing delicate blue flowers of the best of the blues. But, alas! the plant is of very difficult growth, and I, till now, never could succeed with it.

Near to it, in the stony slopes of the maritime Alps, too, there is a very nice and very rare Pansy called *Valderia*, which is one of the prides of that very rich country. The colour is not so real blue as *V. nummulariaefolia*, but as good as the very highly praised *V. cenisia*, which is near to it. *V. Valderia* should be grown in what you call moraine, what I call *tourbière*, where it does perfectly well.

In the whole alpine chain, at the higher elevations, there is another well known *Viola*, called *V. cenisia*. It only grows in slate debris or in the moraine (I mean the right Swiss moraine) only between stones and limestones specially. Its nearest ally is the very beautiful and rare *V. Comolia*, which is found in the higher Alps of the Orobian chain in the North of Italy. Very near to *cenisia*, that beautiful plant has really pink flowers of the best pink colour. They are also very fragrant.

In other parts (Oriental) of the Alps we find the very particular *V. alpina*, dwarf and distinct. But the more common are the species of the *calcarata* group (*calcarata*, *Zoyzii*, *lutea*), which are all very easy to cultivate.

Another group is represented by *V. heterophylla*, *declinata*, &c., which are Italians, and of great beauty too.

In the mountains of Greece and in the Balkans there are *V. gracilis* and *Eugeniae*, which are near to *calcarata*. In the South Apennines is found another nearly allied form called *Bertoloni*, which we grow here very easily.

But, speaking of Pansies, I must not forget a very free-flowering hybrid we found once in one of our seedlings—I mean *V. Florariensis*. It seems to be a cross between *V. calcarata* and *V. rothomagensis*. The latter plant we got twenty-five years ago from its classical station

at Rouen, and it is quite perennial, and not at all annual, as is believed sometimes. As *V. rothomagensis* and *calcarata* are here near to one another, no wonder that they crossed. But the hybrid is such a free flowering one that an English friend of mine wrote me once—"This plant is a real scandal for its freedom to flower."

The flowers are large, purple, with a pale and whitish eye in the centre: it keeps well on its stem, and is lightly odorant. The plant flowers from the 1st of January till the last of December without suspension. I have for many years

known *Sarcococca humilis*, which was covered with sweet-scented pink and white blooms, contrasting charmingly with the shiny evergreen foliage.

The specimens which I have are quite small, but, as I have implied already, flower freely in their young state.

They were kindly given me by Mr. T. A. Havermeyer, of Long Island, U. S. A., where I saw them growing in the open, and they should therefore prove quite hardy in all parts of the British Isles.



SARCOCOCCA HUMILIS. AT GLASNEVIN

made, with these flowers gathered out of doors, my Christmas table decoration.

Just now, after very severe frosts, the old plants I have before my windows are covered with flowers, and do not believe that these plants are biennial or triennial. They have been where they are now for more than six years. Can somebody explain to me why this hybrid is so superior to its parents?

Sarcococca humilis

I SPENT a few hours at Aldenham the other day, and some part of the time in the alpine house: the two most attractive plants in flower there just now are the well-known *Primula Winteri*, with its delicate pale blue flowers, and the little

I know little or nothing about the plant, when it was first introduced into this country. &c., and have indeed never happened to see it growing anywhere except at Aldenham: if however, as I assume, like other *Sarcococcae*, it loves shade or semi-shade, it should prove most valuable for planting under trees. I should judge that it would prove of somewhat dwarfer habit than *S. Hookeriana*. I believe that the plant originated in some part of China, but it is not mentioned in the *Kew Handbook*. Having regard to the enormous number of new introductions from that great country during recent years, has not the time almost come for a new edition of *Kew's* admirable work?

VICARY GIBBS.

The plant mentioned in above article by the Honourable Vicary Gibbs belongs to a small

genus of Euphorbiaceous plants [closely allied to the box. There are only three species described (1) *Sarcococca pruniformis* from India and Malaya. This species is not hardy, and requires to be kept in a greenhouse. (2) *S. Hookeriana*, Himalayas, which is hardy in many parts of Ireland. It is a very ornamental evergreen shrub from 3 to 4 feet high, with long glossy, narrow shining leaves which give to the plant a Bamboo-like appearance. (3) *S. humilis*, which is a much dwarfer evergreen plant with broader leaves, and pretty small numerous, greenish white flowers, which are fragrant, and which appear in February. This species appears to be hardy in Ireland, and likes to be cultivated in partial shade. It is very suitable for a corner in the rock garden, where a good evergreen is required for winter effect, such as is shown in the figure of the plant at Glasnevin. *S. humilis* was first discovered in China by Dr. Henry in Hupeh, and in Szechuan. It was subsequently discovered by Wilson in Western China in 1907, who sent seeds home to Veitch of Chelsea. These seeds germinated, and from this firm the Glasnevin plant was obtained. There are two other species from China in cultivation, which have not yet flowered, and consequently are undetermined.

F. W. MOORE.

The Sundews.

By T. W. BRISCOE.

THESE are small-growing but extremely interesting plants, and are known as *Droseras* or insectivorous subjects. The British species, *D. rotundifolia*, is found in various parts of the country, usually where sphagnum moss and other bog plants thrive, but it will do remarkably well if treated as a greenhouse plant, while of course a damp spot in the rock garden would be a capital place for a small group. The Australian species are among the finest in the genus, and they embrace *D. binata*, sometimes referred to as *D. dichotoma*, a charming plant which has large pure white flowers. *D. spatulata* is another beautiful plant, being very distinct, and of a close compact habit. When grown in full sunshine it turns almost red, and is then most attractive. The North-American *D. filiformis* is a desirable species, and this remark applies to *D. capensis*, which hails from the Cape of Good Hope. The name Sundews is applied on account of the glandular hairs, which appear as if covered with dew.

CULTURAL DETAILS.—*Droseras* are of easy culture, and they need cool intermediate treatment throughout the year. Pans some six or seven inches in diameter prove a convenient size, and several crowns should be placed in each so as to form a nice compact specimen. The pans must be well drained, and the repotting should be done in spring, just prior to growth commencing. The soil is made up of fibrous peat, live sphagnum moss, and partly decayed oak leaves in equal parts, to which can be added a generous sprinkling of silver sand. The whole is cut up moderately fine, and the compost must be made fairly firm around the roots. Plenty of water is needed, and the surroundings should be kept moist by occasionally spraying between the pots. Full sunshine may be given, and ample ventilation whenever the weather is bright and hot. Rain water is advised, because if hard water is used the sphagnum moss often dies, and the rooting medium will soon become a sour mass in which *Droseras* will not succeed. *Droseras* may be increased by division, seed, and root cuttings. The two latter are the best methods. Seed may be sown, as soon as ripe, on a pot of sphagnum moss and peat, but all the large heads of the former must be picked off, or they will soon grow and choke many of the seedlings. To secure plants from root cuttings, only roots from strong healthy plants should be selected, and they are cut into pieces about half an inch in length. They should be laid on the surface of a pot containing the mixture quoted above, and covered with a thin layer of sphagnum moss. If placed in a close propagating case or under a bell glass, the majority will soon begin to grow. In time they will be given a separate existence, and gradually inured to cooler treatment.

The Alpine Columbines.

By H. CORREYON.

I ALWAYS remember the enthusiasm of my late friend, the Reverend Ewbank, when he saw in the Bagnes Valley the *Aquilegia alpina* in masses. He told me once of his desire to see the plant growing wild, so I invited him for a trip—he was then staying at Lausanne for the education of his daughters—in the Valais. I showed him one day the very place for the alpine Columbine, and he enjoyed it immensely.

Of course it is well worth seeing, and nobody can imagine it if not seen. I remember too

when I took Mr. Reg. Farrer with me in Arola to show him the same sight, and he was so glad that he made me a drawing of the flower with his dedication.

In gardens the plant is rather difficult to keep all right. It likes moisture, but not stagnant humidity. Peat is a good soil for it. It is very easy to raise from seeds. This plant is special to the alpine chain. It is an alpine creation. It only goes, to the south, a little farther on the Apennine chain to middle Italy, and is nowhere to be found out of this.

The other mountain chains have their special alpine forms of Columbines, and you will find in everyone of the big European mountains some *Aquilegia* which is special to them.

The Pyrenees have the very good and easy to grow *A. pyrenaica*, a dwarf form of alpina with shorter stem and smaller flowers. The maritime Alps have the *A. Reuteri*, which I found last year abundantly in the Tende Valley. It looks like a smaller form of alpina, but lighter blue with an abundance of golden stamens. In the Oriental part of the alpine chain there are two very good forms which are nearer to *pyrenaica* than to alpina—I mean *A. Bertoloni* and *Einseleana*.

I found two years ago in the Tombea mountains a new *Aquilegia* which Padre Porta, the botanist of the Lago di Garda, recognised to be a quite good and distinct species. I called it *glutinosa* because the stems of it, as well as the leaves, are covered with a glutinous viscosity, giving the whole plant a very strange appearance. It is, however, quite different from *A. viscosa*, and has nothing to do with the Siberian *A. glandulosa*. It grows in the rock débris, very sunny, and is very difficult to get, as the roots are very thick and deep.

Nerines.

By T. W. BRISCOE.

FOR some inexplicable reason the Nerines have never attained that popularity which their merits deserve. They are bulbous plants of remarkable beauty, the flowers being showy and bright, and generally produced in the autumn months, when outside bloom is becoming scarce.

Although some cultivate a few in warm, sheltered borders, it is as a pot plant that Nerines excel, and as such I shall refer to them in the present article. Amongst the most noteworthy are *N. Bowdeni*, a pretty pink species

from Cape Colony: *N. curvifolia*, bright glittering scarlet; *N. Fothergilli* major, a splendid plant with large umbels of scarlet-crimson flowers; *N. samiensis*, the Guernsey Lily, which has deep salmon pink blooms, but there are one or two choice varieties such as *ingens* and *venusta*.

There are also various hybrids such as *N. Manselli* (*flexuosa* x *curvifolia*), *N. atrosanguinea* (*Plantii* x *flexuosa*) and Powell's new hybrids, which vary in colour from pink to dark crimson. In addition to these, Mr. Elwes has raised many seedlings, which have received the Royal Horticultural Society's Award of Merit, and they will no doubt become extremely popular when there is sufficient stock for general distribution.

CULTURAL REMARKS.—Nerines must not be frequently repotted, as most spikes are produced when the bulbs are close together, and the soil is full of roots. When the necessity arises a mixture of loam and leaf soil, with a little sharp sand included, will make a suitable compost. Ample drainage should be given, and fairly firm potting is needed. In some instances a top-dressing of good soil will suffice, and this may be carried out when the flowering season begins. Directly the spikes are cut the growing season will commence, and every encouragement must be given the plants to make strong healthy growth. During this period a light position in a warm house should be chosen, but some cultivators select a shelf in a cool greenhouse, others a frame which is placed on a mild hot-bed, while I have seen the pots stood in a tray which contained an inch or two of water. Personally I think a little warmth is necessary while in active growth, when each plant should be kept well supplied with water. When the leaves show signs of decay the water supply must be gradually decreased, and finally withheld as the foliage disappears. From this stage and until the flowering season the plants must be kept quite dry at the base, and be placed in a cool house or frame where they can be fully exposed to the sun's rays. To secure a full crop of bloom it is essential that bulbs are thoroughly ripened. Propagation is effected by means of offsets, and they may receive the same kind of treatment as established plants. The chief points to observe are fairly warm treatment while in active growth and a decided rest after the foliage decays.

The Guernsey Lily is imported occasionally, usually in the month of August, and when the bulbs are received they ought to be potted up at once, but care must be exercised in regard to watering.

Saxifrages—New and Old.

By MURRAY HORNIBROOK, Esq., R.M., Knapton,
Abbeyleix, Queen's County.

PART III.—SOME OF THE SMALLER GROUPS. THE ENGLERIAS.

THE Englerias—those fascinating Saxifrages which hail mostly from the Balkans—ask and deserve an exceptionally well drained liny soil. Most of them have small flowers enclosed in

enormous fluffy calices and stems covered with wonderful iridescent silky hairs. They will stand a good deal more sun than the Kabschias, and if planted in pockets, the slope must be sharp to allow all surface moisture to run off. The best known is *S. Griesbachii* from Macedonia. It has large rosettes of a beautiful blue-silver hemmed with white, and bears deep crimson flowers in a cone-shaped head in February. The flower stems are pink, covered with hairs and crimson tints tipped with green. This plant should have some stone chips placed round its crown to prevent its foliage touching the wet soil. There is a small form of *S. Griesbachii* rather less than half the size of the type. *S. Fredrici-Augusti* lands us at once into difficulties. Nurserymen used almost invariably to send one under this name, either *S. apiculata* or a bad form of *S. pseudo-sancta*, and if you see

plant catalogued as *S. Fredrika-Augusta*, it is a probably either of those impostors (both of which are Kabschias). Then Mr. Farrer gave us a plant very near to *S. Striburyi*, with large rosettes—like those of *S. Griesbachii*, but rounder—and crimson flowers on crimson stems, the inflorescence being arched and then turning up at the end like a dog's tail. Then there is a much smaller plant, with flowers in varying shades of pink borne in a more branching head. I don't know the origin of this plant, beyond the fact that it was sent to me as "*S. Fredrici-Augusti* of Bertol" but I see it in several catalogues now described as having "inconspicuous pink flowers;" then, to further confuse us, Kew makes Mr. Farrer's plant synonymous with *S. Striburyi*, and makes the name *Fredrici-Augusti* a synonym of *S. thessalica*! Mr. Farrer

maintains, I believe, that his plant is a distinct species. When such eminent authorities disagree, one may, without presumption, offer a suggestion, and I would suggest that Mr. Farrer's plant is not a distinct species, nor is it synonymous with *S. Striburyi*, but it is a distinct variety of *S. Striburyi*, probably a local form. The flowers of *S. Striburyi* are similar to those of Mr. Farrer's *Fredrici*, but are borne, not in a weeping head, but in an erect, branching, candelabra-like head. The rosettes of both are very similar, but those of *S. Striburyi* are inclined to form a four-sided mass. The probability of Mr. Farrer's plant being a local form of *S. Striburyi* is strengthened

by the appearance of yet another plant which I received from two different sources. I got it from Mon. Correvoan as *S. Hedreantha*, and from Sir Josslyn Gore-Booth who collected it in company with Prof. Stribury—as "*S. porophylla* of Striburyi." Now, this plant is undoubtedly very near to both *S. Striburyi* and Mr. Farrer's plant, and is probably another local form. It is a better doer, has similar rosettes, and bears flowers of the same colour as the other two, but the flowers are borne in loose heads, and it comes into flower much earlier; in fact, it is now—20th February—in full flower, while *S. Striburyi* and Mr. Farrer's plant are only commencing to bud. The three plants, therefore, would seem to be properly *S. Striburyi*, the type, and two local forms of it yet to be distinctively named.

Of the other two plants that aspire to the name of *Fredrici-Augusti* in the absence of any authoritative

description of the species, I should prefer to recognise, the plant with "inconspicuous pink flowers," as *S. Fredrici-Augusti*, and leave *S. thessalica* as *S. thessalica*, for the pink-flowered plant is not unlike the *Striburyi* class, whereas *S. thessalica* has foliage more like *S. Burseriana*; and if we give *S. thessalica* the name of *Fredrici* as a synonym, it will possess two names and the poor pink-flowered plant will not have a name at all! *S. thessalica* has blue-grey spiny foliage, and flowers like *S. Griesbachii*, but of a deep, dull crimson. It is a good doer. Close to this, and evidently hybrid seedlings from it, are *S. Bertoloni* and *S. Gusnigeri*, the latter with almost white foliage and brighter flowers. The true *S. porophylla* is an Italian. It is a small, compact plant, with flowers of a rich Rose du Barri shade, and is possibly the



SAX. STRIBURYI

At Knapton.

most satisfactory plant of this section. It should be grown in a group of several plants. Another species which one only fully appreciates when grown in a group is *S. luteo-viridis* from Transylvania. It has pale green flower stems, covered with gold hairs and yellow flowers. The true *S. Kotschyi* is another yellow-flowered species at present very rare. *S. calyciflora* or *media*, from the Pyrenees, with very round rosettes and crimson flowers, is distinct and desirable; and then we have the many intermediate natural hybrids between it and *S. aretioides*, *SS. ambigua*, *Godroniana*, *Grieneri*, &c., of which *S. luteo-purpurea*, with flowers of yellow or orange in purple cups, and *S. Lapeyrousei* are the best. *S. Biasoletti* is a hybrid of *S. Griesbachii* with smaller foliage. *S. Clarkei* has long pointed leaves and rosy pink flowers. *S. Kellereri* is one of the best—long, spiny foliage and large open pink flowers. *S. Stuarti* (*media* × *aretioides*) and its variety *rosea* are two desirable hybrids with larger flowers. I have also a plant similar, but with large flowers, the result of crossing *S. Stribaryi* with *aretioides*. *S. Schottii* is a most fascinating hybrid with foliage near to *S. porophylla* and flowers of a bright orange-scarlet. This does not exhaust all the names of the section. Every season new plants are put on the market and given names. I received last year a *S. "medici"* and *S. "Stanleyana"* indistinguishable from *S. thessalica*, and a *S. Boisseri*, a twin to *S. luteo-purpurea*, and for anyone who does not require a full collection I would suggest *S. Griesbachii*, *S. thessalica*, *S. porophylla*, and *S. Kellereri* as distinct.

THE PORPHYRONS OR OPPOSITIFOLIAS.

This is quite a small section, but it contains some beautiful plants. All are dwarf, close-growing creepers that hug the soil or cliff face. They should be frequently top-dressed and divided if they are to flower freely.

S. oppositifolia is seen to best advantage hanging over a cliff face. It has practically stemless, star-shaped flowers of varying shades of magenta pink. It has many named varieties, not many of which are distinct. *Var. pyrenaica* is a much stronger plant with larger flowers. *Var. W. A. Clarke* has the brightest flowers. *Var. laggeri* has close, compact foliage. There is also a white form, *var. alba*. *S. Murthiana*

is a distinct form, looser in growth and smaller foliage; its flowers have appreciable stems. Other distinct forms are *S. Baumgarteni* and *S. retusa*. The latter makes mats of lichen-like foliage, from which spring small rosy-crimson flowers. It is a charming plant, and with me does best in peat and granite chips in half shade in a level spot. *S. biflora* and *S. Rudolphiana* are also distinct, but are difficult to keep; they seem to resent wet winters and dry summers. *S. latina* is a fine thing, with very large pale pink flowers, and *S. splendens* is possibly the best of the lot, with stronger foliage and an extra petal to each of its flowers. *S. lilacina* seems to be

the connecting link between the *oppositifolias* and the *Kabschias*. It is a Himalayan, and is not one of my successes. I have a couple of plants doing well, one in a granite moraine and another in sandy peat, but others die off unaccountably. It makes a close mat of foliage not unlike *S. retusa*, and bears stemless and large flowers of a clear lilac, quite pure in tone. Unfortunately it is rather a shy bloomer, but the plant is so distinct it is worth any amount of trouble and coaxing. (*Note*—I have done *S. lilacina* an injustice. Since writing the above she has flowered so profusely that her foliage is quite hidden by the mass of her flowers.)

THE UMBROSAS.

These are everybody's plants, growing almost too freely on any damp, semi-shady ledge, and increasing even more readily than the *Aizoons*. The best known is *S. umbrosa*. I never see this plant without thinking of the folk who would have us drop botanical names and "stick to the good old English names." Some English names are beautiful no doubt, but very many, such as bugwort, lousewort, liverwort, &c., are horrible. Once the botanical name is mastered one has no further difficulties, no matter in what language a catalogue may be printed, one is certain to find and recognise the botanical equivalent to the local name, and thus get hold of what one requires. On the other hand, the person who depends upon English names has not only to learn their foreign equivalents, but also frequently finds to his cost that his vaunted "English" name is after all only a local name, which brings me back to *S. umbrosa*, for here are some of its local names:—London Pride, St. Patrick's Cabbage, None so Pretty, and Cheeky Johnny! No doubt there are more, and the unfortunate



SAX. GRIESBACHII

At Glasnevin.

gardener who did not know these synonyms would be in a worse position than Mark Twain, who, in his ignorance of the German language, ordered and paid for, not two dogs (as he intended) but "one dative dog"! *S. Umbrosa*, notwithstanding, is a charming plant, with long, leathery leaves and sprays of pink flowers. I never realised how beautiful a plant it was until last year. I saw it grown as a yard wide edging at Blandsfort in this county. It was in full flower, and its cloudless fairy-like pink sprays swaying in the wind were indescribably charming. *S. Melvillei* is larger and rounder. *S. Geum* is distinguishable by its kidney-shaped leaves. There are many intermediate forms between these two, and some distinct varieties. *S. hirsuta* is covered with stiff bristles; var. *dentata* has deeply indented foliage; var. *variegata* has white variegations. There are also hybrids with other sections. *S. Guthriana* and *S. Andrewsii* are crosses with *S. Aizoon*; the former is the most compact; both have fairly intermediate foliage. I have also some curious plants, the results of crossing *S. Hostii* and *S. Aizoon recta* with *S. Geum*. *S. cuneifolia* has rosettes of stout leathery leaves and white flowers. Var. *infundibuliformis* is as small as its name is large, and has tiny rosettes of dark green leaves. Var. *multicaulis* has narrow foliage more yellow than green. Var. *primuloides* has compact and regular green rosettes and pinky-white flowers. Var. *appendix* is larger; *S. Bucklandii* is nearer to *S. umbrosa*; *S. taygetaea* is a hybrid like a minute *infundibuliformis*, and *S. tazzetta* is a hybrid between *S. Geum* and a plant of another section, namely, *S. rotundifolia*; it has larger rosettes of round and thick leaves and white flowers. *S. punctata* is a North American like *S. Geum*, but with rounder foliage of a dark luscious green. *S. Zimmeteri* is another *Aizoon* cross (a natural one, I believe), with small rosettes like an *Aizoon*, but of the leathery texture of the *umbrosas*; it is a pretty plant, but is a bad rooter and requires constant replanting. Another good hybrid is *S. Pseudo-Forsteri*. The *umbrosas* are, as a section, useful rather than ornamental. They will flourish in shady and dark corners where few plants will live. Under favourable conditions *S. umbrosa*, *S. Geum*, and their immediate relations are spreaders, and should consequently be kept away from anything choice. The smaller members of the section, such as *S. Zimmeteri*, never encroach, and can be planted anywhere with confidence.

Correspondence.

Sir.—The appeal which you did us the honour to publish on August 14th, urging the immediate sowing and planting of all vacant spaces in gardens, &c., with suitable winter vegetables, met with a response far beyond our most sanguine expectations. There are few who would believe what a vast quantity of vegetables was thus added to the food stocks of the country. It was a revelation to most people that such fine produce as was exhibited at the Royal Horticultural Society's Show on November 17th from our gardens at Wisley, and from Messrs. Sutton's grounds at Reading, could be obtained from crops sown or planted subsequent to the date of publication of our letter. Encouraged by the remarkable success of our former appeal we again ask the assistance of your columns in order to urge the sowing and planting of vegetables in every

available place. The united efforts of the many, each adding a little to the general stock, will make in the aggregate a great and valuable addition to the supply of food. During the coming season let there be no vacant spots in any garden. As soon as one crop is used let it be succeeded by another, and let every effort be made to obtain permission to plant up the gardens of empty houses and all small tracts of land lying idle and uncared for.

[This is not the place to advise what vegetables in particular should be planted. Such advice may be given in a more private and individual way. It may, however, be well to observe that on poor unmanured tracts nothing is so likely to succeed as potatoes, and that other crops that may be grown on such land are turnip-rooted leet and turnips. The one thing essential is for every one to plant up every available foot of garden with vegetables of some kind.]

W. WILKS, *Secretary*.

F. KEEBLE, F.R.S., *Director*.

R. H. S. Gardens, Wisley.

Sir.—Fruit growing, and especially the commercial branch of this industry, has assumed such an important position in Ireland that no apology is needed for drawing attention to points of interest connected with it. In the *Gardeners' Chronicle* for February 28th and March 6th, suggestions are made that winter spraying with the Alkali wash may be injurious to the trees, in fact it is definitely stated that such is the case. As this is a matter of very great importance for fruit growers generally, I would be glad to ascertain the experiences of any of your practical readers who may have accurate observations on the point. I am aware that statements are frequently made without sufficient experiments and notes to warrant serious attention being paid to them, but when we find a grower of the high reputation of Mr. Beckett, of Aldenham, definitely stating that fruit trees are injured by continuous spraying with Alkali wash, and recommending that the spraying should only have taken place every three years, instead of annually, we cannot lightly brush the matter aside. Personally I may state that fifteen years continuous spraying has in no way been injurious to the fruit trees or injurious to the crop; in fact I would go further and state that both trees and crop have been improved by it. This is only my individual experience in one garden, in one district. Climate and locality have so much to say to the growth and behaviour of plants in general that no definite rule can be laid down as absolutely applicable to every district, hence the desire to get information from as many districts as possible.

It must also be remembered that the soils and the climatic conditions in most of the fruit growing districts of Ireland are very different from those prevailing at Aldenham. We have a moist atmosphere, and generally speaking we have more moisture in the soil and a heavier rainfall. I have seen the trees at Aldenham. They are as good specimens of orchard trees as anyone could wish to see, in perfect health and condition. Another point of interest is that several varieties of apples flourish at Aldenham which are most unsatisfactory in Ireland. I consider Wellington (Dunmow's Seedling) to be one of the most interesting cases in point. It is a variety highly prized and largely grown in England. In Ireland, in almost every fruit growing district, in all aspects, and in all soils, it is one of the most unsatisfactory apples.

F. W. MOORE.

The Food of Plants.

By CHEMIST.

CARBON, more than any other element perhaps, looms large in interest and importance in the eyes of the chemist. In the uncombined state, as in the more or less pure forms of charcoal, coke, soot, smoke, &c., it cannot lay claim to any special distinction; though this is far from being the case when the element passes into the pure crystalline form of diamond. Thereupon, like Cinderella in the fairy tale, it comes forth from obscurity and outshines in splendour all competitors. In the realm of chemistry, however, the great interest and importance of carbon lies in its wonderful power of combining with other elements to form compounds almost without number. Amongst these compounds are to be found the various products of animal and vegetable life, the interesting and often highly complex substances that build up living tissues, into the composition of which carbon enters in every case; and thus the element in its close association with life, possesses an interest for the zoologist and botanist no less than for the chemist.

Another element closely associated with life is nitrogen. It does not enter into the composition of vegetable substances to the same extent as carbon does, there being none for instance in starch or sugar, in cellulose, in wood, in fibre, bark, &c. But its presence in the protoplasm, in the green colouring matter, in the pollen, and in the albumen food store in the seed, gives an indication of the vital importance of nitrogen in the economy of the plant. Unlike carbon, nitrogen is mighty slow to enter into combination; but once it does combine with other elements the compound is usually of outstanding importance. This fact is well emphasised by a distinguished American professor writing in *Harper's Magazine*: "The romantic department of the nitrogen atom is fascinatingly interesting to the student of chemistry. Wherever he looks he sees at once that nitrogen is the most restless, the most powerful of the elements. . . . Entering into combination with a few other atoms it will yield us the most delicious perfumes, while it is equally ready to join forces with others to produce substances whose smell of utter vileness has the psychological effect of causing the experimenter to 'wish he were dead.' In the aniline dyes it enhances our clothing with a thousand beautiful colours, and in still another thousand forms it enters the chambers of the sick in the healing guise of all the synthetic medicines. It lurks in prussic acid, in the ptomaines, and in a host of deadliest poisons. It drives our bullets in the form of gunpowder, it explodes our mines as dynamite and gun-cotton. . . . We have been accustomed in the past to ascribe to carbon the rôle of life-element paramount; but the more the question is studied, the more does it appear evident that the carbon constituent of the body is the mere brick and mortar of it, good enough to burn as fats and carbohydrates to maintain the fires, but the working vital thing is the restless versatile nitrogen. . . . And yet this nitrogen, so energetic when combined with other elements, is in its carefree solitary condition, a stubborn lazy inert gas, chemically speaking, all but unalterable and uncombined. The 'all but,' however, is vastly important."

We may take it, therefore, that nitrogen is a very important element in the food of plants. Curiously enough the source from which the plants derived it was for a long time a matter of very keen controversy. By some scientists the view was held that plants were able to assimilate the free nitrogen of the air, something after the manner in which they assimilate carbon. If, for instance, the water within the leaf should be split up and its hydrogen combined with the nitrogen of the air present in the pores of the leaf, there is formed the compound ammonia; or if the oxygen of the water be combined instead, then nitric acid is produced. Either compound might be looked upon as the first stage in the assimilation of nitrogen. Why not call upon the sunlight to accomplish the work? If its aid could be invoked to assimilate carbon it was natural to think the same boundless source of energy could be drawn upon for the assimilation of nitrogen. Some such synthesis seemed highly probable from the fact that combined nitrogen rarely if ever occurs in the rocks from which soils are formed by weathering. Its presence now in the soil points to some combining agency being at work. As for those naturally occurring beds of nitrate and other nitrogen compounds, which are to be found in certain rainless districts, it is generally held that these are of organic origin, due to the activity of life of some former period, and not to the decay of underlying rock. The same natural agency that formed these nitrates may be assumed to be actively at work to-day.

It must also be borne in mind that animals obtain their nitrogenous food from the plants on which they feed; from the grass, corn, roots, &c., in the case of farm animals. Now, the question arises, what made good the loss of combined nitrogen due to the sale of cattle, cheese, and other commodities from off the land, a loss which must have been going on for centuries and centuries prior to the introduction of artificial manures and foreign feeding stuffs? From such considerations it was clear there must be some natural agency at work, combining the free nitrogen of the air, and in the absence of any more rational explanation, there was at least a strong presumption that this all-important office was fulfilled by green plants through their power of utilising the energy of the sun.

On the other hand, if plants could thus make use of the free nitrogen of the air, one very common practice in the growing of crops would lose its meaning. There should be no need for the application of nitrogenous manures. But we know how readily crops respond to such treatment. One might imagine that cabbage, potatoes, mangolds, &c., with their great development of leaf surface, would possess special facilities for utilising sunlight in the assimilation of nitrogen. But it is useless to try to grow these crops successfully in soil poor in nitrogenous material. Any hope that the nitrogen of the air will make good is an illusion. This is the common experience in the cultivation of the land—an experience which is further confirmed by the testimony of specially arranged experiments carried out in the laboratory.

An experiment of the kind carried out more than half a century ago may be worth recalling now, inasmuch as it takes us back to the researches of Boussingault (Professor of Agricultural Chemistry, Paris), who devoted special attention to the question of nitrogen assimilation.

In the experiment referred to he made up a soil composed of plant ashes and sand which had been washed perfectly clean. Plant ashes, it might be stated, are free from compounds of nitrogen, but are otherwise rich in the mineral food required by plants. Having made up two portions of the mixture he sowed a known weight of some particular seed (Sunflower for example) in each. To one pot he added potassium nitrate, and to the other potassium carbonate. He also made up a control pot with sand alone, and finally compared the dry weight of the crop in the three pots with the weight of the seed in each case.

The result for Sunflower is seen in the table, the weight of seed being regarded as unity, the numbers represent the weight of the crop:

Pure Sand	Sand Ashes Potassium Carbonate	Sand Ashes Potassium Nitrate
3.6	4.6	198.0

Oats, barley, grasses, peas, beans, clover, &c., were experimented with in the same way, and equally striking results were obtained in every case without exception.

The experiment showed clearly that once the store of nitrogen in the seed is consumed, a plant makes no further growth in the absence of combined nitrogen in the soil. Air, with its 80 per cent. of free nitrogen, is of no avail. As a result of his researches extending over several years, Boussingault was led to the conclusion that plants obtained their nitrogen from the soil alone, and only in the form of nitrates.

The presence of nitrates in the soil, therefore, as well as the mode of their formation and the agencies at work tending to repair their loss, became a matter of the greatest importance, and to this question Boussingault next turned his attention. It had been shown by Cavendish about a century previously that nitric acid is formed when the air is electrically sparked, the oxygen and nitrogen being thereby united to form the acid. In the lightning we see the electric spark reproduced in the grand scale. Boussingault set himself to find out if the lightning also forms nitric acid, and for this purpose he tested the rain-water which fell during thunderstorms. His tests revealed the presence of nitric acid,

showing that oxygen and nitrogen are combined in the lightning track; the acid being carried by the rain to the soil, and there coming in contact with lime, potash, and such minerals, the all-important nitrates are formed. Here *our* natural process, at any rate, was revealed, whereby the nitrogen of the air is combined and the stock of nitrates in the soil added to from time to time.

Liebig's work with regard to carbon assimilation has been referred to in previous article. As might be expected, the question of nitrogen assimilation also engaged his attention, though he did not investigate the matter as thoroughly as Boussingault, whose researches were of a somewhat later date. Liebig approached the subject by studying the final products of decay of vegetable and animal matter. Given time and plenty of air, a plant on decaying disappears as completely as if consumed by fire, the ash or mineral matter only remaining. None of the nitrogen remains in the ash when a plant is burnt, neither does any remain when a plant decays in the open air. In the latter case it passes away into the air in the form of ammonia, just as the carbon passes away in the carbonic acid gas. Conversely, Liebig held, a plant obtains its nitrogen from ammonia and not from the free nitrogen of the air. If the ammonia is present in the air the plant may absorb it by means of its leaves; but for the most part the plant obtains the ammonia from the soil, as the gas, owing to its solubility, is quickly washed out of the air. When organic matter, such as farmyard manure, decays, incorporated in the soil, the gas in that case does not escape into the air, but forms certain ammonia compounds in the soil which serve the plant equally well.

Liebig and Boussingault were both, therefore, opposed to the theory that plants were able to assimilate the free nitrogen of the air.

It was incompatible with the practice of agriculture. It was contrary to the results of laboratory experiments, and was in fact unsupported as far as they knew by any direct evidence. Nevertheless, the whole controversy was renewed later on in an acute form. If the theory was to be abandoned, there were certain facts that called aloud for explanation. How, for instance, could the importance of clover in a rotation be explained, an importance long recognised by the practical agriculturist, not for the feeding value of the crop alone, but for the remarkable way in which it enriched the ground for the succeeding grain crop.

(To be continued.)



AN INGENIOUS DEVICE FOR FIRING SEEDLING TREES
(see page 62).

Hints to Novices.

By R. M. POLLOCK.

APRIL is one of the busiest months of the whole year, there is an enormous amount of work which should be done, and if the weather is bright and mild, and with the longer evenings, there is no reason why everything should not be carried out.

Any annuals that were sown in heat or under cover will be ready for pricking off. This is always best done into boxes or pans, preferably boxes, as they are cheaper than pans, and can be made on the premises, and if the wet winter days were made use of there should be no lack of these now. Drainage must be provided in these boxes, either in the form of holes or by leaving a division along the bottom of the box. Over these openings place some broken crocks or cinders, and over these again some moss or fibre of any sort to prevent the soil getting into the drainage and clogging it. Fill the box to within an inch of the top with good soil: old potting soil mixed with leaf-mould and sand will do splendidly. Level off the top, and into this prick out the seedlings. In most cases they should be dibbled singly. Make the hole sufficiently deep to allow the young root to go in freely, push a little soil gently down into the hole to cover the root, and then tighten the neck of the seedling well. Firmness in pricking off is half the life of the young seedling, and gives it a chance to make a start at once and to take a firm hold in the soil.

When pricked off the worst enemies are the slugs and woodlice, but if the ground of the frame be lightly sprinkled with vaporite, very few insects will venture round the boxes. Vaporite should, however, be used with great care, as if put on the young foliage it will burn it. Orange peel is an excellent and sure trap for these pests, as one bit of this fruit will attract them from some distance, and they can be destroyed. Orange peel, however, is unsightly, and should be hidden as far as possible from view.

A sowing of annuals in the open may be made as soon as the weather softens. In last month's notes this was recommended, but the month turned out so harsh and cold that most gardeners will have hesitated from sowing any annual seed.

In town garden, or gardens attached to terrace houses, cats are the trouble, and the only satisfactory method for protecting the seeds from these "pests" is wire netting, either bought in the made up form of "seed protectors" or getting it by the yard and cutting it to suit requirements.

Among the many good showy annuals for sowing in the open the following may be mentioned:—*Eschscholtzia caspitosa*, a small yellow variety, quite worth growing, and not so untidy as the usual form.

Gilia liniflora, white shaded lilac, 12 inches high. An excellent annual for picking, and lasting well in water. The flowers resemble those of the flax, and are sweet-scented.

Leptosiphon hybridus, charming little annual, only a few inches high, in various shades of orange, yellow, scarlet, pink and white. Excellent for an empty pocket in a bright corner of the rock work or in the front of a border, and are among some of the very few annuals which will bare close sowing.

Inopsidium acule.—Perhaps this can hardly claim to be showy, but it makes up in attraction. It is barely 2 inches high, and forms little tufts

of foliage and pale lilac flowers. Once sown it continues to appear from self-sown seed.

Eucharidium concinnum, another hardy annual which can be sown where it is to flower, and which remains in bloom the whole summer. The flowers are pink, rather resembling those of a single *Clarkia*. In this case the seedlings require plenty of room to develop.

Leptosyne Stillmannii, a dainty annual like a miniature *Dahlia*, introduced to cultivation from California. The flowers are yellow, produced singly on graceful stems about 12 inches high. The slugs seem to have a particular liking for the young glossy foliage.

Newly-made rustic arches or pergolas can be covered quickly and temporarily by sowing the Canary Creeper, large-flowered *Convolvulus*, or *Nasturtium*. These are all quick growers, and they are all attractive and bright. *Tropaeolum tuberosum* is easily grown and easily obtained, and it is a quick growing and a bright climber, but, of course, it dies down in the winter, and should therefore only be planted where a summer covering is needed.

SWEET PEAS.—If those that were sown in pots are tall enough they may get their first stakes. The seedlings should never be allowed to droop in their pots while waiting for support. The supports should be there when the first tendrils are made. See that watering is carefully attended to. Any check to the roots at this early stage will leave its mark in the future.

VIOLETS that have ceased to flower may be lifted, divided and replanted. In most places these have been very late this year, and it is possible that they will continue to bloom well through April and into May. No Violet plantations should be kept more than two seasons; after that time all the flowers produced have such short stalks and the foliage gets stunted. They want good, deep, rich, well trenched soil, and it is no use trying to grow them in light soil or in full sun. They like good depth for their roots and semi-shade for their flowers.

Brunfelsia calycina floribunda

THIS desirable stove plant will be known to many as *Franciscea*, and this name, although considered out of date, is still retained in several trade catalogues. An example under my care has been in bloom for several weeks, and judging from the numerous buds it will continue to give a good display for some time. It is a dwarf form of *B. calycina*, and the fragrant flowers, about 2 inches across, are a beautiful mauve. The plant referred to is in a 5-inch pot, and near by is an example of *B. confertiflora*, which is very effective with its soft blue flowers, that turn pale with age. Both are natives of Brazil, and evergreen.

Any repotting should be done soon after the blooms are removed, using a mixture of light rich soil, but for large examples a more retentive compost can be employed. During the growing period a moist stove temperature is required, and the plants may be freely sprayed overhead whenever the elements are favourable. If any examples have filled their receptacles with roots, an occasional application of weak liquid manure will be beneficial.

When the season's growth is finished the plants can be removed to a cooler and drier structure to harden the wood. T. W. B.

Notes.

A Lightning Plant Firmer

MR. A. MACGREGOR, forester, Abbeyfeix, sends a photograph (see p. 60) showing a novel device for firming the soil round the roots of young trees.

Mr Macgregor writes: "After the very severe weather we have just experienced, seedlings lined out in the autumn will be more or less lifted up out of the soil by the frost, and they will require to be pressed down again before the harsh winds of spring blow.

"The usual practice is to tread them down with the feet, a process slow and laborious.

"A glance at the photograph will explain our arrangement. It is a simple narrow roller in the form of a bog barrow, with a heavy stone placed well over the wheel to give the necessary weight. The wheel is then run along the lines close to the base of the plants. We find this simple plan expeditious, and the results satisfactory."

Hymenanthera crassifolia

THIS shrub is interesting inasmuch that it belongs to the same family as our garden *Violas*—*Violariaceae*—and it also possesses features which make it most decorative and attractive.

The flowers cannot be claimed as possessing any interest from a decorative point of view, being very inconspicuous and of a violet-like colour.

The small entire leaves are leathery in texture and of an evergreen nature, somewhat resembling the better known *Cotoneasters*, while the stems of the shrub are possessed of a silky-grey colour. The most attractive characteristic of the shrub is its berries, which are freely produced close to the stems; they are of a white colour, and stand out strikingly and effectively against the green leaves; they are produced in autumn, and remain attached to the plant throughout the winter. There seems to be some diversity of opinion regarding its hardiness. It is perfectly hardy in the south-west of England, but when planted against a wall it certainly grows more vigorously, and often attains a height of 8 to 10 feet. It is a native of New Zealand, being introduced about forty years ago.

American Honour for Sir Harry Veitch.

THE George Robert White Medal of Honour, which is awarded annually by the Massachusetts Horticultural Society, has been awarded to Sir Harry Veitch for the year 1911. Sir Harry is the first Britisher to be accorded this distinction, and readers of IRISH GARDENING will join us in heartily congratulating this distinguished horticulturist on the honour shown him. Little need be said here of Sir Harry's services to horticulture in all its phases. For many years to come the name of Veitch will remain in gardens; though, alas! the old house is no more, to the sorrow and regret of all who have, in days gone by, had dealings with the famous firm of James Veitch & Sons. The enormous number of new plants which have been introduced to cultivation by the various members of the firm is sufficient in itself to render the name of Veitch imperishable.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath, Ballywalter Park, Co. Down.

DABLINS. For garden decoration old tubers are superior to spring-rooted plants, as the latter are longer in coming into flower and are usually less floriferous. The tubers which have been dormant throughout the winter are now showing buds, and in some cases several appear on the root stock. In such cases the root stock may be divided into suitable sizes, and reserving growths with each detached tuber or tubers. These may be planted forthwith where they are to flower, covering the buds with 4 inches to 6 inches of soil. The best effect is obtained by nussing, but this effect is sometimes lost through using a number of varieties where one is enough.

SWEET PEA. From this date until the end of the month Sweet Pea plants raised in pots or boxes should be planted where they are to flower. If the plants are in boxes the soil should be allowed to become quite dry before planting is commenced, when the roots can be separated without loss. Sweet Peas require firm planting and thorough waterings afterwards, unless the weather is showery. The question of manure must be decided upon its merits by each cultivator. It may be harmful at this stage in certain soils, but in very poor soils manure may be needed to start the plants into vigorous growth. For this purpose very slight applications of soot, leaf-mould, or superphosphate may be useful.

CHRYSANTHEMUMS. Plants of early-flowering *Chrysanthemums* which have been properly hardened may now be planted. They grow very strong in rich soil, but over-luxuriant growth is not desirable; therefore choose a moderately rich soil, and plant in firm ground. Those of the "Massie" type in particular should not be encouraged to make too vigorous shoots. These early-flowering *Chrysanthemums* are valuable for planting in mixed borders in autumn, when the summer-flowering subjects are over. For this purpose a stock should be grown in the reserve garden, and the plants moved to the border when they are in flower.

ANNUALS.—Seedling annuals growing in boxes, pans or pots need careful attention, as they may become drawn if neglected, and spindly plants never give satisfactory results. Thin or transplant the seedlings directly they are large enough for removal. Those of the stronger-growing kinds may be pricked out in beds of soil arranged on the floor of cold frames. It is an advantage to first spread some finely broken manure on the bottom of the frame, for the roots will grow into this, rendering it an easy matter to lift the plants with good balls of soil.

HARDY ANNUALS such as Candytuft, Larkspur, Lupis, Clarkia, &c., may be sown out-doors from the middle to the end of the month. I prefer to sow them in lines in the beds or borders where they are to bloom. The plants are not so difficult to thin and weed in the early stages as when sown broadcast.

HARDY FERNS.—This is the best time to transplant or to divide deciduous Ferns. Large plants growing wild in the woods may be dug up with balls of earth and replanted in suitable situations

in the wild garden, such as beneath the shade of trees or near to rocks.

TREES AND SHRUBS that were planted in clayey soil during March whilst the ground was wet should be mulched with half-decayed manure; this will conserve the moisture and prevent rapid evaporation by drying winds.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. Sharnan-Crawford, Esq., Lota Lodge, Glanmire, Cork.

THE present month is one of increasing activity in the vegetable garden, the proverbial showers in conjunction with the greater sun power expedite the growth of all vegetation; many of the tenderer vegetables may be sown outdoors towards the end of the month.

I may be pardoned for once again urging the need for planting up every vacant space with useful vegetables in case of emergency. We are face to face with the most devastating war the world has ever known; one lucky stroke of the enemy might deprive us of much of our sea-borne food supplies, and in any case all vegetables will be at an enhanced price for some time to come. Hospitals and Refugee Homes require help, and surplus produce cannot be given to more worthy institutions; therefore the system of growing so many plants and no more is indefensible for this year at least.

ASPARAGUS.—Beys prepared last month may now be sown or planted as decided on. If plants are chosen, see that they are exposed to air for the shortest possible time. Eighteen inches every way is a suitable distance to plant; encourage by nitrate dressings growth in the old beds.

ARTICHOKES.—J. rusalem, if not planted last month, should be got in at once; give 3 feet between the rows. The Globe Artichoke will now be fit to propagate, using offshoots from the parent, planting a distance of 5 feet between the rows and 3 feet between the plants.

BETROOT.—A small sowing of a round variety comes in useful for autumn use. I prefer to sow the main crop early in May. Late April is, however, quite a suitable time for many.

BEANS, KIDNEY.—Sow towards the end of the month a small quantity of seed on a south border or in pots in hotbed for planting outdoors later on, topdress forcing beans passing out of flower.

CARROTS.—Sow the main crop, 12 inches between the drills, on ground deeply worked, and in which no manure has been recently dug in. The choice Short Horn varieties may stand closer in the lines.

CALIFLOWERS.—Plant out any remaining over from autumn sowings, and prick out those sown in beds last month; rich, heavily manured soil is imperative to their welfare.

BROCCOLI.—The main crop for winter and spring supplies may be sown any time after the middle of the month according to locality; in the south we find the end of the month a good time in normal seasons.

CABBAGES, BORECOLE, BRUSSELS SPROUTS may all be sown, and earliest sowings requiring pricking out or planting attended to; light dressings of

nitrate of soda applied every ten days to forward early cabbages will work wonders.

CELERY.—Sow the main crop in hot frame, and see that a clean stock of seed is got and preventive measures against the disease taken from the earliest stages.

LETTUCE.—Sow for succession, and plant out on rich soil seedlings from early frame-sowings.

ONIONS.—Plant out any sown under glass, and if picking ones are required sow on poor soil, leaving them unthinned. Thin the main crop during moist weather.

PEAS.—Continue to sow the wrinkled marrows every ten days, and attend to staking growing ones.

SALSIFY AND SCORZONERA.—Sow at the end of the month on deeply dug soil free from manure; 15 inches between the drills is ample space.

SPINACH.—Sow freely and frequently between rows of peas, cutting down immediately the crop runs to seed.

TURNIP.—Sow freely the small table sorts on rich soil, and encourage early sowings by frequent hoeings.

VEGETABLE MARROWS.—Sow a few pots in heat for early supplies, gradually hardening off in frames.

HERBS.—Many of these may now be sown, others will bear dividing, a small sunny border is an ideal place for them, and these herbs, besides being useful for flavouring and salads, are also of educational value.

WINTER GREENS AND BROCCOLIS will now be passing; see that the areas are cleared and got ready for new crops. Prepare celery trenches; deep trenches are a fallacy. Plenty of good manure is the paramount need, and if space is given between the trenches, say 4 feet for every 18-inch wide trench, soil for earthing to any depth will be available, and the excavation will prove in wet winters excellent drainage.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady FitzGerald, Carrigrohane, Co. Clare.

THE most important operation connected with hardy fruits through the dormant season being brought to a conclusion either in ordinary course satisfactorily, or of necessity with the advent of what I think all will accord a hearty welcome to—i.e., the return of springtime and active growth of all kinds of vegetation—I doubt the conclusion of these operations cannot be a most gratifying matter in many instances, as the past has been a most difficult season, with sodden ground and rainy skies week after week, sorely trying one's patience and retarding work in a most disagreeable manner; especially so with those having heavy, retentive soils to deal with. Though small comfort to any one, it is noteworthy that fruit growers throughout the British Isles have all been similarly affected by these unfavourable conditions (and combined in many districts with the great upheaval caused by stress of war). The *London Times* says, in the course of a review of the weather during the winter months, that during the past one hundred years no such heavy rainfall as that of 1914-15 has been recorded. We can only hope that the season before us may bring considerable compensation for the difficulties and troubles of the past. At

all events in this locality (and so far as I can learn in other districts) there is a great profusion of blossom buds; plump, and promising good things in store, if we are fortunate in having the buds blossoming under propitious weather conditions.

It is advisable to make some provision for protecting wall trees from spring frosts. Where fixed or moveable wall copings are not provided for fruit, wall protection may be afforded by temporary measures, which should be ready for any emergency, and especially in the case of early flowering pears and peaches. A single night's frost may destroy all chance of a reasonable crop or any at all if left unprotected, where otherwise, by covering with garden mats two or three thicknesses of bird netting, or any improvised protection, a good crop would almost certainly be ensured. Where numbers of trees need protection a good method is to provide the requisite number of larch, or any light poles, laid slanting against the walls, and secured at the top to the wall, with the base about 6 feet from wall, and let into the ground a few inches to keep steady; a wire or strong cord run from pole to pole, and turned round the pole at top, with a second line, 4 or 5 feet at least down the pole from top; along this may be fixed whatever protecting material it is decided to use. The covering should be moved or taken down during the day to allow of full exposure to sun or fine days, also free access for bees or insects, which are almost indispensable aids to fertilisation of the blossoms. Many of the earliest pears to expand their blossoms frequently fail to crop satisfactorily, even though weather conditions appear quite favourable; it is most likely owing to the self-sterility of such varieties. The same applies to plums, though not to such an extent as in pears. Varieties having the reputation for self-sterility should be assisted to crop by artificial fertilisation; the absence or presence of pollen may be discerned on close examination either with the naked eye or with the assistance of a small magnifying lens, and pollen may be conveyed on fine dry days to a self-sterile variety by drawing a rabbit's tail or a bunch of light feathers over the trusses of blossoms; in this way collecting the pollen to be distributed in a like manner over sterile flowers. A much more even and certain crop on outdoor peaches is assured by artificial fertilisation, though if bees are kept in the garden or locality, and numbers of these are observed on the blossoms, the need for artificial fertilisation is almost nil.

Much has been written within the past few years on self-sterility in pears and plums, and lists of such varieties published by those who have experimented in the matter; though last year, for instance, failure on the part of pears or plums to set a good crop of fruit (where severe frosts did not prevent) was quite an exception, as nearly every variety cropped heavily; but last year again was phenomenal in that respect. It is often remarked amongst fruit growers that certain varieties are very shy setters (or croppers). The failure also of trees clothed with fine crops of blossoms, and no fruit resulting, is often commented on; such cases are worthy of investigation.

A variety of minor matters (though none the less quite essential to success) will now need

attention, such as a final cleaning up and burning of prunings, all kinds of rubbish, weeds, &c.; the cleaning and repairing of walks and roads. Where mulching of new planted fruit trees has been deferred it should now be carried out. If the surface of the ground has become hardened or crusted over, run the hoe or a Bucco cultivator over the surface before applying the mulching. Attack weeds on first appearance; they are much more readily kept down by early hoeing than when allowed to attain size and a firm hold in the ground. Hoeing or loosening the surface of the ground, even where weeds are not in evidence, is also very beneficial to fruit trees.

Overhaul netting, and order new where old nets are no longer serviceable. Punnets, &c., if needed should be ordered in good time, to be in hand when required; such matters need attention unusually early this year owing to delays in delivery or transit.

Where strawberries were dressed with farmyard manure, as previously advised, some means to prevent fruit being spoiled by grit must be adopted before flower scapes are much advanced. Clean straw, if obtainable, is the best; next to that is the littery straw from stable manure, and this if put down betimes gets washed quite clean by rains before fruit attains much size, thus removing cause for any reasonable objection to this litter being used for such purpose. If the beds were not dressed with farmyard manure, now is a good time to apply some quick acting artificial manure. Nitrate of soda applied twice or three times as the flowers show, and while fruits are swelling, about 2 ozs. to the square yard; Kainit at from 2 to 4 ozs. per yard is also a very useful dressing. Whatever manure may be used should be raked or lightly hoed in, and after a few showers of rain to wash manure into ground, straw should be placed around plants to prevent splashing of fruit.

Where attacks of gooseberry caterpillars are suspected, gooseberry, red and white currant trees should be sprayed as the leaves unfold, using Swifte's arsenate of lead, 1 lb. of the lead to 50 gallons of water, apply with a fine spray, and completely spray all the foliage. Where apple and pear trees were sprayed during winter months with sulphate of copper, this should be followed up by spraying with Bordeaux mixture; or Woburn Bordeaux paste as directed is much preferable to home-made Bordeaux mixtures. The first spraying should be applied as soon as the foliage is expanded, to be followed with another spraying after, or just as, the petals of blossoms are falling, and again when the fruit shows to be well set; the spray should be applied with a good pressure on, being careful to moisten every part of trees, but not to such an extent as to cause extensive dripping of mixture, or any, if avoidable.

Lime sulphur as a remedy against apple and pear scab is becoming very popular, and is no doubt as effective as the sulphate of copper solutions. It is very readily mixed and reasonable in price; that is referring to the commercial lime sulphur, which is also much preferable in all ways to the home-made compound. The present is a good time to commence using this spray; to be applied same time as with Bordeaux mixture, and according to instructions issued by all makers.

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EDITOR—C. F. BALL

Greenhouse Primulas.

By T. W. BRISCOE.

Of late years considerable improvement has been made among the Primulas quoted above, and few greenhouses are complete without a batch of these charming plants during the winter months. The colours are both varied and pleasing, and for the most part the plants are of easy culture. Among the Chinese Primulas there is great variety, and the following have all come under my observation in the past season, and can be well recommended:—Crimson King is one of the darkest crimson I have seen, and remains in full beauty for quite a long time. Giant White is excellent, as was also Reading Blue: but Reading Pink I did not admire, as the flowers soon lost their colour. *P. stellata*, or the Star Primrose, is no doubt most popular, and they please many individuals who dislike the stiff and somewhat formal type already quoted. They bloom profusely, and the tall slender stems bring the flowers well above the foliage. Coral Pink is a charming kind, the reddish tinge in the stalks of the leaves being an additional charm to many. Both the Light Blue and Dark Blue are good, and the same remark applies to Lord Roberts and Ruby. There are many others of equal merit, and any grower would do well to secure catalogues from those firms who specialise in these delightful plants. Where a fine yellow is required *P. kewensis* should be chosen, and it is a plant that pays for generous treatment. When the pots are filled with roots, a sprinkling of Clay's Fertilizer, or occasional applications of liquid manure, is most helpful. *P. malacoides* must not be forgotten, and to keep up a succession a sprinkling of seed should be sown at intervals of six weeks.

P. obconica.—In the gardening press generally letters appear in regard to the irritation caused to some sensitive skins by the handling of this

plant. No doubt many of the statements are gross exaggerations, but the difficulty is easily got over by using a pair of gloves or allowing someone to repot them, &c., who is not affected. They are so valuable for winter work that they cannot very well be dispensed with. For general purposes a reliable mixed strain is advised, but they can be obtained in various shades such as white, pink, crimson, lilac, and blue. The reds are as a rule lacking in colour, and the most that can be said for them is forms of good magenta.

Another pretty little plant is *P. Forbesii*, and about fifty pots have been producing a pretty display throughout the winter months. It is a charming miniature, half-hardy species, with rich rosy-mauve flowers with a yellow eye.

All the Primulas mentioned are raised from seeds, and a small sowing can be made at the end of May, but the principal batch should be sown in June or July, as I always think they are more acceptable after the bulk of the *Chrysanthemums* are passed. Well drained pots or pans may be used, and any light potting soil will suffice, but the surface must be fine and even. Only a very slight covering is needed, and each pot should have a piece of glass placed over the top until germination has taken place. During this period an ordinary greenhouse temperature will be sufficient, but care must be taken to prevent the soil getting dry. Strong sunlight must be avoided, but it is best to keep the young plants near to the glass. When large enough each seedling should be placed in a 60 sized pot, and then arranged on a shady shelf in a cool greenhouse. The soil should be rather light, with a fair supply of good leaf mould. Directly they have filled these pots with roots they must be moved into receptacles 5 and 6 inches in diameter, in which they will

flower. The majority will go into the former size, and each pot can be filled one-eighth of its depth with drainage. A suitable rooting medium consists of the best fibrous loam two parts, one part leaf mould, and one part from an old mushroom bed, with a sprinkling of silver sand to render the whole porous. The soil is pressed moderately firm, and sufficient water is applied to wet the whole of the compost. Cold frames with a north aspect, or where a little shade can be afforded, will suit them during the hot months, and until the nights begin to get cold, when it will be necessary to place them in a cool greenhouse. Throughout their existence careful watering is necessary: both extremes must be avoided, as a sudden drought is just as fatal as excessive moisture. A cool bottom is also essential, and much preferred by Primulas to an open wood staging, while it also prevents them becoming dry in a short time.

Insect pests are not troublesome, except perhaps greenfly, but these are easily destroyed by light fumigations.

Primula denticulata.

SELDOM if ever before has this Himalayan Primrose flowered with such lavish profusion as it has this year, in spite of a wretched late cold season. The number and size of the heads produced by each plant has been quite exceptional, and as the best forms only have been retained after some years of rigorous selection, the results are eminently satisfactory. The position in which the particular plants referred to grow is fairly shaded by yew trees and Rhododendrons, and the soil is largely that in which Rhododendrons are cultivated. The elevation varies from perhaps 3 feet to 6 or 8 feet above the surround-

ing ground, thus while the nature of the soil renders it sufficiently moist at all times, it is withal always well drained.

More than one attempt has been made to grow *P. denticulata* in the bog garden and by the water side, where *P. rosea* is now a glorious mass of flowers, and where, later on, *P. japonica*, *P. pulcherrima*, *P. Bulleyana*, *P. Unique*, *P. sikkinensis* and others flourish, but without success. Invariably the crowns seemed to rot in winter, and any flower heads which struggled

through were poor and deformed. By the time these notes appear the flowers will have faded, and any not required for seed should be at once removed. Immediately after flowering, the plants proceed to make rapid growth, and should be divided before this is too far advanced. Division is imperative if a fine display of flowers is desired, and adequate nourishment in the way of decayed manure is equally essential. Old, thoroughly rotten cow manure is first rate for mixing with the soil on replanting the divisions, and failing this, old hot-bed material or very old decayed stable manure may be used. The thing to ensure is a sufficient supply of nitrogenous food material, so that strong healthy crowns

may be formed before winter. There are several varieties of *P. denticulata*, among which the pure white form is conspicuous. Although the heads are usually smaller than the common lilac-coloured form, they are still very beautiful. *P. denticulata* var. *Cashmiriana* is distinct, having fine heads of dark lilac flowers, while the under side of the leaves, and also the flower stems, are covered with yellow powder. Considerable variation is frequently seen among seedlings, and as seed usually sets freely some fine forms may be selected.

J. W. B.



[photo by]

[S. Rose.

PRIMULA DENTICULATA AT GLASNEVIN.

Notes.

Douglasia lævigata.

THIS is one of the most delightful spring alpinines, flowering in April or early May, and is well worth some little trouble to succeed with. It is not exactly an easy subject, and, like its near allies the *Androsaces*, is impatient of winter wet. The flowers are of a pretty pink shade, borne on short stems just above the glossy green leaves. A very sharp sandy compost is necessary, in which a small proportion of fine peat may be incorporated. This has the effect of retaining sufficient moisture in summer for the healthy growth of the plant without becoming sour in winter. The better known *D. vitaliana* is oftener seen in gardens, and is also a most charming rock-garden plant, rejoicing in a sandy soil. The name *Douglasia* commemorates the famous traveller and plant collector, David Douglas, who found the now little known *Douglasia nivalis* near the source of the Columbia River. ALPINIST.



Photo by]

ANEMONE PULSATILLA ALBA.

[H. C. Elsdon

Adonis vernalis.

DURING the early part of April this was one of the most conspicuous plants in the garden. Growing in the corner of a small bog in the rockery, the large yellow flowers surmounting the not fully expanded leaves were most effective, and attracted the attention of visitors at once.

Just at present, mid-April, *Adonis vernalis* is opening its first flowers, and will soon contribute a share to the first real flush of colour which is at last stealing slowly over the rock garden, and

which, by the time May is here, should culminate in a riot of glorious colour.

A GARDENER.

Anemone Pulsatilla alba.

A GROUP of the Pasque flower itself is an imposing sight, but the variety *alba* is perhaps still more beautiful and attractive. It is a cause for regret that it is not seen more frequently in our English and Irish gardens, as it is so easily grown and requires little attention beyond a suitable soil and position.

It is absolutely essential for the plant to thrive that the soil should contain lime, and it also certainly prefers an open position.

I have seen the type growing wild in Cambridge shire, and there it grows on an almost perpendicular bank, the soil containing much chalk.

The white variety comes perfectly true from seed, and is easily

raised in this way; the seed sown as soon as ripe in a cold frame, the seedlings being potted up when quite small; it is preferable to pot them in single pots, as they dislike too great a disturbance at the roots when planting in their permanent quarters.

There are several other varieties of the Pasque flower known to cultivators, and all are worthy of cultivation.

H. C. ELSDON.

Dianthus × Woodfordiensis.

THIS is a particularly free-flowering plant, likely to become popular with lovers of alpinines. It originated in the garden of Mr. R. A. Malby, an enthusiastic cultivator of rock plants, and in

writing to us recently he says: "I sowed seeds collected from my own *D. alpinus* growing near *D. deltoides*, and the original plant of *D. Woodfordiensis* was one of the resultant seedlings. The plant is neat in habit, intermediate in character between the parents, and very floriferous; it makes many cuttings, which strike readily. I have several other interesting, and I think improved, types maturing from other crosses." Mr. Clarence Elliot, we understand has acquired the stock of *Dianthus* \times *Woodfordiensis* for distribution, and in his capable hands a large supply should soon be available.

Calceolaria

\times *Ballii*.

SHRUBBY *Calceolarias* have become popular of recent years, due to the production of several ornamental free-flowering hybrids. They are greenhouse plants, making a good display during the summer months. Whether some of these hybrids may yet prove useful for "bedding out" remains to be seen.

The plant under notice, which was raised in the Royal Botanic Gardens at Glasnevin, is a free-flowering hybrid, very intermediate in character between its parents, *C. dellexa* and *C. Forgeti*, both Peruvian plants. The first-named is more commonly called *C. fuchsiefolia*, and flowers in winter, though this character is not so pronounced in the hybrid. *C. Forgeti*, one of Messrs. Sanders' introductions, is found at an elevation of 8,000 feet in the Andes, and was figured in the *Gardeners' Chronicle*, Jan. 27, 1912,

showing its free-flowering qualities when bedded out during the summer months in Kew Gardens.

The hybrid *C. \times Ballii* is extremely floriferous, bearing innumerable rather small flowers, and as the plants branch very freely the total effect is good, compensating for any lack of size in the individual flowers. The colour of the flowers

varies between sulphur and lemon, and a good idea of the general appearance of the plant is obtainable from the plant illustrated.

B.

Primula

Excelsior.

WHEN the orange scarlet *P. Cockburniana* was introduced great results were expected from it by the hybridists, and they have not been disappointed. The first hybrid to appear was *Unique* (*P. pulverulenta* + *P. Cockburniana*) and it received an Award of Merit from the Royal Horticultural Society on May 28, 1907. This was actually raised at Messrs. Veitch's Feltham Nursery, but the

stock was never robust, and never made any headway. The reverse cross was eventually made by Mr. T. W. Briscoe at Langley, and when exhibited on May 4, 1909, as *P. Unique* "Improved" it also received an Award of Merit from the R. H. S., and was then put into commerce.

All hybrids from *P. pulverulenta* and *P. Cockburniana* are forms of *P. Unique*, and Messrs. Veitch sold plants which were the result of both ways of crossing. No difference could be detected so far as constitution was concerned.



Photo by

DIANTHUS \times WOODFORDIENSIS.

[R. A. Malby]

Further experiments were conducted, and hundreds of seedlings were raised, but the majority was inferior to *P. Unique*.

Among the crosses made was *P. Unique* and *P. Cockburniana*, and one seedling appeared that was a great improvement upon all known *Primulas*, at any rate so far as colour is concerned. It was raised by Mr. Briscoe, and named *P. Excelsior*. It was exhibited at the Royal Horticultural Society meeting on June 3, 1913, and was honoured with an Award of Merit.

The colour is an intense fiery scarlet, and when well grown the flowers are slightly larger than *P. Unique*. It is hardy and perennial, and will prove an ideal subject for the rock garden, where it is moist, but not wet, and partial shade exist. *P. Excelsior* is similar to the parents in habit, and the flower stems are farinose.

As most readers are aware the house of Veitch is no more, and of course the stock of this *Primula* with other plants has passed into different hands.

The herbaceous department with the stock of *P. Excelsior* was taken over by Mr. J. C. Allgrove, who for many years had been in the employ of Messrs. J. Veitch & Sons, Ltd.—B.

Magnolia salicifolia.

CLOSER acquaintance with this Japanese *Magnolia* increases its value in the estimation of those fortunate enough to possess a plant. The first blossoms open a day or two in advance of the

star-flowered *Magnolia*, *M. stellata*, towards the end of March or the first half of April, according to the season.

The first plants to flower in this country were imported to Kew from Japan in 1906, blooming five years later. Its nearest ally is *M. Kobus*, also a Japanese species. *M. salicifolia* is found wild at an elevation of 1,700 feet to 1,500 feet in the mountains of Nippon and the Kuisin district. It forms a small tree 15 feet to 20 feet high with a

trunk of 1 foot girth. The slender character of the branches and twigs, together with the thin willow-like leaves, readily distinguishes the tree from other *Magnolias*. The dainty pure white flowers are borne very freely on the ends of the lateral growths in advance of the leaves. When fully expanded the blooms are 3 inches to 4 inches across.

In a well-drained light loam, to which has been added some peat and leaf mould, the growth of the willow-leaved *Magnolia* is fairly fast, one of the originally imported trees being now about 9 feet high. Flowering early, a position sheltered from the east is desirable, there being nothing so useful as a belt of tall hollies, yews, or conifers to protect and show off the exquisite beauty of the flowers. *M. salicifolia* is figured in the *Botanical Magazine* tab. 8483. A. O.



CALCEOLARIA - BALLIE.

Notice.

THE trial of Tulips which is being continued this year includes about 5,000 stocks. Should weather conditions prove normal the early-flowering section will be at its best towards the end of the present month, and the other sections during the first fortnight in May. In order to facilitate the inspection of the trial an interleaved index has been prepared in pamphlet form. Fellows of the Society visiting Wisley may obtain copies of this index, free of charge, on application at the office.

Saxifrages—New and Old.

By MURRAY HORNIBROOK, Kington, Abbey-cix,
Queen's County.

PART IV.

I HAVE already occupied more space than I intended for the whole of the present series of articles, and the Mosses and several smaller sections are still before me, and, upon consideration, I have determined to make but a cursory examination of the Mossy sections which they contain and garden forms which they contain are almost infinite in number, and, apart from the question of space, there are reasons which render the task of classifying them exceptionally difficult. The Mosses seed freely and interbreed interminably. Even when one collects a species in its native habitat one finds many varying forms within the space of a few yards, and one result of importing species and planting them in gardens where the bees can hybridise them is to utterly confuse the species almost beyond recognition, and the task of classifying them is a difficult one even to the possessor of a herbarium. At Edinburgh, where Professor Bayly Balfour specialises in Saxifrages, order is gradually being evolved out of chaos, and no doubt had the Saxifrage Conference been held this spring we should have been able to clear up a great many doubtful points. As it is, with the exception of a few well defined species that one finds fairly true everywhere, one sees in gardens—botanic, private and nursery names in bewildering variety for apparently identical or nearly identical plants, and I so mistrust the names of my Mosses that I have swept most of them away, and they shall remain nameless until some authority makes it his business to sort out the species and describe them in such a way that the ordinary mortal will be able to recognise them. After all, for the ordinary rock gardener to delve deeply into the minute differences of the Mossy species—many of which are difficult to grow and keep—is unnecessary labour. The average rock gardener grows Mosses principally for effect, and to meet this requirement all he need do is to purchase a few of the large-flowered hybrids, sow their seed, and from the resulting seedlings (which come up profusely) he should obtain some forms equal, if not superior, to many of the highly-priced "named" varieties of commerce. For such a purpose I would suggest *Sax. Bathoniensis* or *Sanguinea Superba* as the best red, *Sax. muscoides* var. *Jewel* as the best non-fading crimson, and *Sax. granulata*, *decipiens*, a large coarse growing white—these will cross freely and give him as many varying forms as he requires. If he hankers after "species" the following are all strong, easy growing plants: *S. Wallacei*, *S. muscoides* var. *allioni* var. *pygmaea*, var. *Rhei*, *S. canaliculata*, *S. pedemontana cervicornis*, *S. ceratophylla*, *S. decipiens* var. *Sternbergii*, *S. palmata*, *S. exarata*, *S. ruscocens*, and *S. trilobata*—all these will grow anywhere in any soil not too parched or waterlogged. A few choicer species not difficult to grow are *S. Pedatifida* and *S. obscura*, *S. Mawiana*, *S. bifurcata*, *S. tenella* and *S. Oramensis*. New and attractive species requiring well drained positions are *S. Erioblasta*,

S. Nevadaensis, *S. Balfouri*, *S. Gemmipara*, *S. Sediformis*, *S. Conifera* and *S. Strigosa*. Difficult species to be avoided are *S. Aphylla*, *S. flagellaris*, *S. Stellaris*, and *S. Cymosa*.

Of hybrids, as I said, everyone can raise his own, but I would put in a good word for *S. Fergusoni*, one of the very earliest to flower, its deep crimson flowers lacking the size, but having more charm than many of the new large-flowered hybrids. *S. Lindsayana* is also, I believe, a hybrid, but very distinct close mossy foliage and immanetable, almost stemless, white flowers.

We have now left the big sections behind us, and as most of those which remain are quite small I will not deal with them separately.

S. crosa is a typical American Saxifrage. Splendid imposing foliage, still more imposing flower stems, and almost imperceptible flowers, it is very distinct, but coarse and ugly, and suitable only for rough and damp corners. *S. pennsylvanica* is smaller and not so coarse, *S. ni alis* has prostrate rosettes of pale green, spade-shaped, leathery leaves, slightly toothed; *S. reflexa*, from Japan, is not unlike it, but stronger; *S. Rafidula* is a curiously unknown gem from N. W. America, and is, to my mind, the most attractive of all the American Saxifrages; it makes flat rosettes like an alpine primula; its leaves are shiny and of a dark green, with crimson underneath, edges toothed and inclined to recurve; then from the centre of each rosette springs a flower stem only 2 or 3 inches high, crowned with a crowded head of small white flowers with scarlet anthers. The effect they produce is both dainty and charming. I got *S. Rafidula* some years ago and sent it to Kew and Glasnevin, but it does not appear to have strayed into cultivation at all; it is perfectly easy to grow in light soil in half-shady situations. Another American that succeeds under similar treatment is *S. lutea*, *rifolia*, probably one of the most distinct Saxifrages in cultivation; it has entire shiny bright green leaves, spade-shaped or rather canoe paddle shaped, and throws up capitate heads of white flowers on red flower stems in late April. I heard it once described as "Primula Cashmeriana crossed with a lawn daisy"—a fantastic but realistic description. I do not know why it is not in general cultivation. No doubt it is very rare, but it is so robust that once established there should be no fear of losing it. The true *S. Mertensiana* is an interesting plant with round, slightly dented, light green leaves with hairs on their surface and also on their stems. One used to receive for it *S. heterantha*, a distinct plant with small bright green, deeply dented leaves, shaped more like those of *Camp. garganica*. *S. heterantha* is of the same clan as *S. Lyalli*—a very rare American that I have only recently got true; the latter has similar but larger leaves which spring from surface rooting rhizome-like growths. *S. Nelsoniana* is another interesting plant; growth similar to that of *S. Mertensiana*, but its leaves are of a bright deep green and brilliant crimson underneath. None of these Americans have flowers of any value except *S. Rafidula* and *S. Integrifolia*. Possibly the quaintest of them all is *S. Nutkana*; a full sized plant of this makes a large, perfectly flat rosette of pale yellow-green leaves, with dented edge and three or four projecting teeth at the end of each leaf; then

from its centre rises a flower stem which bears not only the usual inconspicuous flowers but also tiny young plants which eventually fall to the ground and soon take root. These young plants are for their first season bright green in colour, their leaves being as succulent as a *Sedum* and almost erect. I think it is the most distinct Saxifrage I have come across. *S. granulata*, the Meadow Saxifrage, with its pure white flowers, is too well known to require description. Its cousin, *S. cernua*, is smaller in every way, and increases itself in a manner not unlike that of *S. nutkana*, but in this instance the young plants are tiny bulbils, which soon root and send up leaves. For all these I would advise soil lightened with leaf-mould or peat and cool exposures.

S. aspera and its consins *S. bronchialis* and *S. sedoides* are interesting rather than attractive, and seem to be the connecting link between the Mossies and the oppositifolias, making tufts of more or less hairy rosettes and bearing creamy flowers. They do not like a hot spot, and with me prefer a peaty and stony slope on which they can ramble. *S. rotundifolia* and its varieties are very easy plants indeed; any damp and shady corner will suit them. There are several more or less distinct named varieties of the type (which has pale green, very round leaves and small flowers, white or spotted). I grow some under the names of *S. repanda*, *S. lasiophylla* var. *villosa* (very dwarf and hairy), *S. hederifolia* and *S. Rhodopea*. The last two are distinct, *S. hederifolia* having the brightest flowers of the section.

Two fine Chinamen are *S. Fortunei* and *S. Mandshuriensis*. Of the former there are two forms, one with green leaves and the other with leaves of a bright and shiny bronze. They bear pure white flowers, most distinct in shape, the upper petals being short and the two lower petals elongated like a water wagtail's tail feathers. They flower in October, and are consequently liable to be cut down by early frosts. *S. Mandshuriensis* is dwarfer and hardier, but its flowers are not so attractive. Other Saxifrages which I believe come from the same part of the world are *S. cuneatiformis* and *S. sarmentosa*, neither of which is quite hardy here.

Last of all we come to the bog lovers, *S. hirculus* and *S. diversifolia*, with bright yellow flowers; *S. aizoides* and its fine variety var. *atrorubens*; *S. Brunoniana* and its var. *Majuscula*, with their distinct bright green Androsace-like rosettes at the end of scarlet runners thrown out by the parent plant.

Despite the amount of space I have occupied, I have by no means exhausted the list of interesting Saxifrages. Many, however, though of interest to the collector, are not of much value as "garden plants," and I must therefore pass them by. It is, no doubt, difficult for the rock gardener who does not specialise in Saxifrages to select from so many names the small number of plants he requires, and Mr. Elwes has suggested to me the desirability of making such a selection, and including in it as far as possible plants not only the best in size and colour of their section, but also in ease of propagation and of culture. Unfortunately the best in size and colour are not

always the easiest to grow and propagate, but I will do what I can to fulfil his request.

*Aizoon*s, white forms.—*S. Aizoon* Rex, *S. Churchillii*, *S. Lingulata* Bellardi.

Coloured forms.—*S. Aizoon* rosea, *S. Aizoon* lutea, *S. Cartilaginea*, *S. Kolenati*ana.

Kabschias, yellow forms.—*S. Faldonsia* (not too easy), *S. Paulinae*, *S. Borisii* compacta, *S. Haagi*, *S. Godsoffi*, *S. apiculata*, *S. Rocheiana* lutea. White forms.—*S. Apiculata* alba, *S. Marginata*, *S. S. Burscriana* Gloria, minor and *Speciosa*.

Oppositifolias.—Var. *W. A. Clarke*, var. *latina*.

Umbrosas.—*S. primuloides*, *S. Gum* / *umbrosa*.

Mossies.—*S. Wallacei*, *S. Lindsayana*, *S. Bathonensis*, *S. Muscoides* var. *Jewel*, *S. Erioblasta*, *S. Granulata* × *Decipiens*.

Vari us other distinct Saxifrages.—*S. Aizoides* var. *atrorubens*, *S. Rotundifolia* var. *Hedraefolia*, *S. integrifolia*, *S. rudidula*.

Englerias.—*S. Griesbachii*, *S. porophylla*, *S. luteo-viridis*, *S. Kellereri*, *S. tribaryi* and *S. thesalicia*.

In conclusion, I would like to thank some of the readers of IRISH GARDENING for the interesting letters they have sent to me, and also for the help I have received (and am still receiving) from the Saxifrages they have sent for my inspection. Many of the plants sent were old friends with new names, but others were local or garden forms of much interest. For some unknown reason those frequent and interesting discussions upon difficulties of culture and the raising of new varieties of species that one observes weekly in the English gardening press are almost entirely absent from the correspondence column of IRISH GARDENING, and one is therefore unable to approximate the amount of interest its readers take in any particular form of gardening, and I had grave doubts when I undertook the present series of articles whether the cultivation of Saxifrages in this country had made sufficient strides to justify them. I have, therefore, been both surprised and gratified by the number of interesting letters I have received and the points raised in them, and if I have not been able to deal with all these points in the articles, it is not because I do not appreciate their importance, but on account of considerations of space. I will, however, endeavour to reply to most of them by letter.

Rhododendron dilatatum.

A NATIVE of Japan, this *Azalea* is one of our most distinct April-flowering deciduous shrubs. Bushes up to 30 inches high, closely packed with rosy-purple flowers a couple of inches across, have a charm all their own. Sheltered among the evergreen species on a south or west border, and in a cosy nook in the rock garden, *R. dilatatum* is worthy of more attention from cultivators. It is allied to *R. rhombicum*, having unspotted flowers, but is a better garden plant. May be propagated from half-mature young shoots inserted as cuttings towards the end of June in a propagating frame with slight bottom heat and by seeds.

R. dilatatum was first introduced by Messrs. Veitch in 1883, and Mr. Wilson collected seeds during his recent visit to Japan. It is figured in the *Botanical Magazine* tab. 7681. A. O.

The Food of Plants.

By CHEMIST.

THE value of peas, beans and lupins as vegetable food was recognised long before the time of Liebig and the advent of analytical chemistry. The chemist explains how this high food value is due to their richness in proteids, the nitrogenous material from which the nervous and muscular tissues of our bodies have been built up and from which the wastage of these tissues due to the wear and tear of life is made good from day to day. Now, it might naturally be inferred that these peas, beans and lupins, owing to their richness in nitrogen, should, when raised as crops, be specially severe on the land, and require an extra allowance of nitrogenous manure. Experience, however, showed that this was not the case. These legumes, it was known, were not by any means severe or exhausting crops. On the contrary. Yet the nitrogen must come from somewhere. Hence the need became apparent for a scientific *field* experiment bearing on the question, and, accordingly, an experiment of the kind was carried out at Altmark in Germany, the results of which were published in 1881.

A piece of ground of rather poor quality, which had not been tilled or manured for a number of years previously, was cropped with lupins for fifteen years in succession. Dressings of minerals were given annually, but no nitrogen compounds whatever. When the crop reached maturity it was cut and removed every year in due course. At the beginning of the experiment the services of a chemist were requisitioned to make an analysis of the soil and subsoil, with regard to the amount of combined nitrogen present; and a similar analysis was made, at the end of the experiment, fifteen years later. The results of the analyses may be seen at a glance.

	Nitrogen in Soil	Nitrogen in Subsoil
At beginning .	.027 % in top 6"	.021 % from 6"-21"
At the end .	.087 % in top 8"	.025 % from 8"-21"

It will be observed that despite the heavy annual drain of nitrogen, due to the removal of the crop, without any compensating return of nitrogenous manures, yet both the soil and subsoil actually grew richer in nitrogen. This experiment proved beyond a shadow of doubt that atmospheric nitrogen was "fixed" in some way by the lupin crop. It was not equally clear, however, that this unique power was possessed by plants in general. Certain plants seemed to be favoured—lupin, peas, beans, and, of course, clover—all belonging to one family too. But why was it they lost the power when grown under the conditions of Boussingault's experiment? The question was more easily asked than answered, and needless to say gave rise to much discussion. Indeed, the whole subject of nitrogen assimilation seemed to be once more in the melting pot. But at any rate

it was clear there must be some unknown factor operating in the soil under natural conditions which was altogether missing in the artificial soil made up of sand and wood ashes.

Some clue as to the nature of this unknown factor was supplied by the researches of Pasteur, carried on about the same time in quite another field of inquiry. In studying fermentation, Pasteur was led to the conclusion that certain chemical changes were brought about by the action of micro-organisms. Alcoholic fermentation, for instance, was due to the yeast organism. Other organisms produced putrefaction and decay, and similarly with regard to disease. In a word, Pasteur by his researches was laying the foundations of the new science of bacteriology. As some writer expressed it in another way, Pasteur by his researches has set up for us the empire of the microbe in addition to the other powers we have to struggle against. But in passing it may be pointed out that he also led the way in showing how the power of this new empire might be resisted, and even turned to good account. In this way his researches have benefited France to an extent sufficient (in Huxley's opinion) to make up for the war indemnity of 1870. Science, not so much for its own sake as for the sake of humanity and the welfare of his own beloved France, seemed indeed to be the ideal of the great Frenchman.

It was easy to imagine that these seemingly ubiquitous micro-organisms of Pasteur might be present in the soil, busy at work, bringing about chemical changes in a manner not hitherto realised. One such chemical change, the conversion of ammonium compounds into nitrates (nitrication), was shown (1877) by Warington, of Rothamstead, to be due to bacterial agency. The change was brought about in two stages by two different species of organism, one species taking up the work where the other left off. It was just possible that the mysterious fixation of atmospheric nitrogen by lupins and other leguminous plants might be due to the same cause.

The matter was investigated by two German scientists—Hellriegel and Wilfarth—in a classical research, the result of which was published in 1888. They worked with both lupins and peas, which they grew in sterilised sand, the necessary mineral food being added thereto, but no nitrogen compound whatever. Boussingault's previous results were confirmed. The plants grew all right for a little while, and then all growth was arrested. Next, some soil extract was added, and wherever this treatment was followed the plants grew and flourished. It made all the difference between growth and no growth. The difference was not due to any food value in the soil extract itself, because when this was heated to 70° C. there was no result, the extract had lost its power. The power evidently was due to some form of life in the extract, to the activity of some micro-organism whose ordinary habitat was the soil. Further, it was found that this soil extract, so effective with lupins and peas, had no effect when applied in the case of plants not belonging to the leguminous family.

Another matter that attracted attention was the presence of root nodules in the lupins and peas whenever these were grown under the soil extract treatment; whereas when grown by the aid of nitrates in sterilised sand or water cultures the nodules were absent. They must be due therefore to the activity of the organisms or bacteria, to use the more common term. That the

nodules contain the bacteria was gathered from the fact that they (the nodules), like soil extract, possessed the power of inoculation. They may be regarded as so many points of lodgment wherein the bacteria have taken up their abode (later the entrance of the organism through the root hair was observed under the microscope). Its settlement in the tissue of the root setting up local irritation gives rise to the nodule, something after the manner of leaf-gall formation in the oak. Each nodule becomes a colony. Symbiotic relationship is established between the plant and the bacteria: the plant supplying the sugar, the bacteria providing the valuable proteid, through assimilating the free nitrogen, present in the air spaces of the soil. When the plant decays the bacteria escape into the soil, but a great number remain whose activities are finished for good. By their decay the nodules are enriched in proteids, these riches later on becoming part of the soil and adding to its fertility.

Such in the main were the results of this research, perhaps the most interesting and important of the latter half of the nineteenth century from the agricultural-botanical point of view. These results were afterwards confirmed and amplified by English scientists at Rothamstead, Cambridge, and elsewhere, and many further researches have since been carried out with the view of turning the newly-acquired knowledge to practical use. The hope was at one time entertained that it might be possible to bring about a partnership between the lupin organism *Bacillus radicleola* and plants other than those of the leguminous order; but all experiments in the way of inoculation of grain, crucifers, &c., have so far proved unsuccessful. Better results have followed in the case of inoculation for the benefit of legumes themselves, more particularly with regard to their growth in newly reclaimed moorland. Here the addition of some ordinary soil from off arable land has been found to be highly beneficial, as by that means the organism *Bacillus radicleola* is, no doubt, introduced into a soil where it had not previously been in existence. To avoid this cumbersome method of inoculation by quantities of soil taken off arable land, pure cultures of *B. radicleola* were placed on the market, with special strains appropriate to each of the different leguminous crops—peas, beans, lupins, vetches, &c.—but from one cause or another these special cultures have not proved a commercial success. More research seems necessary. Soil bacteriology is, as it were, a science still in the making; it has not yet "arrived" so far as practical agriculture is concerned.

Much practical use is, however, made of the lupin crop in the reclamation of poor sandy soils. Instead of removing the crop it is ploughed in while still growing. The carbonaceous matter thus added, though of no value chemically as food, is of great importance physically in improving the texture of the loose sandy soil, imparting to it a greater capacity for retaining moisture, absorbing gases, &c.; and, of course, there is also added the valuable nitrogen, in the fixing of which lupin excels all the other leguminosae.

Another micro-organism which can assimilate free nitrogen has recently (1901) been found in the soil, not living in partnership with a plant, as *B. radicleola* does, but leading an independent existence, obtaining its carbonaceous food from dead organic matter in the soil. The activity of this organism known as *Azotobacter* is now

associated with the great fertility possessed by prairie soils. The growth of grass and the non-removal of the crop even for countless years would in itself only add carbonaceous matter to the soil; as the grasses have no root nodules, no working alliance with nitrogen organisms, like the legumes. The *Azotobacter*, however, makes up for this want by using the energy of the decaying prairie vegetation to add the invaluable nitrogen compounds. The importance of these lowly organisms becomes more and more apparent as we go on. Even ordinary farmyard manure is of no use to the crop until certain bacteria have worked chemical changes in its constitution—until, in fact, its nitrogen compounds have been reduced to ammonia, to take a particular example. If these decomposing bacteria are held up in their work, or inhibited in any way, the crop suffers. Recent experiments at Rothamstead have shown how these useful bacteria are preyed upon by other organisms in the soil to the great detriment of the growing crop. There are therefore both good and bad organisms from the farmer's point of view. Finally, as an instance of a wasteful process going on in the soil, the activity of another organism may be referred to, an activity which sets nitrogen free from ammonia, thus reversing the action of *Azotobacter* and *B. radicleola*. It may be worth mentioning that this wasteful process is most in evidence where intensive cultivation is carried on, where in fact the ordinary processes of plant nutrition are speeded up beyond the normal limit.

In following up our inquiries as to the manner in which plants obtain the nitrogen of their food, we have had to touch on the question of soil bacteriology—a subject about which the writer does not claim to possess any special technical knowledge. Although in its nature somewhat elusive and intangible, nevertheless the subject appears to be one with a future. One of our greatest authorities on questions of practical agriculture, but more especially on all matters pertaining to the soil, Mr. A. D. Hall, in his book, "The Feeding of Crops and Stock," says:—"While we are very far from being able to control the bacteria and other organisms present in the soil, we are beginning to realise both the fundamental importance of the part they play and the manner in which they can be affected by processes and materials applied to the soil; and though so far we have only succeeded in explaining results which the practical farmer had arrived at by experience, yet our knowledge must in time lead to deliberate and conscious advance in the way of utilising their powers to better effect." Some years later, in the light of further research, he speaks in a more confident tone. In a paper read at the Royal Institution, May, 1912, he says:—"The problem before us is to bring the soil bacteria under control, and already we begin to see such control is not impossible. . . . By certain processes of partial sterilisation we can eliminate organisms which keep in check the useful bacteria in the soil—*i.e.*, those which break down the nitrogen compounds to the state of ammonia. . . . At present the processes have not been extended to the open field, but there is promise of a method by which ultimately the unuseful fauna and flora will be domesticated, the useful races encouraged, the noxious repressed; just as the larger flora and fauna have been reduced to our service since the days when primitive man first turned from hunting to agriculture."

Spring Show. R.H.S., Ireland.

April 14 and 15.

AN early morning visit, just prior to judging commencing, found competitors about to leave the hall and nurserymen and florists putting the finishing touches to their exhibits. Through the courtesy of the secretary we were able to quietly view the many classes put up for competition and exhibition, and on another page will be found a complete prize list.

The season is a late one, but the quality over all was excellent. Daffodils for some reason or other were not quite so good as usual, though many fine groups were on view. The trade growers were not so many as usual, only Messrs. Hogg & Robertson and Messrs. Sutton & Sons staging exhibits of Daffodils. There were few novelties of outstanding merit, though one or two unnamed seedlings shown by the Irish firm were very fine, particularly a large pale trumpet variety; other prominent sorts in their collection were Duke of Bedford, Glory of Leiden, King Alfred, Maximus, Golden Bell, Weardale Perfection, with Lucifer, Plenipo, Cardinal, Firebrand, and many others.

Messrs. Sutton & Sons used a dark background, which greatly enhanced the appearance of their exhibit and showed up the varieties to perfection. Prominent among them was a fine epergne of the old Double Jonquil, also Southern Gem, Orange Buffon, Fairy Queen, and Sidney, while King Alfred was also very fine, and the enormous yellow trumpet variety, Olympia, was most striking; Glory of Leiden and Argent, with many others, were also shown in quantity by the famous Reading firm.

Messrs. E. Browett & Sons, Kingstown, were strongly represented, and had, as usual, a fine display of well-grown useful decorative material. Nothing better could be wished for than their blue and white Hydrangeas, a mass of bloom, in four-inch pots. Azaleas, Cytisuses, and Palms were very handsome, and any quantity of the ever popular Aspidistra, as well as Pteris Ferns and Spiraeas, were on view. A feature of this exhibit was a large number of baskets of Pansies, the flowers large and of beautiful colouring.

Messrs. Chas. Ransay & Sons, Ballstridge, the well-known florists, were prominent at the opposite end of the hall, and had a telling exhibit of choice cut flowers and foliage and flowering plants in pots. Magnificent bouquets of Roses were a feature, the chief varieties being Prince de Bulgarie, Mad. A. Chateaucy, Sunburst, Liberty, Molly S. Crawford, Mad. E. Heriot, the famous Daily Mail Rose, and others. Carnations were also prominent and in good condition, the following being some of the best:—Pioneer, rose pink; Lady Northcliffe, salmon pink; Scarlet Carola and the old Crimson Carola; Lady Meyer, flesh pink; Sunstar, yellow with red markings; and Beacon, orange scarlet. Aralia Veitchii, Palms, Liliums, and specimen Crotons all combined to add to the general effect.

Messrs. W. Watson & Sons, Clontarf, who won the challenge cup for Alpines in the class open to the trade only, also staged a non-competitive exhibit containing many choice and beautiful

dwarf shrubs and rock plants. Messrs. Watson have progressed remarkably since taking up hardy plants, and must now be reckoned among the leading hardy plant growers of the country.

Prominent in this exhibit, which must not be confused with their other staged for competition, were several dwarf bedding Roses, in which Messrs. Watson are strong believers for summer decorative work. The chief sorts were Eva Teschendorff, Mrs. W. H. Cutbush, Orleans, and Ellen Poulsen, all shades of rose and pink. Other interesting shrubs were Cytisus purpureus albus, Cytisus praecox, pale yellow; Erica Veitchii, white; Cytisus albus, Cytisus scoparius, Andromeda, Cytisus purpureus incarnatus, pale pink; and Cydonia Maulei, &c.

Among Alpines, *Houstonia corulea alba* was beautiful, and *Primula Juliae* was also in good form. *Auricula Dusty Miller*, with large yellow flowers, was much admired, while clumps of *Androsaces*, *Primula rosea*, *Draba hibernica*, *Erica carnea*, *Houstonia serpyllifolia*, *Daphne*, *Cheirum*, and *Anemone nemorosa purpurea* testified to the cultural skill of Messrs. Watson, and added a distinct charm to the show.

In their exhibit which won the challenge cup many choice plants were displayed in quantity. Among others we noted fine groups of *Primula rosea grandiflora*, *Auricula Mrs. S. Robinson*, *Ranunculus amplexicaulis*, *Arabis aubrietoides*, *Sax. rocheliiana lutea*, *S. arctioides*, *Primula viscosa*, *Viola gracilis* *Crimson Crown*, *Androsace sempervivoides*, *Lithospermum Heavenly Blue*, *Helichrysum bellidoides*, &c.

The Tully Nurseries, Kildare, who were placed second, had numerous fine groups of good things, but lacked something in arrangement. Prominent in their exhibit were *Androsace Chumbyi*, *Morisia hypogaea*, *Omphalodes cappadocica*, *Viola gracilis*, *Arenaria balaearica*, *Wahlenbergia serpyllifolia*, *Primula calycina*, *Mazus radicans*, *Primula glaucescens*, *Primula marginata*, and other good things.

Miss Johnson, who is earning a reputation for hardy plants, also exhibited in this class, and had some good lots of the dark form of *Primula Juliae*, *P. pubescens alba*, *P. Winteri*, *Androsace Laggeri*, *Aubrietia Bridesmaid*, *Anemone Pulsatilla*, and *Ethionema schistosum*.

In the class for twelve pans of Alpines there was, unfortunately, but one competitor—namely, Mrs. Greer, of Curragh Grange. These were the best pans yet shown in this class, and comprised the following:—*Sax. Boryi*, *S. dubautica*, *Primula Juliae*, *P. frondosa*, *Mazus rugosum*, *Myosotis Ruth Fisher*, *Androsace sarmentosa*, *Gentiana verna*, *Androsace Laggeri*, *Oxalis cuneaphylla*, very fine; *Viola gracilis*, and *Helichrysum bellidoides*.

Hardy cut flowers were, as usual in Dublin, very good, though the late season was against the inclusion of some of the choicer sorts. Capt. Riall, who took first honours in the largest class, showed good vases of *Magnolia stellata*, *Rhod. arboreum*, *Erica arborea*, *Acacia dealbata*, *Spiraea Thunbergii*, &c. In Lady Talbot Power's exhibit we noted good lots of *Iris stylosa*, *Forssythias*, *Cydonias*, *Grevillea rosmarinifolia*, &c. Other good things noted in this class were *Omphalodes verna*, very pretty as a cut flower, also the old double Wallflower and *Fritillarias*.

To lovers of alpines one of the most interesting exhibits was a non-competitive one from Mr. Murray Hornbrook. It was composed chiefly of rare Saxifrages, of which, as readers of IRISH GAR-

DENING know, Mr. Hornbrook has a wonderful knowledge, both as regards their identity and their cultivation. The following were noted in fine form:—*Sax. Strömbyi* var. *hedreantha*, *S.* seedling from *S. Frederici Augusti* with scarlet flowers; *S. lutea viridis*, *S. integrifolia*, *S. ex-doxiana*, a beautiful pan smothered in flowers; *S. Bertolini*, *S. Gussnusi*, a yellow-flowered seedling from *S. Strömbyi* × *S. arctioides*; *S. Kellereri*, finely flowered; *S. rufidala*, a dwarf species with white flowers, the anthers reddish brown; *S. Ferdinandi Cobargi*, with rich yellow flowers; *S. Kinlayi*, a charming white-flowered hybrid; and a beautiful pan of *S. porophylla*.

Calcicolarias were well shown by several competitors, the first prize lot being really magnificent. It is a pity that the shrubby or sub-shrubby hybrids are not represented, since they are so useful in greenhouse and conservatory. One can imagine the fine effect which would be produced even at the show by groups of *C. Jeffrey's Hybrid*, *C. Veitchii*, *C. Cibrani*, *C. Stewarti*,

Roses in pots were not so plentiful as in former years, nor perhaps so good in quality, due no doubt to the late season. Near the Roses, *Azalea mollis* lent a welcome dash of colour, and gave promise of the outdoor display later on.

Several good lots of *Astilbes* were on view, and were effective in lighting up a rather dark corner of the hall.

In the class for a basket of Carnations competition was weak and the blooms of indifferent quality. In fact, with the exception of the handsome blooms on Messrs. Ramsay's stand, Carnations were weak throughout the show.

In the classes for Zonal Pelargoniums, single and double, Alderman Bewley took both firsts with very good trusses considering the early date.

Cut blooms of Roses brought a fair amount of competition, Alderman Bewley's twenty-four being remarkably good, second place being taken by Mr. D'Olier, Bray, with a very good lot too. In the Tea and Noisette class Mr. D'Olier took



MESSRS. WATSON'S GROUP OF ALPINES WHICH WON THE CHALLENGE CUP AT THE SPRING SHOW, DUBLIN.

and the fine hybrids which have been raised between the greenhouse kinds and the more perennial woody sorts.

Regal Pelargoniums made a good display, although only three exhibits were forward. *Primula obconica* has rarely been better shown, some of the lots being truly magnificent; some particularly fine dark red forms, showing that progress is still being made in the right direction. Stocks were delightfully fragrant, though a trifle drawn, as if they had been somewhat hurried into flower.

Hippeastrums (*Amarylids*) were very fine and attracted much attention, the gorgeous colours and huge flowers rendering them conspicuous from all parts of the hall.

The date was early for *Gloxinias*, nevertheless Alderman Bewley was forward with nicely flowered specimens of this ever-popular greenhouse or stove plant, and the same exhibitor had a superbly grown lot of *Schizanthus*, the individual flowers being of immense size and the plants furnished to the pots. All over, *Schizanthus* has seldom been better shown than this year.

first with nice blooms, Alderman Bewley being second, but in the class for twelve blooms Alderman Bewley reasserted himself and took first place, Mr. D'Olier going second.

Mr. T. W. Russell put up a fine table of *Primula obconica* in which some good dark varieties were noticeable.

Deutzias were decidedly poor; again, we should say, owing to the late season, but some very well-grown *Cinerarias* were on view, although the colours did not strike one as in any way pleasing or attractive.

Tulips were very indifferent, but Hyacinths were excellent, although one might suggest that the pots were unduly large and unnecessarily conspicuous. The same remark is applicable to the *Mignonette*, which in most cases was grown in pots by far too large. Nothing over seven inches is at all necessary to grow this fragrant annual well.

One of the most delightful exhibits in the show was brought out in the class for *Freesias* in pots. Rarely has better grown stuff been seen in any show, and evidence of cultural skill of a high order was manifested in every lot shown.

A particularly pleasing exhibit was that of Lily of the Valley in pans, demonstrating when well grown the value of this popular flower for greenhouse decoration.

The fruit section of the show maintained the reputation of Ireland as a fruit-growing country. The general appearance and condition of the prize dishes was superb, exhibiting the essential characteristics necessary for keeping quality. While complimenting the successful competitors, the unsuccessful in future should aim at the high quality that merited award. The Catalpa pears shown by Alderman Bewley and Lady Fitzgerald were good examples of cultural skill.

Vegetables were probably under the average in entries, but considering the extremely erratic weather conditions during winter and spring this is not surprising. The first prize collection of six varieties exhibited by Nathaniel Hone, Esq., were really fine and most tastily put up. In the class section cucumbers, French beans, sea-kale, and early potatoes were up to standard quality, while cabbage, broccoli, and lettuce differed very much in quality between the first and third prizes.

For Prize List, see Advertisement Section (p. vii.)

Hints to Novices.

By R. M. POLLOCK.

VIOLETS.—These will be out of flower by the middle of the month, and may be divided up and a new plantation made. Lift the old plants, shake the soil from the roots, and break the clumps up into strong single bits. These may be replanted either in a new piece of ground, or if the original spot was good and rich and in the semi-shade, it may be well dug over, some fresh manure added, and the plants put in 15 inches apart every way. This will not be at all too far apart if the plants are healthy and the locality suitable. In their newly planted condition they should never be allowed to suffer from want of water. They should get a good drenching as soon as planted, and this should be repeated if the weather is dry. If the plantation is not to be renade, cut all runners off the old plants and fork up the ground round them. Princess of Wales cannot be beaten for large flowers, long stalks, free habit, and delicious perfume; Marie Louise, an old but a good double variety; Admiral Avellan, single red, is very attractive, but it will not do in all gardens, and seems fastidious as to soil and situation.

HARDY ANNUALS.—The first lot of these sown in the open will be ready for thinning, and it is well to do one thinning now and another later on. If all be done at once, some disaster may occur; slugs may eat all that are left in a few nights, or cats or dogs may prance on the lot, and all is lost; whereas if a few of the weakest are taken out now, where they are too crowded, a further thinning can if necessary be done later on.

ANNUALS that have been raised in frames and pricked out will during the present month be fit for planting out. Choose a dull day if possible, and water the pans or boxes from which the plants are to be removed thoroughly beforehand, so as to have the soil in a damp, moist state. This will enable the plants to be moved with very little disturbance to the roots. When planted, give a good soaking of water, and see that they get more if the weather is dry.

A sowing of late-flowering annuals can be made in the open, and where Crocuses have died down the bare spots can be covered by hardy annuals,

which will flower in late July, August, and September, and in this way empty patches can be avoided.

Where bedding-out is carried on this may be started as soon as the spring plants are cleared out of the beds. Taste differs greatly in this department, and no rules can be laid down, but unless the subject has been given some considerable thought during the preceding autumn and spring, and preparations made, success is doubtful. A visit to some of our public parks round Dublin will give very good examples of the effects that can be obtained through using ordinary garden material in an effective and suitable way. The great point to remember is to plant sufficiently close as to cover all the earth in the bed or border. This will give that satisfactory effect of an uninterrupted patch of colour. It is always advisable to keep a few extra plants to fill up in case some may die after planting.

During the last week the biennials for next spring may be sown Wallflowers, Canterbury Bells, Honesty, Sweet William, Columbines, Foxgloves, and others. Sow in the open ground in seed beds, where the soil has been broken up fairly fine, and sow the seeds in lines, as it is far easier to keep the varieties distinct thus sown than when scattered. Remember to sow thinly. The seedlings then start away strong and vigorous, instead of being cramped and stunted in their early growth. These seedlings will be transplanted later in the season.

Roses will have to be carefully watched for caterpillars and greenfly. Cold winds and bright sun encourage greenfly to a horrible extent, but this pest is easier to deal with than caterpillars and grubs. The latter have to be hand-picked, which, of course, takes a long time if roses are grown in quantity. Wherever a young leaf is seen crumpled up, it is certain some insect is or has been at work on it, and must be destroyed. Open the leaf and remove the insect; if it is not in that one it will be found in another not far off. Quassia chips boiled and strained off make an excellent wash, but simpler still is the extract of quassia which can be bought in this quite cheaply, and diluted according to directions. This can be used with a sprayer or fine syringe, and when thus applied will remove the greenfly without much difficulty.

A layer of clean straw may be put round strawberry plants to keep the flower and fruit off the ground. Fork the soil over before placing the straw.

Fruit trees on walls where the fruit has set may be syringed when the weather is hot and dry to keep down fly. Here again quassia is useful, as it makes the leaves so bitter that the insects dislike them.

Rockeries and rock gardens are now the most popular form of gardening, and in a rockery, even a small one, a great deal of time can be spent. In this paper, and in all other gardening papers, numerous articles appear on this subject, giving directions for propagating, planting, and making, and the most suitable plants to grow, all written by experts and those "in the know," but it would be well to remember that unless a rock garden or an alpine garden is kept neat and tidy, as well as full of choice plants, it is not a pleasure to be in it or remain in it. Alpine plants are, in the great majority, low-growing, compact, tidy plants, and can only look their best when kept so, and the sight of weeds in a rock garden is far worse than weeds in a herbaceous border. One dandelion flower will spoil the whole effect of a good piece of rock work, even if filled with the most expensive and choice plants.

Correspondence.

WINTER SPRAYING

SIR.—With reference to Sir F. W. Moore's letter on this subject in your April issue, allow me to say that after twelve years' annual spraying I can see no bad effects, but much benefit has been conferred on the trees. I used the crude caustic soda washes at first, but without any more evidence of their injurious effect than a feeling that they might harden the skin of a tree as in our own skin. We know they burn. I gave them up for a more elaborate and finely proportioned wash, a proprietary article which I use annually. If, however, biennial or triennial applications can be proved efficient, much expense may be saved fruit growers.

Sir Frederick has, however, pointed out clearly the difference in climate, &c., between England and Ireland, and particularly striking is this the case with Aldenham and Chilwell (the two districts in which the two opponents of annual caustic wash spraying, as recorded in the *Gardeners' Chronicle*, live). Both of these districts are favoured with a small annual rainfall—Aldenham 20.72 inches, Chilwell 21.75 inches. Our annual rainfall is 16.42 inches for the same year, 1913—the last available volume of "British Rainfall" I have for reference. These figures bear out Sir Frederick's climatic assertion, and I know the soils of both these districts are heavy, close-textured stuffs, unlike the general class of soil in Ireland. An interesting letter favouring annual spraying with a diluted solution coming from the Isle of Wight appeared in the *Gardeners' Chronicle* of April 10th. The rainfall of Isle of Wight varies in districts from 29 to 36 inches annually, so evidently climates with much humidity and rainfall may be taken as likely to benefit by annual sprayings, whereas the drier parts of a country require less. Could accurate observers be found, the whole subject would pay for discussion.

A. F. PEARSON.

SIR.—In your April issue of IRISH GARDENING I note a very interesting letter signed F. W. Moore, giving his experience of winter spraying with alkali wash for fifteen years without any injurious effect to either trees or crop. Like the writer I have met with a number of growers who state caustic soda spray injures the bark of apple trees, but these statements were in most cases made by men who never used alkali wash or very little of any other spray fluids. Personally I have never found any injurious effects, although I have given winter spray fluids a fair trial.

In 1905 I took charge of twenty acres of fruit planted on different soils and situations in the south of Ireland; the plantations were mixed, including about fifteen varieties of apples, some plums, pears, gooseberries, red, white and black currants; all were sprayed for five years in succession with 1 lbs. caustic soda, 1 lbs. crude potash, 3 lbs. soft soap to 40 gallons water; spraying commenced when the trees were only three years old, and at the end of the term all were in perfect health. Since then, in the north of Ireland, I have tested 8 lbs. caustic soda, 3 lbs. soft soap to 40 gallons water for four consecutive years, commencing with nine year old Bramley's and Lane's. The trees treated were growing in the centre of an acre orchard, and on both sides rows were left for control; the sprayed trees each year showed a marked im-

provement in both fruit and foliage in comparison with those left for control, and no trace whatsoever of hardening or injury to the bark.

When old trees are winter-sprayed, the moss and lichen soon dry up and commence to crumble, also the old loose bark chips off. Growers have often drawn my attention to this, which is often called "burning" or "injury." On examining the bark underneath, it will be found quite sound and healthy. Any winter spray fluid which does not remove moss, lichen, and old loose bark (which is a harbour for insects and their eggs) is very little value. I wish to make clear to the reader that I am not stating it is absolutely necessary to spray every year in all cases. Common sense and judgment must be used. Where trees are planted on open situations, a good distance from row to row, spraying every other year may be sufficient to keep them clean, but when planted closely together, or surrounded by forest trees, it is advisable to spray every year.

J. HAGAN.

SIR.—I have used the caustic alkali wash (8 lbs. caustic soda, 3 lbs. soft soap, 40 gallons water) on young orchard trees three successive seasons without noticing any ill-effects whatever. The orchards were situated in various aspects and were planted with the leading dessert and culinary varieties. Spraying was done in calm weather with the ordinary potato sprayer, which gives a very fine spray. In some cases the spraying was not completed till 1st March, but at the time the buds had not commenced to break away. I never observed any injury to the buds, though one would expect, if injury would result from this mixture, that the buds or the base of the buds would be the first to suffer.

I had an opportunity quite recently of seeing several orchards in Co. Antrim, and in each case the trees had been sprayed successively with the alkali wash with satisfactory results. One of the growers informed me he used this mixture each season for five years, and so far as he could see, the trees never suffered in any way. I may add that his fruit trees are of mature age, perfectly healthy, and studded with fruit buds. I have also seen the alkali wash tried with lime and sulphur and other winter-spraying mixtures, and the most satisfactory results were produced by the alkali mixture.

It is, of course, possible that injury may result if the mixture be made too strong, or where the trees are bad with lichen and too much of the mixture applied during one operation. Instead of spraying being harmful by continual use, I think we have reason rather to deplore that more of this work is not being done by fruit growers generally.

G. DOOLAN.

Belfast.

Patrinia Palmata.

This pretty little plant belongs to the Valerian family, and makes a pretty display in early summer, continuing in flower for a considerable time. The total height scarcely exceeds nine inches, the palmate leaves all springing from the base and surmounted by the spreading corymbs of fragrant yellow flowers. A moist peaty bed or recess in the rock garden suits it admirably, shade not being necessary. Seeds are produced fairly freely, and if sown when ripe will germinate in spring if not before.

ALPHEIST.

Prunus subhirtella.

THIS Japanese cherry was introduced to British gardens in 1895, a plant during that year being received at Kew from the Arnold Arboretum. It belongs to the *Cerasus* section of the genus, and is closely allied to the rose-bud cherry, *Prunus pendula*. An inhabitant of the mountains of Japan, the native name is Higansakura.

P. subhirtella forms a tree of medium height, widely spreading compared with its stature, and noticeable by reason of the numerous twiggy branches. The flowering season varies from the last week in March to the end of April. This year, which is a late season, it is the second half of the period. The individual blooms are 7-inch in diameter, very freely borne along the slender branches in clusters of two to four or five flowers; opening with a pleasing pink tinge they change to white with age.

The readiest method of propagation is to insert cuttings made of the half mature shoots towards the end of July in a propagating frame with slight bottom heat. A. O.

Woodlice.

As we are frequently asked for advice as to the destruction of this pest, we publish the following extracts kindly sent by a correspondent:

THE ECONOMIC IMPORTANCE OF WOODLICE. By W. E. Collinge (*Journal of the Board of Agriculture*, Vol. XXI., No. 3, pp. 206-212, plate). The article deals at some length with the life-histories and habits of the more common species of woodlice, which on occasion cause serious loss to horticulturists. Under the heading of "Preventive and Remedial Measures" it is said that there is no doubt that neglect to clean out out-houses, potting sheds, and similar places, from time to time, has much to do with the increase of woodlice. Again, rubbish heaps are frequently left to afford admirable breeding-places. A long series of outdoor tests with baits was made in order to find out what substances might be used to attract the woodlice, and another series to ascertain the most advisable poison. A series of tests with repellents were also made. It was found that sliced potatoes given a thin covering of Paris green or London purple, proved most effective. London purple also proved the best repellent. Kerosene emulsion as a contact spray was fatal. In a greenhouse it was found that sprinkling Paris green on the floor and covering it with damp boards was very effective. On the first morning there were 137 dead specimens, on the second 59, and on the third 21. Dusting the soil, especially along the sides of tiles surrounding flower-beds, with equal parts of Paris green and ground unslaked lime is an excellent remedy.

TO DESTROY WOODLICE (*Journal of the Department of Agriculture*, Victoria, December, 1913, p. 518, in article: "Insect Pests of the Potato," by C. French).—Trap by placing in the haunts of the woodlice pieces of parsnip, beetroot, or potato cooked in a solution of arsenic. They eat these greedily. They can also be trapped in large numbers by placing empty boxes (or bones on top of old sacks) at the side of the garden, and into these the woodlice will creep on the approach of day. If the woodlice are in the ground, vaporite well worked into the soil destroys them through the gas evolved.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath, Bally-walter Park, Co. Down.

CONIFERS.—An inspection of these trees should be frequently made during the growing season to see that the leader is uninjured, because the preservation of this is desirable in most species to maintain the symmetry of the specimen. If any have become too much damaged to be worth retaining, the nearest well-placed shoot should be tied to a stake lashed to the main stem. If the top of the tree is more than a few feet from the ground, use a soft ligature, such as binder-cord, so that by the time the new leader is self-supporting, the tie will have rotted and fallen away.

Young trees of *Abies* and *Picea*, especially of the latter genus, often form twin leaders, which, if allowed to grow, not only destroy the outline of the tree, but later on form a lodgment for dead leaves and water, which soon induce decay at the fork, and a gale eventually splits the tree at this point.

BAMBOOS. Any varieties of *Bambusa*, *Arundinaria* and *Phyllostachys* that have been recently planted should be given occasional waterings, as these plants become dry very quickly in the presence of a drying wind. *A. nuda* and *A. anceps* are greatly affected by dry conditions, the leaves frequently showing signs of shrivelling during an east wind.

Large clumps of Bamboos can be improved in condition by applying water from the hose.

KNOB-ENDERSONS.—The early removal of the seed vessels is of great benefit to the bushes, especially the Himalayan species, and all young and recently-moved plants which are showing signs of exhaustion. These latter would derive great benefit from a mulching of partially decayed manure. Remove the point from any shoots which are making undue headway to the detriment of the shape of the bush. Remove the suckers which often spring up around the stems of grafted plants.

PRIMROSES AND AURICULAS.—Seeds may now be sown in pans or boxes of light, sandy soil. Barely cover the seeds and place the boxes in a cold frame. Although the florists' *Auricula* is tender and susceptible to damp, the "garden" forms are quite hardy, and have such a beautiful range of colour and form that they should be largely grown where spring flowers are in request.

ANNUALS. The seedlings from the first sowing out-of-doors will soon be fit for thinning. This should be rigorously carried out, for it is better to slightly err in allowing too much room than too little. After thinning has been done, hoe between the rows, and if slugs are suspected dust the plants with soot.

GENERAL REMARKS.—Space in the glass-houses will be in great demand just now, therefore plants should be hardened as soon as possible, so that they may be stood out-of-doors. The more tender subjects may be transferred from the houses to cold frames. Tender plants with soft growth, such as *Heliotrope*, *Salvia*, and *Iresine*, must be treated carefully, or the plants may receive a check. Ventilate the frames freely whenever the weather is favourable; in a few days the lights may be withdrawn entirely, and this will lead to a firm healthy growth.

Sheltered corners of walls, or by the sides of glass-houses, may often be utilised for bedding plants to relieve the congestion under glass, but make preparations to cover the plants at night should frost threaten.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitzgerald, Carrigoran, Co. Clare.

"WELCOME, merry month of May." Fruit prospects are on the whole looking cheery enough, and let us hope that they shall continue to the end, and not find us later on lamenting the vagaries of the weather, as anything but a "merry" prospect may result from the ungenial weather such as is occasionally vouchsafed during this month.

Though there is during this month a considerable lull in operations on fruit quarters, some of our troublesome insect pests become very active in their annual operations, and these must be taken in hand promptly on appearance. The aphid tribe, or, as they are more frequently styled, green fly, black fly, &c. (not forgetting the woolly aphid) very quickly establish themselves on currants, plums, cherries, apples (and peaches if grown outdoors), these may all be readily disposed of by timely spraying, though the longer spraying is deferred the more time and spray must be expended on making a clearance of these pests, which increase and multiply at an amazing rate, in case harsh dry weather may prevail on their advent. The instinct of self-preservation "even in these lowly subjects" is soon evidenced in the curling up and blistering of foliage, points of shoots, &c. thus rendering the insects to a great extent immune from attacks of enemies and sprays. If the aphid are left undisturbed, this curling of leaves rapidly increases to such an extent that nothing short of hand-picking the curled leaves, &c., will suffice to destroy the fly (this applies specially to cherries infested with black fly). Of course the dipping of such leaves, shoots, &c., in insecticide, as sometimes advised, may be resorted to, but the disadvantages are so obvious that it hardly merits mention at all.

All varieties of currants are subject to aphid attacks, though black currants are most susceptible, and the fruit very soon seriously injured by an unchecked attack of aphid. Spraying compounds wherewith to combat all kinds of insect attacks are now so numerous, and mostly quite effective, that it is inadvisable to be recommending any particular compound; however, it is no uncommon occurrence for some of these pests to appear quite unexpectedly, or people may not be "forearmed" with the requisite compound, or the fruit might be almost consumed by the expectant flies ere the compound arrived from maker or store: soft soap is readily obtained, and makes an effective wash for most kinds of aphid, specially currant aphid. Where great numbers of bushes or trees are affected, it may be used as follows:—Take $3\frac{1}{2}$ lbs. of soft soap, place it in a bucket and pour over it a couple of gallons of very hot or boiling water, then stir with a lath or narrow strip of board until the whole is dissolved; pour this into such a utensil as an empty paraffin or other barrel (holding about 10 gallons), then fill up with rain water: if sufficient hot water can be added to

make the whole new milk warm for using, the mixture is more effective. Soft soaps vary in composition, and to make sure of the mixture being strong enough take an infested leaf or shoot and dip in the mixture; if the flies are not at once killed, dissolve another $\frac{1}{2}$ lb. of the soap and add to mixture: this must be sprayed on with a good pressure, mostly to the underside of foliage. One spraying thoroughly carried out is generally sufficient, though on plums a second spraying is likely to be required, as the aphid (one or two kinds) peculiar to plums is not so readily destroyed as currant aphid. If the trees or bushes have become badly infested, the badly curled or blistered leaves should be picked off before any spraying is carried out, these curled leaves, &c., being thrown into a bucket, and boiling water poured over the leaves to destroy the aphid; any amount of spraying would not suffice to kill the aphid in these curled leaves. Woolly aphid may make its appearance this month on apple trees, and should be destroyed promptly; small quantities may be destroyed by brushing the woolly patches over with methylated spirits, using a very small paint brush or a small bunch of hairs made into a brush for the purpose, rubbing the liquid well into the aphid. Where larger areas are to be dealt with, spraying must be resorted to; special force must be used in order to disperse the woolly covering and allow of spray reaching the insects.

Wherever the necessity for spraying of bush fruits for caterpillars, or the larger fruits for black spot, &c., exists, it must to a great extent be carried out this month, either in conjunction with winter spraying or where no winter spraying was done either by reason of excessive rainy and unsuitable weather during past winter, or, as in some cases, where a belief exists that the result of winter spraying for scab on fruit trees does not justify the outlay. In any case no practical and up-to-date fruit grower in these times gainsays the advantages following on spraying in summer or winter, and it is very important that it should be carried out this month thoroughly, using whatever compound may be most favoured. The spray to be most effective (and economical) must be made very fine, and just sufficient to moisten all the foliage, &c., and not be applied so heavily as to cause dripping from leaves or branches. For caterpillars it seems to be very generally conceded that Arsenate of Lead is more effective and extensively used than any other compound: this may be used—1 lb. of the paste to 25 gallons of water, sprayed over the bushes, being careful to cover all the foliage with a fine spray, just sufficient to moisten the whole of the foliage. Care must be taken not to spray with this poison at any time within a month of the fruit being gathered; also bear in mind that this is a dangerous poison, and run no risks of injury being inflicted on human beings or domestic animals by the use of it.

Mulching of newly planted (and specially late planted) fruit trees, if not already done, should be seen to this month; such trees always derive considerable benefit from a mulch of farmyard manure, about half-decayed, but still retaining a considerable part of its nutritive properties; in most cases manure can be procured for either large or small numbers of trees, and all who mulch freely will find themselves amply compensated in the healthy vigorous growth and

root action resultant (and compared with un-mulched trees); this will be much more apparent if hot sun, with drying winds, should prevail during this and next month. If the surface of the ground has become hardened and crusted over, it should be broken up and made fine with a Dutch hoe or Bucco cultivator before the mulch is applied; such treatment also greatly minimises the necessity for watering in cases of severe drought setting in, and particularly so with trees planted against walls, which feel the ill-effects of drought more quickly and severely than those trees planted in the open.

Young trees which have come into bearing substantial crops of fruit (and the old ones may say "why not we also?") should be mulched also; but for these the manure may be much fresher and more stimulating than for new planted trees; if the weather should be hot and dry at the time of mulching these fruiting trees, the value of mulching will be considerably enhanced by following up with a good soaking of water, which at once washes down to the roots a great part of the nutritive properties of manure. A maxim oft and oft repeated "keep the hoe going" if it has not already been set going. Make no further delay in hoeing and cultivating to both keep down weeds and to break up crusty or lumpy surfaces, which must be very common this season after the abnormally wet winter. Frequent hoeing, or such as will maintain the ground loose and free of weeds, is almost as beneficial as mulching to fruit trees of all kinds, and in addition gives a very gratifying and smart appearance to the garden or orchard. Bush fruits, strawberries and raspberries are all much benefited by the application of some quick-acting and stimulating dressing while their fruits are swelling, during this and next month. Nitrate of soda is one of the best. Where the bushes, &c., were duly manured and dug amongst during the winter or early spring months, the soda may be applied at the rate of about 2 ozs. (not more) to a good sized and fruitful bush or about an ounce to the square yard amongst strawberries and raspberries, once or twice during the season.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. Shanahan-Crawford, Esq., Lota Lodge, Glanmire, Cork.

MAY brings with it much work in the vegetable garden. Thinning and transplanting will be necessary during moist spells, while hoeing between all growing crops during hot dry weather will act beneficially to the soil and the crops; should failures in earlier sowings have occurred, these may still be made good, indeed the more or less experimental work of sowing vegetables late last summer at the outbreak of the war proved that many things formerly regarded as requiring a long time to mature turned in much quicker than thought possible.

BEANS, now flowering, should have the points pinched out; this prevents attacks of black fly and hastens podding. A sowing may still be made on cool heavy soil.

KIDNEY BEANS, dwarf and climbing, may be sown freely, allowing liberal space for dwarfs between the rows, say at least 2 feet, and 18 inches between the plants. Light rich soil suits the Kidney bean. The climbing varieties require

more room still. In the case of the common Scarlet Runner, allow 12 feet between the rows; the intervening space will suit very well for growing vegetable narrowes.

BEET. Sow the main crop. Nice small roots of good quality will result from present sowing.

BROCCOLI. Sow for succession the late May and June varieties.

BRUSSELS SPROUTS. Plant out on rich soil a few plants of early sowing for autumn use.

CABBAGE. If the small tender hearts are required in late summer, sow a pinch of some small variety such as Tender and True. Prick and plant out early spring sowings.

CARROT. Thin during showery weather; give a light dusting of soot and salt now and again as a deterrent to the carrot fly.

CARFLOWER. Frame-sown plants will need planting out in the richest soil; indeed a trench of manure, were it possible to give such, would be greedily seized on. Give plenty of water if the weather is at all dry.

CELERY. If trenches are not already made, they may now be completed, planting the ridges with either a line of lettuces or French beans. Place plenty of farmyard manure in the trenches, and leave till the young plants are ready for planting. A trench of 18 inches wide and 12 inches deep is a nice size, to stand 4 feet apart.

LETTUCE. Sow the large varieties now where they are to mature, and water freely all earlier plantings.

PEA. Sow the second earlies every ten days in shallow trenches. This facilitates watering, or surface mulchings may be placed in the depression.

RADISH. Mustard and cress ought to be sown frequently to keep a fresh and tender supply.

TOMATOES.—Those sown for the purpose of planting outdoors will be fit for hardening about the end of May and placing in their fruiting quarters. A south wall or border well sheltered from east winds is a suitable place to grow them.

VEGETABLE MARROWS will be fit by the end of the month to plant outdoors under a handlight or frame for a start, an old dungheap or ridge of manure covered with soil suits them admirably.

POTATOES.—Earth up all early varieties when ready.

Chrysanthemum Flowers in March and April.

ON April 21st we received a box of Chrysanthemum flowers from Mr. J. Moneriff, Florence Court Gardens, Enniskillen.

The blooms were of medium size, fresh, and of a soft pink colour. These are of much interest on account of the unusual season of flowering. Writing later Mr. Moneriff says: "I think it is rare to have such good blooms at this time of year. I have had a dozen plants which have been in flower since March, and flowers all of good size. I have grown it now for two years, and it flowers about the same time. I got it from a friend who called it Milfred Blush. I have looked through a lot of catalogues, but cannot find such a name."

Perhaps some of our readers may know the variety or of others which behave similarly, in which case we would be glad to hear from them.

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LINCOLN
NEW
BOTANICAL
GARDEN

EDITOR C. F. BALL

Some of the Newer Chinese Rhododendrons

By MR. A. OSBORN, Kew.

EXPLORATIONS in China during the last twenty years prove that region and extending through Tibet into the Himalayas to be the headquarters of the Rhododendron family. The

French missionaries, Abbés David, Delavay, and Farges, and the British collectors, Messrs. Wilson, Forrest, and Purdon, all sent home seeds of Rhododendrons. English gardens are indebted to Mr. E. H. Wilson for most of the species mentioned here, though a number were introduced a few years earlier to France. A number have already proved distinct and valuable additions to our gardens, while in the hands of the hybridist few will deny they possess immense possibilities. While most of Mr. Wilson's introductions are perfectly hardy, a number flower in early spring, when the flowers are often damaged by frosts when planted in the open. For these a position sheltered from the morning sun is very desirable. These remarks suggest that the Chinese Rhododendrons will prove of the greatest value in the milder climate of the south and west, including Ireland. The majority of the Chinese Rhododendrons are evergreen. The most notable exceptions are *R. sinense* and *R. mucronulatum*.

Inserted at the right time when the young shoots are beginning to assume a half-ripe nature, cuttings of most of the smaller-leaved Rhododendrons root readily in a propagating

frame with slight bottom heat. In this way it will be easy to select and raise stocks of the best forms or varieties, as considerable variation exists among the seedlings of some species in colour, size and markings of the flowers.

R. AMBIGUUM.—A bushy evergreen promising to grow 4 feet or more in height. Produces terminal trusses of four to six flowers about the end of April or early in May, pale yellow, with greenish yellow spots. The colour is the most important recommendation, being rare among evergreen Rhododendrons. It seeds freely under cultivation. Introduced by Mr. Wilson.

R. AUGUSTINI. This is said to reach a

height of 10 feet. Young plants form pleasing bushy evergreens. In colour the flowers are very variable including white, blush, pink, lavender and purple. A few years selecting among these should give us a most valuable addition to the evergreen flowering species of our gardens. One in particular, introduced by Mr. Wilson, a lavender-purple shade, flowers $2\frac{1}{2}$ inches across,



Photo by]

18. Rose

RHODODENDRON DAVIDSONIANUM AT GLASNEVIN.

with yellow spots on the upper lobes, and wayed edges, is particularly desirable.

R. CHARTOPHYLLUM.—An evergreen species allied to *R. yunnanense*, but flowers earlier, has rather larger leaves, and the habit of the bushes is more erect. The flowers are borne in clusters at the ends of the shoots, white with a lavender tint spotted with reddish brown, $1\frac{1}{2}$ inches in diameter. Introduced to France by the French missionaries.

R. CONCINNUM.—This has evergreen leaves up to 2 inches long and forms a bush of moderate size, producing trusses of purple or lavender purple flowers in May. These are about 2 inches across in terminal trusses of three or four blooms. We owe its introduction to Mr. E. H. Wilson, who first sent seeds home to Messrs. Veitch in 1904.

R. DAVIDII.—This evergreen species is in the way of *R. Fortunei*, but has rather smaller leaves and flowers. It has the seven-lobed flower, bell-shaped, some 2 inches across, lilac-pink in colour. The leaves are 4 inches to 6 inches long and one-third as wide. A Western Chinese species, the plant is named in compliment to its discoverer, Abbé David. Our plants were raised from seeds collected in 1904 by Mr. E. H. Wilson.

R. DECORUM.—A form or ally of *R. Fortunei* several collectors have introduced from Western China. Even when not in flower, the sturdy plants are attractive evergreen bushes with stout light green foliage. It has the fragrant, seven-lobed blooms, some $2\frac{1}{2}$ inches across, delicate bluish-pink or white in colour. Good-natured in growth, *R. decorum* may prove quite as useful to the hybridist as *R. Fortunei* has done.

R. DISCOLOR.—Still another of the *R. Fortunei* breed, our plants are readily distinguished from other Chinese species by their large leaves and starting into growth later.

R. DAVIDSONIANUM.—This is an evergreen species closely allied to *R. chartophyllum*, but differs from it in having narrower leaves, longer pedicels, and generally larger flowers. It is in full beauty towards the end of April or early in May, the flowers being so numerous on some of the plants as to hide most of the foliage. These are white or pale bluish, with crimson markings, and about $1\frac{1}{2}$ inches in diameter. For its introduction we are indebted to Mr. Wilson.

R. DISCOLOR.—This is a beautiful evergreen bush, with large stout leaves, 6 inches to 8 inches long, and bluish-tinted or white flowers, funnel-shaped, 2 inches to 3 inches wide. Allied

to *R. Fortunei*, it starts into growth later than that species, but is distinguished by narrower leaves and larger calyxlobes. The introducer, Mr. E. H. Wilson, describes *R. discolor* as a common species in Western Hupeh.

R. FARGESII.—An evergreen species with leathery oblong-ovate leaves of moderate size and rosy pink or pale rose blossoms closely arranged in a terminal head of about half-a-dozen funnel-shaped flowers, opening outside from the middle of April onwards. Shelter from the morning sun is desirable.

R. FASTIGIATUM.—This dainty alpine Rhododendron, introduced by Mr. Forrest, is allied to and forms a fitting companion to *R. intricatum*, collected by Mr. E. H. Wilson. The latter flowers in early April, while the flowers of *R. fastigiatum* open towards the end of that month or early in May. Growing 6 inches to 1 foot high, or perhaps more with age, it has small evergreen leaves, averaging half an inch long, and dainty pale purple or reddish purple flowers an inch across. A gem for the rock garden, *R. fastigiatum* is botanically easy to distinguish from *R. intricatum*, having protruding stamens.

R. FLAVIDUM.—Another dwarf evergreen rock garden species, particularly interesting because it has yellow flowers which are 1 inch across, borne in small clusters at the ends of the shoots during April. Introduced by Mr. Wilson from Western Szechuen when collecting for Messrs. Veitch; it has also been named *R. primulinum*.

R. HANCEANUM.—This at present with us is a dwarf evergreen shrub, the appearance suggesting a position in the rock garden. As, however, Mr. Wilson records it as a large bush up to 10 feet high in China, *R. Hanceanum* should prove a useful addition to the pleasure grounds and woodland walks. The creamy white or pale yellow flowers open during May, and are borne in small terminal clusters, the individual flowers being about 1 inch across.

R. INTRICATUM.—This dainty and distinct Rhododendron is one of Mr. Wilson's best introductions from China. Quite different when it first flowered from any other species, the dwarf evergreen pygmy-like bushes do not appear likely to much exceed 1 foot in height. The effect when the little bushes are covered during April with quantities of dainty lilac-mauve or pale purple flowers can better be imagined than described. Found at an elevation of over 10,000 feet in Western China, *R. intricatum* is quite hardy, but flowering early in the season a south-west or west aspect is desirable to provide some shelter for the blossoms from spring frosts.

R. LUTESCENS.—This is essentially a plant for southern gardens, as it flowers during April and starts into growth early, thus in most seasons the plants suffer, unless in very favourable positions, from frosts and cold winds. The yellow flowers, which are both terminal and axillary towards the ends of the shoots, are its chief claim for consideration.

R. MICRANTHUM.—In some respects this must be considered among the most distinct of recent introductions. When cut and placed in water, sprays of this *Rhododendron* suggest more that of a *Ledum*, with its closely-packed terminal racemes of dainty little white flowers, which open towards the end of May. An evergreen bush, it is inclined to be rather straggly in habit, a circumstance which can be overcome by placing several plants in close proximity which, as they grow, will intermix. *R. micranthum* is a native of Northern and Central China and Manchuria.

R. MOUPINENSE.—Introduced by Mr. Wilson in 1909, this is a dwarf evergreen species 1 foot to 2 feet, or possibly eventually a little more in height. With dark green oval leaves about an inch long and purple spotted white flowers 2 inches across, *R. moupinense* will find most congenial surroundings in the rock garden, where the flowers which expand in April will be afforded some protection.

R. POLYLEPIS.—Under the name of *R. Harrovianum* this species from Western China is already fairly well known in our gardens. Though an evergreen, the plants have an unhappy cold look about them in winter, at least if the position is at all exposed. This, coupled with the rather dull looking pale purple flowers, hardly warrant its extended cultivation in view of the many better species among the newer introductions. Even when not in flower, *R. polylepis* is readily recognised by its wrinkled leaves.

R. SIDEROPHYLLUM.—This species is in the way of *R. yunnanense*, but, in addition to botanical differences, the habit is rather more upright, forming a somewhat pyramidal bush, and the bluish tint is more pronounced in the spotted flowers, in addition to flowering a fortnight earlier. A pleasing evergreen, the flowers are about 1½ inches in diameter, borne in clusters towards the ends of the previous season's growths. A Western Chinese species first introduced by Mr. Wilson in 1904.

R. SOULIEI.—This is among the choicest and most distinct of Mr. Wilson's introductions from Western China. Likely to prove a most attractive evergreen, *R. Souliei* has very distinct

dark green glaucous leaves, heart-shaped, 2 inches to 3 inches long, and open saucer-shaped blossoms up to 3 inches in diameter of a pleasing flesh-pink or rosy-pink tint. Flowering in May, there is less likelihood of the flowers being damaged by frosts and cold winds than in some of the other species mentioned.

R. SUTCHUENENSE.—This is one of the large-leaved evergreen species, making an attractive bush even when not in flower. It has large bell-shaped, open flowers, 2½ inches to 3 inches across, in colour a lilac-pink or rosy-pink shade. Unfortunately the flowers open during March and early April, and thus as a flowering bush *R. sutchuense* is suitable only for the mild and favoured parts of the south and west.

R. YANTHINUM.—Among the evergreen *Rhododendrons* of Chinese origin, with comparatively small leaves and purple flowers, this is the most pleasing. Though the plants raised from seeds vary considerably in the shade of colour, a goodly number are of a rich glowing reddish hue. By selecting the best of these for propagation a distinct and charming addition to our hardy *Rhododendrons* may be looked for.

R. YUNNANENSE.—We are indebted to the Abbé Delavay for first introducing this plant to our gardens. A very free-flowering bush, *R. yunnanense* blossoms during May, and is delightful as a lawn bed or grouped in the shrubbery border. With this species also there will have to be some selecting, as individual plants produce flowers superior in every way to others. The bluish-tinted blooms are prettily spotted with reddish brown markings.

Anemone sylvestris grandiflora.

This is a very beautiful plant, suitable for a moist position in the rock garden, but also amenable to cultivation in a well managed herbaceous border. Flowering in May for a considerable time, this charming plant keeps up the season of flowering, which is started by the earlier flowering species, *blanda* and *appennina*. The variety *grandiflora* is stronger in growth and bears larger flowers than the ordinary form, and is in every way a desirable plant, spreading freely, and producing pure white flowers some two inches across.

Also flowering in May, *Anemone globosa* is distinct and rare. In this case the flowers are much smaller, globose in shape, and unique in their rosy-pink colour, not common in the smaller growing early-flowering *Anemones*.

H. Adfl. necr.

Cinerarias

By T. W. BRISCOE.

FEW plants can equal the various forms of Cineraria for producing a gorgeous display throughout the winter and early spring months. The kinds often met with are those known as large-flowered, the plants being dwarf and compact in habit. They can be procured in various shades of colour, such as blue, white, crimson, blue-edged, &c.; but for general purposes a

good reliable mixed strain is preferable. Other dwarf kinds are Antique Rose, the flowers being a pretty shade of rose; but it is a plant I never really admired. Matador is similar in habit, but the flowers are orange scarlet, and is worth growing on that account. The best section to my mind is the stellata or polyantha, and they certainly have gained great popularity of late years. They grow from 2 to 4 feet high, and the immense heads of star-shaped flowers are produced on long stalks, which render them ideal subjects for cutting or general decorative work as pot plants. Here again a first-class mixture is excellent for most gardens although they are offered in shades of light blue and white, but so far as my experience goes they do not come true from seed. The Feltham Beauty strain is somewhat similar to the stellata group, the flowers being larger and the petals broader, but the true star shape is retained. It is an excellent plant where tall kinds cannot be accommodated, as there are many distinct and attractive shades of colour, while the habit leaves nothing to be desired. In the Cactus Blue we have a delightful plant of compact growth. The flowers are a beautiful clear blue of various shades, with the petals slightly twisted and bent near the tips, which give the blooms a distinct and pleasing effect.

One firm also offers an intermediate strain, but sufficient has been written to show what a wealth of material there is to choose from, and if the strains are increased at the same rate as they have of late years, the gardener who cannot

regularly visit the various shows will have a difficult task in knowing what to choose.

Cinerarias are raised from seeds, and the best time to sow them is early in June, and July for a later batch. The seed is small, and should only be lightly covered with fine soil. The pots or pans should be well drained, and filled to within an inch of the rim with ordinary potting compost. If placed in gentle heat or a cold frame which is kept close, germination will soon take place, and when the seedlings have made two or three tiny leaves they should be placed singly in small pots. A

light, airy, cool position is then needed to secure strong and sturdy growth. When sufficiently advanced they must be given larger receptacles, until the flowering size is reached. For this purpose pots 6 inches in diameter should be chosen for the smaller growing kinds, and 7 and 8 inch pots for the stellata group. A suitable compost consists of good fibrous loam three parts, leaf mould one part, and a moderate sprinkling of coarse sand to render the whole porous. A large quantity of drainage is not needed, but sufficient must be provided to secure a free outlet for water. At the final potting a little artificial manure may be incorporated in the soil. Throughout the early stages of growth the plants ought not to become pot-bound or starved in any way. Cinerarias enjoy a cool, moist bottom and plenty



SHOWING DEPTH OF PEAT IN A BOG WHERE SEEDS OF PINUS PINASTER WERE SOWN.

of air, and a little shade may be necessary when the weather is exceptionally hot, but this must not be overdone, or the plants will become weak and spindly. Although the subject of the present note should not be allowed to get dry at the root, a certain amount of care is required in handling the water pot, or some of the plants may suddenly collapse, while the foliage is brittle, and in consequence is easily broken. After the final potting and the pots are filled with roots, alternate waterings with weak liquid manure will be beneficial, but this must be discontinued directly the flowers commence to open.

The principal insect pests are red-spider and greenfly, but the former only appears when

sufficient moisture has not been kept around the plants in hot dry weather. The greenfly is easily destroyed by slight fumigation at frequent intervals. It has been stated that Cinerarias are rather difficult to bring to perfection, but such a statement is grossly untrue. There is no difficulty in growing these showy plants, providing they are given fair treatment, which every plant requires.

Herbaceous Calceolarias

FOR some reason or other this delightful greenhouse plant is not grown so extensively as it should be. I know

of no other plant that commands the same amount of admiration when well grown. Every year seems to bring some new charming colours from the hybridist; at present we have besides the old spotted varieties many beautiful selfs from deep maroon to delicate sulphur-yellow, scarcely two alike. In many cases there seems to be some difficulty in obtaining that delightful freedom so characteristic in a well-grown healthy plant, consequently the result is a short, unattractive specimen with small flowers and foliage. In most cases the reason

is due to some check in cultivation. To be successful the plants must not receive any check from the seed pan to the flowering stage. Codling is chiefly responsible for failures in many cases. At all times Calceolarias delight in a cool airy house shaded from the hot sun during summer. Seed should be sown about the end of May in a light compost consisting of loam leaf mould, with plenty of sand, all passed through a fine sieve made fairly firm in the seed pan; water with a fine rose to settle the soil about an hour before sowing; cover the seed with a thin coating of very fine soil, place the pan in a shady corner of the greenhouse, cover it with a piece of glass to check evaporation till seedlings appear, when it can be removed near

the roof glass. As soon as the seedlings show their first pair of rough leaves they should be removed from the seed pan to boxes in a similar compost about 2 inches apart. A close watch must be kept for greenfly, as this pest can conceal itself beneath the small leaves unnoticed, doing irreparable damage.

As growth advances potting should receive attention. As a rule 3 or 4-inch pots are usually large enough for removing the plants into from the boxes, using similar soil, preferably a little rougher. Careful watering is most essential at all times; never allow the plants to suffer either extreme wet or dry. For the

final potting 8 or 9-inch pots are large enough. This soil should consist of good fibrous loam, with a fair supply of good clean leaf mould, add one 9-inch pot full of cow manure broken up fine, also plenty of coarse sand, avoid chemicals, use a little diluted farm-yard manure, water during flowering period; an abundance of air at all times is one of the chief points of success.

W. H. GREEN.



PINUS PINASTER FOUR YEARS AFTER SEEDS WERE SOWN IN THE BOG.

Fabiana imbricata

A NATIVE of Chili, this shrub was introduced about 1839 and is still not grown to the extent

that its decorative qualities warrant. It very much resembles some of the larger growing Ericas, and is a shrub worthy of extended cultivation; although so much resembling an Erica, it belongs to the potato family—Solanaceae. The flowers are abundantly produced, being of a white colour, which offer a pleasing contrast to the tiny dark green foliage. The shrub cannot be stated to be perfectly hardy, but planted against a wall in a position facing south, and given the protection of a mat during the coldest weather, it should be quite at home; while in the southern parts of England it succeeds in an open position without any protection.

H. C. ELSDON.

Rhododendrons at Woodside, Howth

THE peculiar geological formation of the Howth promontory, which is free of lime in a county which is mainly a limestone one, makes the cultivation of Rhododendrons and kindred plants possible whenever sufficient shelter can be obtained. The climate is mild, and the chief factor operating against gardening at Howth is wind. This can only be overcome by forming plantations of pines or other evergreens capable of withstanding heavy gales, and by taking advantage of the protection of large rocks and boulders in conjunction with plantations of hardy evergreens or other trees and shrubs which can be induced to form a screen.

At Woodside, the residence of Mrs. Hart, there is a considerable wooded area, and in this a very fine collection of Rhododendrons has been successfully planted and established. The soil is naturally of a peaty nature, overlying rock, and is admirably adapted for plants of the *Erica* family, though numerous other shrubs of diverse orders are thriving equally well.

The first week in May was a little early for many Rhododendrons, yet quite a number were making a fine display, and the healthy, happy appearance of others bristling with fat buds was, to a gardener, almost as pleasurable a sight as the fully expanded blossoms.

One of the first species to be noted was the delightful little *R. glaucum*, a native of Sikkim and Bhotan at high altitudes. It makes a dwarf bush, probably not often exceeding 3 feet, and bears oval leaves, which are glaucous below. The flowers, which are possibly about an inch wider, are of a beautiful soft rosy-purple colour, borne in clusters of 6 or 7 together. It is apparently quite hardy at Woodside.

R. campylocarpum was very striking, and was bearing scores of trusses of clear yellow flowers, a rare and refreshing treat to see. This is a very handsome species, with leathery leaves glossy above and glaucous below. It makes a compact shapely bush, and when carrying scores of trusses as in this case is a shrub of great beauty. Near by *R. cinnabarinum* and *R. Roylei* were flowering freely, and were attractive in their rich colouring. Generally now *R. Roylei* is considered only a variety of the former, and rightly so. The habit of both plants is distinct from many other Rhododendrons, being rather thin and sparse, while the flowers are more tubular or funnel-shaped than is usual. The leaves too are of a peculiar grey-green hue, at once marking them as distinct among other

species. The flowers of the type, as the name implies, are cinnabar red, while those of the variety *Roylei* are deep rosy-red and shorter than those of *R. cinnabarinum*. Both were flowering nicely at Woodside. Another plant not usually seen outside was noted *viz.*, *R. fragrantissimum*, a hybrid between *R. Dalhousie* and *R. ciliatum*, both tender species, though *R. ciliatum* also flourishes in the open at Howth. *R. Countess of Haddington*, which is of hybrid origin, was also bearing its handsome bluish pink blossoms usually only seen in green-houses, and testifying to the mild climate of Howth. *R. rubiginosum*, a native of South-west China, was also noted, bearing clusters of rosy-lilac flowers, and making a nice show. A great many other species are grown, many not being in flower at the time of my visit. Numerous new kinds recently introduced from China are growing on in nursery beds, and in due time no doubt they will take their place in the general collection.

Rhododendrons are not the only shrubby plants grown, and numerous species of *Pittosporum*, *Clematis*, &c., were noted in passing. A feature is made of the double-flowering cherries, most of them young plants which will become increasingly beautiful as they develop.

B.

Pinus Pinaster

I AM sending you four photographs of *Pinus Pinaster* sown direct on a peat bog. No. 1 shows the depth of the peat; * No. 2 and 3, taken at the same spot at intervals of two years, illustrate the remarkably rapid growth of *Pinus Pinaster* on a soil that is fatal to even the accommodating Scots Pine. No. 4 is a photograph of three average plants at four years from sowing. It is surprising that *P. Pinaster* has not been more extensively used on such places. Judging by the numerous specimens we find in various parts of the country, it must have attracted some attention sixty or eighty years ago. It is mentioned in Gregor's "Arboriculture" as being the only tree to succeed on a wet peat moss in Scotland, and more recently under similar conditions in the West of Ireland it is observed to be the only one that succeeded in establishing itself out of a great many varieties tried.

It probably early lost favour on account of it being such a bad transplant. As a seedling it grows a long tap-root, which makes it very difficult to transplant successfully; in that respect it resembles the Corsican Pine, and it is

* Not suitable for reproduction.

well known that both species are eminently suited for direct sowing, a method that ought to be employed wherever possible, as by that method the tree has an undisturbed tap-root; and what is also very important, the initial cost of establishing a plantation in that way is very much less than by the usual method of planting four year-old trees. A few shillings can purchase 40,000 embryo trees in the form of seeds; it would cost twenty or thirty pounds to buy 40,000 four-year old trees twice transplanted.

Our expensive nursery system is open to reform, and except where it cannot be avoided and for experimental work, possibly elimination, our steady aim should be to secure conditions that would encourage natural reproduction or make direct seeding possible. Good healthy seed of known and well tried forest trees require only suitable surface conditions and protection from their natural enemies, and these conditions ought to occur naturally at some period in the life of every forest.

Abbeyleix,

A. MACGREGOR.

Rhododendron spinuliferum

SIR JOHN ROSS of Bladensburg has kindly forwarded a flowering spray of this uncommon species from his unique collection at Rostrevor House, Co. Down. The flowers were somewhat too far gone to make a good photograph, but sufficiently showed the peculiar characters of the species, which is a scarce plant in cultivation.

R. spinuliferum is an evergreen, comparatively dwarf in habit, the specimen at Rostrevor being at present about 2 feet high. The young shoots are thickly furnished with hairs, and the rather lance-shaped leaves are scaly and hairy on the under surface with a few scattered hairs on the margins. The upper surface is rough, and the margins tend to recurve, rendering the leaves slightly concave. The flowers, which are bright red, are peculiar in that, unlike most *Rhododendrons*, the lobes of the corolla do not spread outwards, but rather incline to form a tube round the stamens which protrude slightly beyond them. The plant is a native of Yunnan, where it was first discovered by that industrious collector, the Abbé Delavay, and Mr. Bean in his recently published book on Trees and Shrubs remarks that it was "introduced to France by Mr. Maurice de Vilmorin in 1907." The species is doubtfully hardy, and further experience is necessary before any definite statement can be made on this head.

Lycaste Skinneri.

THIS is a showy and easily grown Orchid which will thrive either in a cool or intermediate house. It is a winter-flowering species, and the large handsome flowers are white suffused with rose, the lip or labellum being thickly spotted with crimson and rose. There are various forms in cultivation which have received such names as *alba*, *rosea*, *picta*, &c., but for general purposes the type is preferred. When growth begins in spring the repotting may be carried out, but this operation only need be performed every third year or so if the soil is in a sweet condition. The pots should be filled one-third of their depth with drainage, and the rooting medium consists of good fibrous loam and *Osmunda* fibre in equal parts, with a moderate sprinkling of sphagnum moss and crushed crocks. For a few weeks water should be afforded somewhat sparingly, but once the roots take possession of the fresh compost the supply may be increased with advantage. When the season's growth is completed, the plants will need a rest with less water at the base, but the bulbs must not be allowed to shrivel. With ordinary care and attention this delightful plant may be grown successfully, and kept in good health for a number of years.

A Fine Form of *Orchis latifolia*

IN the Royal Gardens at Glasnevin every year a remarkably beautiful variety of *Orchis latifolia* may be seen blooming towards the end of May or early in June. The plant was discovered by the late Dr. Moore, Ph.D., F.L.S., M.R.I.A., and the following account of it was given by Dr. Moore, and is taken from the proceedings of the Natural History Society of Dublin, Vol. IV., p. 180:—

"Found in 1856 in the neighbourhood of Sandycroft, Co. Dublin, in a meadow, in May. The size of the plant and time of flowering together at once attracted my attention, and led me to dig up some of the plants with their roots, which were planted in the Botanic Gardens, where they have continued to grow ever since that time. . . . The plant . . . has stems that measure 26 inches from the root to the apex of the inflorescence, with light green leaves, which are 2 inches wide in the centre and 6 inches long, the spike of inflorescence $5\frac{1}{2}$ inches from base to apex, among which are partially coloured bracts longer than the flowers."

The above brief abstract written so long ago scarcely does justice to this beautiful hardy Orchid, as it now appears after many years of cultivation. The stately spikes of velvety purple flowers have increased in size and beauty, and many a visitor may be seen every year wrapt in admiration of its wondrous beauty.

Correspondence

Spraying Fruit Trees.

TO THE EDITOR OF IRISH GARDENING.

SIR, The letter on this subject by Sir F. Moore is interesting and justifiable in the face of so many notes in the horticultural press on the wisdom or otherwise of the annual spraying of fruit trees with alkali washes. Certain districts favour the growth of moss and lichen much more than others. In my case this is so; here the soil is of a heavy retentive nature, accompanied with an annual average rainfall of 32 inches and a stiff impervious subsoil. Such conditions as these favour the growth of moss and lichen on fruit trees, rendering spraying at least every two years an absolute necessity to maintain the trees in a cleanly condition.

Alkali washes, very carefully used and in a weaker condition than sometimes employed, are no doubt beneficial in thoroughly cleansing the trees in alternate years, or once in three years, but I should not advise the use of them annually, having experienced adverse results and seen the effects elsewhere, which perhaps was not the fault of the material, but the manner in which it was applied. With hundreds of trees to be sprayed one has to depend upon subordinates to carry out the work, and it is not always in the actual strength of the wash used, but in its application, that is injurious. I have seen parts of trees injured in the bark owing to an extra quantity of the liquid being given to that part of the tree, no doubt with the idea of thoroughly cleansing that portion so badly affected with moss. Therefore under all conditions I agree with Mr. Beckett in his caution not to spray too often with alkali washes.

Perhaps outside of Aldenham no one is better acquainted with the gardens there than myself, having paid at least two visits annually for the last twenty-seven years, much to my advantage in noting the good work so long carried out there. I have particularly watched the progress of the orchard trees, and have no hesitation in saying that they are some of the finest in the country, not only in appearance, but in the crops of magnificent fruit they annually bear. The accompanying illustration of a tree growing there of the variety Blenheim Pippin will serve to show readers of IRISH GARDENING the manner of trees they are.

Although they receive so little spraying—once in three years—they are remarkably clear of moss and lichen. Not only is the effective manner in which they are cleansed triennially largely answerable for their condition, but there is another element that plays no inconsiderable portion in their welfare. I allude to their rude health, brought about by thorough cultivation, in which extra deep trenching plays such an important part, as it does in all matters appertaining to the production of all horticultural subjects at Aldenham.

This extra deep trenching of the stiff clay subsoil provides free percolation for heavy rainfall, which is all in favour of clean growth. The rainfall at Aldenham is light, some 26 inches annually, which again favour the condition of the trees.

Swanmore Park, Hants. E. HOLYNEUX.

Lupins as Manure.

TO THE EDITOR OF IRISH GARDENING.

SIR, With reference to the article on "The Food of Plants," it is said: "In the fixing of nitrogen lupin excels all the other leguminosae."

It may interest your readers to know that lupins were used by the ancients to make manure, Cato said: "You can make manure of litter, or else of lupins, straw, beanstalks, or the leaves of the holo-oak and quecus.*"

Pliny also adds: "The soil of a field or vineyard is enriched by the growth of a crop of lupins; indeed, so far is it from standing in need of manure, the lupins will act upon it as well as the very best.†" Yours faithfully,

GEORGE HENSLAW.

TO THE EDITOR OF IRISH GARDENING.

SIR, The following extracts from a letter written by an officer at present with the troops at the Dardanelles, may interest some of your readers, and some of them may possibly have been in this locality, and may be able to give some information as to the names of the plants. The writer was no botanist, not even a horticulturist, but an "observer of nature." "P."

"The place seems to be covered with dwarf holly and juniper. The dwarf holly doesn't seem to have any flowers, except a wee tassel of tiny green things, hardly noticeable, but it has lots of green growths on its leaves which turn scarlet and are just the size and colour of holly berries. The Euphorbia is a murderous thing, looks most inviting to sit on or step on, but is awfully prickly, and so strong that it only gives enough when you step on it to throw you off your balance. Its rather pretty, as the young growth is bright yellow. The wild thyme is a bigger variety than at home, I think. The flower is white with a tinge of lilac, and the air gets thick with the smell. You know the tiny weed at home called, I think, "Shepherd's Joy," or "Shepherd's Weather Glass," which comes out in the sun when its going to be fine. Well, there's a lovely kind like that here, only the flowers are a deep pure purple with a wee orange spot in the centre. It only grows about 1 to 1½ inches high. Then there are lots of Convolvulus, chiefly pink, and any number of kinds of Vetches—one very pretty mauve one, and I found one lovely little scarlet Pea, just like the "Blue Pea," only scarlet. There's also a thing with a flower just like a good sized pink rock rose, but not the same leaf, and lots of little Saxifrages, and I'm told Hypericum later on. Then there's a lot of a thing one sees in gardens at home about 1 to 3 feet high, with a leaf like small rabbit's ear plants, and a yellow flower coming out of a buzz of soft stuff. I don't know what it is. There's no soil to speak of, it's all marble rock, and the devil on boots. The funny thing is that though there are so many little flowers, they make no show, not like at home, in fact "there's no place like home." You get all sorts of beautiful things and fine places, but

* *De Re Bust.* 37.

† *Nat. Hist.*, Bk. xviii., c. 38.

they are spoilt by awful drawbacks, such as all sand, all rock, no grass, no trees, no water. Its always one thing, and mostly with signs that its burnt to blazes with the sun three parts of the year, and you might whistle for a drop of rain to freshen things up. I'm beginning to think it was a bit of a miracle old Moses getting water out of the rock!"

Scottish Appointment for an Irishman

AFTER due consideration the Glasgow Corporation have appointed Mr. James Rourke, foreman in

a period of nearly three years at Kew, latterly as assistant foreman, he was appointed foreman in the Botanic Gardens, Glasgow, succeeding Mr. J. J. Guttridge, now Superintendent of Parks and Gardens in Liverpool. For the last eighteen years Mr. Rourke has been in the Botanic Gardens, Glasgow, and the many young men who during that time have served there will rejoice that the tact, geniality and skill which he consistently displayed in the management of the staff has been rewarded by the corporation in his appointment to a larger and more important post.

J. W. B.



APPLE BLENHEIM PIPPIN AT ALDENHAM, HERTS.

the Botanic Gardens, as Assistant Superintendent of Parks and Gardens in Glasgow.

Mr. Rourke served his apprenticeship in the gardens of Marmaduke C. Cramer, Esq., Rathmore, Kinsale, where he remained two years further as a journeyman gardener. He was subsequently foreman in the gardens of Lady Ashtown, Killinane, Co. Limerick, for twelve months, and from there entered the Royal Botanic Gardens, Glasnevin, where he remained for two and a half years laying the foundation of that experience in public gardening which has now proved its value. From Glasnevin Mr. Rourke went to the Royal Gardens, Kew, where he found ample opportunities of adding to his knowledge and experience in the fine gardening practised there, and in the lectures which are of inestimable value to the young gardener. After

Cornus Nuttallii.

THE above Cornus seems likely to be an even finer thing than *Cornus capitata* when it becomes better known and the plants have time to become established. A small tree some 4 feet high, planted near the Lily pond in the Botanic Gardens at Glasnevin, has this year borne a number of flowers. This species is apparently quite hardy, and, unlike *C. capitata*, does not suffer from frost at Glasnevin. The showy part of the inflorescence is the bracts surrounding the true flowers, the bracts being almost white and with a spread of probably 2 inches. The leaves are about 3 or 4 inches long, and fall off in autumn unlike those of *C. capitata*, which is practically evergreen. Given a rich moist soil this handsome N. W. American species ought to make a very handsome tree after some years.

Early Spring in the Rock Garden

By J. HARPER SCARLE, LL.B. (Dulkey).

THIS year we have had not only an abnormally wet winter, but also a moist spring to the time of writing.

Yet, notwithstanding the heavy and persistent winter rains, the rock garden has not suffered. Indeed some plants seem to be the better for it. *Gentiana verna* must have enjoyed the soaking. It has been planted for four years, and each year it spreads a little and grows more robust. One piece, about four inches across, has twenty-seven flowers on it, and most of them are an inch in diameter. Its magnificent blue is the glory of the spring rock garden, and is set off by a carpet of *Androsace sarmentosa* growing on a slope just beyond the gentian.

In many gardens this gentian refuses to grow and has to be constantly renewed and coddled in various ways. One successful gardener recommends that it should be protected in winter by a glass. This may be a necessity in an impure atmosphere, but is the opposite of the natural conditions under which it grows wild in the West of Ireland. There it is deluged with rain for the greater part of the year, but the natural drainage is good. Pure air, sun, plenty of moisture with perfect drainage are some of its requirements; without these it is not likely to flourish, but given these things it probably is of no great consequence whether the garden is on limestone or granite. Curiously enough I have had more difficulty with *Gentiana acialis*, which is, generally speaking, the easier of the two. Out of four or five places in which it has been tried the only one in which it is really flourishing is on the sunniest part of the moraine.

The comparatively new *Androsace hedraantha* flowered very early. It is a dainty little plant, with foliage akin to lactea and rose coloured flowers. *Androsace lactea* came into flower during April, and the strong, healthy looking tufts will probably continue to throw up fresh blossoms all through the summer. It may exhaust itself sometimes owing to its prodigality in the way of flowers, but it sets seed freely. There is more than one form of *Androsace villosa*. The best one has small woolly-looking rosettes, with very solid white flowers, which have an orange-red eye. It increases somewhat slowly and laterally. Another form that I have is a more robust grower, being like *A. arachnoidea*. Both are full of bloom, and contrast well with the bright rose of *A. Chumbyi*. All these like a good loam kept open with sand and small stones; the surface should be well covered with chips of limestone or granite, and they should be protected from the winter rains by a pane of glass.

Petrocallis pyrenaica turns rusty looking in the winter, and also enjoys protection from the rains at that time; then come some dry sunny days in March, and in a very short time it dons a bright green coat and is smothered with its tiny flowers. It is a sun-lover, and likes plenty of grit in the soil; indeed in most gardens it is a plant for the moraine.

Shortia galacifolia was penurious in the matter of flowers this spring, but to make up for that it is throwing up any quantity of new leaves and is the picture of health.

Morisia hypogea, with its bright yellow flowers, is one of the most beautiful of the April plants.

It does best in the partial shade of rocks, and the soil should not be rich. When it has made a good-sized tuft it should be taken up, after flowering, divided and the separate rosettes replanted. It is one of the easiest of plants to divide, as each rosette comes away with a complete set of roots.

Saxifraga bursiferona Gloria and speciosa bloomed very freely, but were over before the March equinoxes. A plant which I had under the name of *bursiferona* major was much later, blooming at the end of April with the earlier red mossies. The foliage is pale in colour, very dwarf and squat, but the blossoms are big and solid, quite as good as Gloria was.

Saxifraga marginata and *coryophylla*, good sized healthy patches, have shown no sign of flowering this spring.

The red mossies *Cilibrani*, Gloria and Guildford Seedling have been excellent, and none of them is shaggy or coarse. Wallacei, as usual, is a mass of brilliant, glistening white.

The hot summer of last year, followed by a wet winter, seems to have suited all the silvery Saxifrages—never has there been such a promise of bloom, from tiny minima to giant longifolia and cotyledon pyramidalis, as there is now.

In a Small Rock Garden

IN May there are so many plants in flower, even in a small garden, that it is only possible to speak of a few of them. The sight of *Aquilegia glandulosa* coming into bloom invites one to write a few words about this most beautiful species. Knowing it to be a somewhat difficult plant to grow, I decided to raise seedlings and experiment with them in different parts of the garden. I obtained seed from its classical home, Torres, in 1913, and the resulting seedlings were planted in various soils and aspects. Last year two plants flowered in a partially shaded peat bed, but the peat of which this bed is composed is somewhat light, and dries up in the summer; as a result these and several other plants in the same bed died in the drought, and in this bed I now have only two invalid survivors and one or two self-sown seedlings. Plants in sandy loam and also in heavy loam do no more than exist. Others on a ridge of peat and loam look happy, but have not yet flowered. My successful plants, now coming into bloom, are in heavy liny loam in a sunken bed about 6 inches below the path level here, partially sheltered from sun and wind; three plants are coming into flower, in addition the new foliage is coming stronger than ever, so I now have hopes that *A. glandulosa* is going to stay with me. The flowers are of a wondrous beauty, soft blue and white, full and ample in shape, and worthy of any effort to obtain.

Another Columbine that I find very attractive is *A. labellata*, a Japanese species, with beautiful foliage of soft Japanese green and semi-erect flowers, white faintly tinged with green. It seems quite happy in any soil, peat, loam, and even very sandy and gritty loam, but in all places where it is doing well it is low down, thus obtaining plenty of moisture; last winter some of the crowns suffered with the excessive wet, but the plants are bravely shooting forth again now.

The effect of the excessive rain last winter in my garden, which is sunless from November to

March, was rather curious. *Aquilegia flabellata*, *Geranium cinereum album*, and one or two other species suffered from crown rot, whereas *Androsaces* sailed through without "glazing." *Androsaces sarmentosa* on the main bank suffered to some extent, but even when "glazed" I find some rosettes "go off." On the moraine this species and also the hairier *A. Chambyi* came through without harm. *A. sarmentosa* on a ledge of

sandy soil with a sharp slope, and also on a well drained ridge surfaced with chips, lost but one or two rosettes, so that with ample surface and underground drainage the protection by glass seems to be unnecessary. Still talking of *Androsaces*, I must extol *A. lactea*: this species forms tufts of bright green foliage and bears a profusion of white flowers, starry or circular in outline, with a yellow eye, the buds often tinged with delicate pink. My best plants are in peat in half shade, but it is also quite satisfactory in sandy loam and moraine in full sun. In the moraine, which is composed of whinstone chips, sand, and about one-tenth peat or loam, *Iris cristata* is just in bloom. The soft lavender blue flowers,

with a bright orange crest on the falls, always delight me. I have it growing happily in sandy loam, peat and moraine; the foliage is strongest in the peat, but the flowers are just as large on the moraine plants as the others. Another delightful little *Iris*, rarely seen, is *I. arenaria*. This, raised from seed, has flowered with me for the first time this year; it forms a straggling mass of leaf tufts about 3 inches high, from which the flower-stalks rise to a height of 1 to 6 inches; each bears three flowers, opening in succession. The flowers are a soft pure yellow, with orange crest and a few brown pencillings at the throat; the colour is so beautiful and the whole plant so exquisitely proportioned, that I never tire of looking at the plant while the flowers last, which is, alas! only one day. My one

plant seems quite happy in the sandy, gritty soil of what I call the Saxifrage plateau. The germination of *Iris* seeds is somewhat erratic. *I. chamensis*, which, in tones of white, pale sea-green and sulphur, is most attractive, germinates readily; *I. pumila vera* is slow and irregular; one batch sown in 1913 gave one plant early in 1914, one in autumn, and a further one this spring; another pan sown at the same time did

nothing till this spring, when four plants appeared. Fortunately when they do appear there is no difficulty in growing them. *I. mellita* sown at the same time has not yet condescended to appear. However, seed raising teaches patience, and I do not yet despair of *I. mellita* for *Gentiana angulosa* and *Ranunculus ranunculoides* sown in November, 1912, did not germinate till this spring; *Meconopsis pumila*, sown in September, 1913, did not germinate till April of this year. This is rather curious, as *Meconopsis* sown in August or September usually germinates in about a fortnight even in a cold frame, at least I have found *M. Wallichii*, *integrifolia racemosa*, and *sinuata latifolia* do so. But even the seeds of the



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same species seem to vary greatly in germinating power. *M. sinuata latifolia* sown at the same time as *M. pumila* germinated readily in two to three weeks; owing to lack of time the plants remained in the original pan till this spring, and when I came to prick them out I found a flourishing crop of youngsters which had just germinated in company with the plants of last season's growth. The difficulty I find when writing or talking about one's plants is to know when to stop, but the sheets in front of me indicate that it is time I did so, therefore I will leave over till another issue notes on *Gentiana verna* seedlings and several plants of merit, such as *Euthera ovata*, *Erodium macradenum album*, &c., which I intended to talk about.

Sandymount.

E. B. ANDERSON.

Forms and Varieties of *Cytisus* Brooms

APART from the true species of *Cytisus*, which are all very beautiful, there are a number of hybrids and varietal forms well worth cultivating, and, indeed, superseding some of the species where decorative value alone is considered.

During the past month quite a number of these forms and hybrids have been observed in flower in the National garden at Glasnevin, and while still fresh in our memory a brief account of them may prove interesting and useful to readers of IRISH GARDENING. One of the first to open its flowers, and certainly one of the very best, is *Cytisus Beani*, so named in honour of Mr. W. J. Bean, who lately wrote the work on trees and shrubs reviewed in this magazine. It forms a prostrate low-growing shrub, not often exceeding a foot high, but spreading considerably. The leaves, as in most Brooms, are small, and drop off in autumn, the young branches retaining, of course, the green colour. The flowers, which are of a very beautiful golden yellow, are borne profusely over the greater part of the branches. The plant is admirably adapted for the rock garden, where its charms are most readily seen and enjoyed. This hybrid occurred by chance at Kew, the supposed parents being the charming little *C. Arduini*, from the Maritime Alps, and *C. purgans*, a native of France and Spain.

Perhaps the most striking hybrid recently raised among shrubs is *C. Dallimorei*, named in honour of the raiser, Mr. W. Dallimore, formerly foreman in the Arboretum, and now assistant curator of the Forestry Museum at Kew.

This remarkable and beautiful plant is the result of crossing *C. scoparius Andreanus* with the White Broom, and is recorded as the first hybrid Broom to be raised artificially, all others having been found accidentally growing among or near other species. The flowers of *C. Dallimorei* are of a very beautiful rosy pink, varying to crimson, a most remarkable and delightful combination, the value of which will be more appreciated in the spring garden as plants become more plentiful. This is an erect growing shrub, which will apparently reach a considerable height, and must prove of the greatest value for massing.

Cuttings are not by any means easy to root, and although roots can be induced to form, yet subsequent growth is slow and unsatisfactory—the most satisfactory method of propagation being by grafting on *Laburnum*.

One of the earliest hybrid Brooms to become known was *C. Kewensis*, perhaps even to-day the most popular of the smaller growing kinds in gardens. This much admired shrub, like the others, originated at Kew over twenty years ago, and has for parents *C. Arduini* and *C. albus*. The flowers are of a beautiful creamy white, borne in the greatest profusion.

An older Broom than the above is *C. præcox*, even yet not as freely planted as it might be. This, too, is a hybrid having for parents *C. purgans*, already mentioned, and *C. albus*, the common White Broom. In habit it follows *C. albus*, but flowers even more freely, the blossoms being of a beautiful sulphur yellow. For massing, this is one of the finest May flowering shrubs.

Cytisus purpureus albus is a very beautiful white-flowered variety of the purple Broom, and makes a useful rockery shrub as well as being

suitable for beds and borders. There is also a rose or flesh-coloured form worth including.

The common Broom *C. scoparius* has produced some exceedingly beautiful varieties, among which, of course, *C. scoparius Andreanus* is, perhaps, the best known. In this variety the typical yellow colour is replaced by a suffusion of reddish crimson seedlings, again showing much variation. Some fine forms have been selected in Ireland by Mr. Smith, of Newry, among others now becoming well known are *Pirely*, *Mayfly*, *Dragonfly*, &c., all beautiful free flowering shrubs.

At the time of writing *C. scoparius pendulus* is one of the most beautiful shrubs in the garden. Usually grafted on *Laburnum* the weeping branches, laden with large yellow flowers, form a most pleasing sight. When grafted on short stems, it is suitable for rock gardens, but when worked higher may be used in the shrubbery or as a lawn specimen.

The Moonlight Broom, which is a sulphur-coloured form of *C. scoparius*, is extremely effective in a mass, and forms a pleasing feature in the garden and grounds.

An old hybrid, but little known, is *C. versicolor*, a hybrid of *C. purpureus* and a yellow-flowered species. The flowers in colour are a combination of yellow and purple, unique and quite effective. It forms a medium-sized compact bush, rather larger than *C. purpureus*, and can be used in a variety of positions.

In the matter of cultivation these Brooms are not fastidious. Well drained soil, light rather than heavy, is best, and the plants should be cut over several times when young to induce a bushy growth. In later years less pruning is necessary, as they do not break well from the older wood. When showing signs of decline young plants should be substituted.

Propagation of most varieties must be done by cuttings or grafting, as seedlings cannot be relied on to come true.

Cuttings of half-ripened growths about 3 or 4 inches long, with a "heel" root freely in sandy soil under a hand light. They should be potted up in spring before the roots have grown too long. Grafting is preferable in some cases, as with *C. Dallimorei*, and grafting is frequently carried out when weeping or other forms are wanted for certain positions.

TOLKA.

Vella pseudocytisus (The Cress Rocket)

THIS uncommon plant has been flowering freely during May in a sheltered border by one of the greenhouses at Glasnevin. It forms a low shrub, not often exceeding a couple of feet in height, and is evergreen. It is not altogether hardy, but succeeds if afforded some protection, and well worth some attention in this respect. The flowers, which are yellow, are produced in long racemes at the ends of the branches. A native of Spain, this pretty shrub belongs to the Crucifer order, and requires a sunny, sheltered position.

Another species also not common is *Vella spinosa*, which grows on the rockery at Glasnevin. It forms a dwarf bush with stiff spiny branches which bear narrow, dull-green leaves. It is deciduous, and does not flower with the freedom of the other species. The flowers are yellow. Also a native of Spain, this is a useful dwarf shrub for the rock garden, where it can be usefully employed among other dwarf Alpines without in any way robbing or over-growing choice things.

Mucklagh in the Heather

In the April issue of last year there appeared a delightful appreciation of the beauties of Mucklagh—"the Wicklow Mountain home of The O'Mahony"—in its setting of the golden gorse. On 23rd September I saw it in the glory of the heather—the touch of gold, which caught the rays of the autumn sun being supplied by the fading bracken, and it seemed to me that in such a setting the natural and artificial had fused as I had never before seen—heather, as far as the eye could reach in quantity—heather, in endless variety and exquisite beauty close at hand. It seemed only to need a tiny gorse bush here and there to be a perfect reproduction; perhaps the tiny broom-like *Genista pilosa* which flowers until autumn might find a place?

When I last visited the gardens spring had decked the rocks and waterside with colour, but now the beauty was in high places, for all the heights were crowned with a collection of Heaths that one can scarcely imagine being surpassed. Two years ago this wonderful heath show was responsible for introducing the gardens first to my notice. A friend in passing noticed an unfamiliar heather and stopped to examine; though no florist he knew he had seen something worth sharing, and I believe each season since he has turned aside to admire the old friends with new faces. As I have said, a stream runs through the garden between two rocky banks; these rocks rise from the entrance gradually to the level of the house, which faces the garden. On the left the heights are all crowned with heath in endless variety, finishing opposite the windows of the house with enormous masses on the level of *Erica carnea*, *E. c. alba*, and *Mediterranea hybrida*, which even at this season, in their fresh foliage and light coloured buds, add not a little to the beauty of the collection.

And now to give some of the varieties that struck me as of special beauty or interest—*Menziesia polifolia* and *M. alba*, both in splendid flower, and quite close the charming and, to me, new variety bi-color, the mixed tints of purple and white in each bell giving a very attractive shade of colour; this variety has the compact habit of *M. p. alba*, and is a great acquisition.

But to *Erica Maweania* I would give first place. This is a beautiful thing—habit, dwarf and compact; foliage, a lovely shade of dark shining green thickly fringed, as its parent *E. ciliaris*, with larger and darker bells than that variety, blooming from July to November, robust and vigorous, it leaves nothing to be desired.

This heath was discovered in Portugal by Mr. George Maw in 1872, and is, I believe, a natural hybrid of *E. ciliaris*.

Quite close was the finest white Ling I have ever seen—*C. vulgaris tomentosa*. At this date the common white Ling is fading, but this seemed in full glory, the foliage is greyish green and the flower spikes are extra long and well covered.

C. v. aurea, very dwarf and very golden, made an excellent foil for *E. Alportii*, which has very dark green foliage and deep crimson flowers—a most distinct and pleasing variety.

The Cornish heath, *E. vagans*, was represented in two varieties, red and white, the latter, I think, the more desirable colour.

E. tetralix, both pink and white, had wandered lower down the banks, and was growing almost at the water side in the moist peaty soil, which is its natural habitat, but so accommodating is it that with me it flourishes and blooms the whole season from early summer to late autumn in a dry sunny position where scattered stones alone save it from being parched.

The varieties of the Scotch Heath—*E. cinerea*—were all beautiful, the most striking being a hybrid "found in Ireland," having a rose and white bell; the double-flowered *E. c. maculii* was pretty and quaint-looking, and the varieties in bright rose and white were good. In a sheltered position, *Erica codonodes* was thriving, the peculiar light green of the foliage being very remarkable.

On the opposite bank and in a lower, more moist and sheltered position, there is a charming colony of *Menziesia caerulea*, a rare native and a real gem; this tiny shrub has dark, stiff, shining green leaves; grows only about six inches high, each little branch being surmounted by a tuft of pinkish bells on stems, the bells being about the size of those of *Men. polifolia*; and quite close to this treasure and growing still further into the shelter was a collection of the holly fern in such evident contentment that one made instinctively a mental note of the conditions.

As I turned homewards my one regret was that the owner was unable to see and enjoy that on which he had bestowed his labour.

H. S. W.

Scutellaria Mociniana

THERE are a number of useful flowering plants which are rarely seen in private gardens, and the one quoted above is no exception to the rule, but it is a subject which should certainly be grown for furnishing a display in the intermediate house during the winter months. By striking a few cuttings at intervals it could be had in bloom at other periods of the year. It is a member of the Labiate family, and forms an upright shrubby plant, with terminal heads of closely-packed intense scarlet flowers. It is a native of Mexico, and was introduced about fifty years ago.

Propagation by cuttings is easy, as they strike readily if inserted in sandy soil, and kept in a close frame for a week or two until rooted. At this stage they must be potted off singly, the ordinary compost being employed. As growth advances they should be given receptacles 5 or 6 inches in diameter, and when these are filled with roots an occasional stimulant may be applied until the scapes appear.

Some plants may be pinched freely, but the subject under notice must not be stopped too frequently, and then only in the early stages, as the best heads of bloom are borne on strong growths only. A much better effect is produced by three or four stout shoots than seven or eight of smaller dimensions. Through the summer months a greenhouse temperature will suffice, and the plants should be kept fairly near the glass.

T. W. B.

Hints to Novices.

By R. M. POLLOCK.

WATERING will occupy a large portion of the time spent in the garden if June continues as May ended. Where possible it should be done in the afternoons, when the sun has lost its strength, and it should be thoroughly done if done at all. Many people object to watering in the late afternoons for fear of frost at night, but that argument can hardly be applied to the month of June. A slight sprinkling on the surface is of little use, and only assists in forming a cake of the surface soil. What is wanted is to soak the soil for as far below the surface as the roots descend, and it is wonderful how far the roots of ordinary garden plants do travel. Water applied from a can with a fine rose is the best method, but where the garden is large, and where a lot of hardy herbaceous plants have to be watered, a can is a slow process, and a hose is the quickest and least troublesome method, but to do this there must be a certain pressure of water. As before stated, for large stretches of planting it is indispensable, but for small gardens, and especially for a rockery, it is distinctly a mistake. The force with which the water leaves the hose causes, in the first place, the surface soil to become caked and hard; secondly, shallow rooters, small delicate alpins, and newly-planted seedlings are constantly washed out of the ground, or the soil round them so disturbed as to leave the roots bare to the scorching rays of the sun next day, and no plant will live under such conditions. There is little doubt that hosing a rockery is responsible to a large extent for many vacancies either at the time or later in the season.

RAINWATER.—What a lot of this is allowed to run away off the roofs and down the drains, when it might with little trouble be saved for garden work. Pipes from the roof usually run down into the back yard of modern houses, and there a barrel or tub could be arranged to catch this water. A little bit of perforated zinc fastened to the mouth of the pipe will prevent much of the dirt from the rain gutters getting into the barrel and eventually stopping up the rose of the can. This perforated zinc would require to be occasionally removed and cleaned out.

Hoeing of beds and borders will answer two purposes. It will break up the hardened surface of the ground, so letting air to the roots, and it will also kill the weeds, and with this bright sun they are very easily disposed of. The hoe should be freely used, and where its use is not possible a hand-fork will serve the same purpose. This applies to the rockery, where, of course, a hoe could not be used, and many of the pockets will be greatly improved and the plants encouraged by constant forking over.

STAKING.—The true character of plants is often entirely lost by careless and thoughtless staking. When staking plants such as Pyrethrums, Oriental Poppies, Delphiniums, and any tall-growing soft-stemmed plants, all the shoots should be given plenty of room. In the case of Delphiniums (Larkspurs), some of the weak late shoots may be removed entirely, and the strong ones firmly and carefully tied to stakes which will support them until they go out of flower. No stake should ever be put in which will be taller than the plant when in flower. The effect of a foot of stake above a plant is not attractive.

Stakes should be hidden as far as possible, but they cannot be done without. When tying young growing shoots care should be taken to allow sufficient room for the shoots to swell.

Bedding out if not finished should be completed as soon as possible. Usually the same beds have to take spring and summer bedding, in which case the bulbs will have to be lifted while still green. The Tulips and Narcissus lifted in this condition may be heeled in in some corner out of sight, and when the leaves are brown, the bulbs may be lifted dried, cleaned and stored until they are again required for planting in the autumn. They should be kept in a dry shed or loft where mice and rats cannot penetrate.

If space allows if a last batch of annuals may be sown in the open, but satisfactory results at this late season for sowing can only be relied on with those that germinate quickly, such as Virginian Stock, Nemophila, Gilia, Candytuft, &c. The early spring rock plants will by this have gone out of flower and other treasures replaced them, but the early ones will still want attention. These must be cut over and all old flowers removed. This applies to all the Arabis family, Cerastium, Aubrietia, Myssum, &c. They will look bare for a few days, but very soon fresh young green shoots will appear forming a regular cushion of growth.

The useful bright and easily grown *Violas*, which are blazing in all gardens now, can be kept in continuous flower by carefully removing all the pods as the flowers fade. This makes a wonderful difference in the length of time they remain in flower.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath,
Ballywalter Park, Co. Down.

HERBACEOUS BORDERS.—Most of the plants in the herbaceous borders are now in their full beauty of flowering, such subjects as *Hemero-cillis*, both species and hybrids, *Genus*, *Trolliuses*, *Lupins*, *Poppies*, *Heucheras*, large flowering *Irises* and many others giving a gay effect. Every effort should be made to maintain the borders in a tidy and attractive condition by removing any dead foliage, especially from early flowering bulbous plants. It is specially necessary to remove the old flower-head of these latter plants, as the formation of seeds weakens the bulbs. Coarse-growing subjects will need to be restricted to their proper bounds. Where the hoe can be used without injury to the plants, it will be an advantage to stir the soil, as much for the purpose of conserving the moisture in the ground as for destroying weeds. This operation is best carried out on a dull day after rain.

STAKING. Stock-flowered *Larkspurs*, tall and intermediate *Antirrhinums*, and other plants have now attained to such heights as to need supports. The *Larkspurs* and *Lavatera rosea* need stout stakes about 5 feet long. *Antirrhinums* do not need the flower spikes to be supported, so that short stakes to support the body of the plant will be quite sufficient.

SWEET PEAS.—These plants are making great progress, and it will be necessary to train the leading shoots, so that they will grow in the

right direction. Where the soil is dry, they should be given copious supplies of water. If soot was not mixed with the soil, previous to planting, a good dressing of this material should be placed round the plants now. Soot is rather slow in its manurial effect; its chief value is in imparting clearness and brilliancy to the colours of the flowers.

SPRING BEDDING PLANTS.—The best plants of such subjects as *Aubrietia* having been selected and marked for stock, may be divided into small portions, each with a few roots attached, and replanted in a partially shaded corner of the reserve garden. Wallflower, *Silenes*, *Myosotis*, *Polyanthus*, &c., are best raised from seed sown at once in cold frames, which should be shaded until germination takes place. Sow the seed thinly in order that the seedlings may have room to develop hardy and sturdy from the start.

SEASONABLE NOTES.—When the summer bedding has been completed, time may be obtained for picking off any dead flowers and prevent seed pods forming, as this will enable the plants to make growth more quickly. The plants in vases, pots, or window boxes will need daily attention, as to watering owing to their restricted rooting medium. These plants suffer most during showery weather, it being sometimes thought that the roots are sufficiently moist without examination, whereas most of the rains may be thrown off by the foliage, and, in nearly all cases, the rains are insufficient to thoroughly soak the soil throughout the pot. Strong-growing herbaceous perennials planted in shrubberies and borders may be given a mulching, and if the ground is of a close nature, it should be forked up before the mulch is applied. In the quarters provided for Dahlias, it will be necessary to set traps for carwigs. Seeds of *Polyanthus* and similar plants which it is intended to save should be gathered and placed in trays to dry.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitzgerald, Carrigoran, Co. Clare.

It need not have been surprising to see more or less paucity in the show of fruit blossoms this season, considering the unusually heavy crops of fruit which the trees carried last year. However, in these gardens and in this locality generally, there is a most abundant crop of blossoms on all kinds of fruits: the great bulk of apple trees are a mass of blossom. An abundant crop of apples, always welcome, would have quite an enhanced value this season owing to the abnormal conditions brought about by the deplorable war, thus giving us an additional incentive to hope that this year's blossom may produce a bountiful crop of fruit. At the present time, pears and plums seem to have set a good crop, and as these fruits blossomed under genial weather and conditions favourable to proper fertilisation of the blossoms, a good crop seems to be quite assured, especially so as a copious rain is now falling, after a spell of drought of a very trying nature. (Here we have only recorded little over quarter of an inch of rain during past 23 days, and much N.E.S.E. wind has prevailed.) Apples are having a critical time, I am afraid, as owing to an unfavourable change in the weather—*i.e.*, from bright and fine to very gloomy cold days, with

the thermometer disagreeably near freezing point at night, violent N.E.S.E. winds also prevailing, though with such a profusion of blossom much may remain to expand after this flighty weather has passed away.

All kinds of fruit trees growing against walls or trained to wires, &c., will now need careful attention, especially new planted trees and such young trees as have not already filled their allotted space: the leading shoots on these should be nailed or tied into position before they become too long, or so hard that they may snap on drawing them down to their places; shoots for filling the centres of fan-trained, and shoots for extending horizontal trained trees must be similarly treated; superfluous shoots breaking from main stems should be cut clean away at base; over-crowded groups of new shoots should be thinned, either cut them out or cut clean away with a good sharp knife. In a similar manner older trees which have filled up their quarters, over-crowded spurs may be cut out completely, also cut out the young shoots from the points of much elongated spurs, and take out some of the over-numeric shoots from other spurs. Espalier and cordon trained trees may be similarly disbudded or thinned. Extending cordons, whether upright or horizontally trained, may more readily be kept straight, and a good shape, by tying a light stake to the top of the cordon, allowing it to project over top of cordon, and keep the leading shoot tied down to the stake. Peaches must have all shoots removed, except those required for extending the trees, and such as are to carry next year's crop; the leading shoots must be periodically tied into position, and the shoots for carrying next year's fruits trained alongside the growth carrying fruit at present. These latter shoots must be the best placed ones at base of last year's growth, or the nearest to base; the most suitable are such shoots as spring from upper side of the fruiting branch. It is very essential to leave a growth in front of fruit, to keep the sap circulating to fruits; if this shoot is not needed for tying in it may be kept pinched back one or two leaves as they grow. As the fruit will most likely set a heavier crop than trees could properly mature in a satisfactory manner, thinning must be carried out, gradually removing small and badly placed fruits, finally thinning the fruits to from 6 to 12 inches apart, according to size of fruits desired. If the trees are affected with peach-leaf blister, all the blistered leaves must be picked off and burnt. Figs should also be similarly treated, except that there is usually no necessity for thinning the fruits. Where pears have set heavy crops, and the fruits are evidently beyond danger of dropping off, these should be thinned more or less; if large first-class fruits are desired, thin freely, leaving from one to three or four fruits on a spur, making allowance for variety and carrying capabilities of the trees; even if the fruits are eventually for sale, do not overcrop the trees; although the fruits may be liberally thinned, the remainder will attain to a larger size, and give enhanced value to the individual fruits; the result of putting undersized poor quality fruits on the market is only irritating to the grower, and brings discredit to both market and producer.

Where it is intended to make new beds or plantations of strawberries, the earliest runners possible should be layered so that they may make

good strong plants for early planting. In order to insure heavy crops of fine strawberries, the ground should be in the best possible condition—*i.e.*, trenched and liberally manured; where there is sufficient depth of good soil to allow of trenching without bringing an undesirable subsoil to the top; where trenching cannot be resorted to, as an alternative dig over the subsoil and work in a free allowance of manure. If ordinary digging is deemed sufficient, dig as deeply as possible, and give a liberal allowance of rich well decayed manure, also when the ground is cleared and before spreading the manure apply about 1 ozs. to the yard of basic slag; the ground should be dug at once to allow of its settling down and becoming pulverised before planting in August or September. Strawberries may also be planted on ground from which early potatoes have been cleared, and providing that this ground is in good heart, and has been liberally manured for the potatoes with subsequent liberal manuring, good crops of fruit will be produced. The best plants are obtained by layering the runners into 3-inch pots, filled with any reasonably good loam, to which should be added a little good rotten manure, or leaf mould and bone meal, making the compost firm in the pots; there is no necessity for putting drainage in the pots; stand the pots in batches between alternate lines of plants, draw over the runners and peg them down with wire pegs. (If these pegs are pulled out at planting time and stored away they will answer this purpose for several years.) Where pots are not available pieces of fresh cut turves, 3 inches square and 2 inches or more thick, are an admirable substitute; the runners may be pegged on to these similarly with pots.

When calculating the numbers required allow for the stronger growers to be planted $2\frac{1}{2}$ feet apart each way, smaller growing varieties 2 feet each way; by following this method a good crop of fine fruits is obtained the season following planting, and the plants will continue bearing for a number of years, being left in the same quarters until showing signs of exhaustion. If desired a light crop that does not take much out of the ground, such as a row of lettuce, or Tripoli onions, may be grown between the lines of strawberry plants without any detriment to the strawberries during first year.

Do not overlook protecting materials for the advancing crop of strawberries; where birds are plentiful they quickly destroy the best fruits if not netted betimes; this applies also to gooseberries which are to be left for ripening, as well as red and white currants.

RASPBERRIES. If excessively dry weather prevails while the fruits are swelling, give liberal supplies of water if at all possible; the trouble of watering will be amply compensated for in the much improved fruit; a sprinkling of nitrate of soda down one side of rows will prove very beneficial, give soda at rate of 2 ozs. to the yard; also give strawberries a similar watering in case of weather being very dry while fruits are swelling.

When raspberry canes are in robust health they usually produce great numbers of suckers, these should now to a great extent be pulled up, only leaving two or three of strongest suckers nearest the canes to mature; though if young canes are required next autumn for filling up gaps, or planting new lines, leave such suckers as are farthest away from the canes to grow on, and these can be dug up at planting time.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. Shanahan-Crawford, Esq., Lota Lodge, Glanmire, Cork.

If we are to succeed in growing high-class vegetables much energy must be given to the work of the vegetable garden in June, the thinning and transplanting of many crops will be necessary, choosing moist, cloudy days for these jobs; mulching and watering of advanced and growing crops may also be necessary, and above all things surface cultivation of all growing crops will pay, whether practised on weedy or weedless ground; if deep winter cultivation was carried out in the proper season, then the maximum benefit may be expected from unceasing hoeing or other methods of surface cultivation.

ASPARAGUS may be cut until the third week of the month, but not later, as time must be given for the growth to ripen strong crowns for next season's grass; if liquid manure can be got a few applications to the beds will be of great value; in exposed positions the strong growths will require staking.

BEANS (KIDNEY). Continue to sow for succession crops.

BROCCOLI. Plant out in their quarters during showery weather.

CABBAGE. Autumn sown ones will now be past; the ground may be cleared and planted with any quick-growing crops, but do not repeat brassicas.

CARROTTES. Give plenty of water to the plants; liquid manure, if possible; protect the curd from sun by covering with its own leaves.

CELERY, when fit for planting, should be placed in the trenches during wet weather, lifting each plant with as large a ball of soil as possible; let the plants stand nine inches apart; the less check given now the greater likelihood of success at maturity. Should dry weather follow planting, give water freely.

LETTUCE will now be growing fast; any running to seed must be cleared and fresh batches sown.

LEEKs, where grown for early supplies, may be pricked into rich trenches similar to celery.

ONIONS. Liquid manure waterings or light dressings of artificial manures in showery weather will benefit these, and a thick sowing will provide salading.

PEAS. Continue sowing for late supplies; first or second earlys are now the best for this season's sowing.

TERNIPS.—Sow on cool soils and, as soon as germination takes place, hasten the growth by gentle stimulant. If the fly proves troublesome light dustings of soot will deter, but quick growth is the best prevention.

VEGETABLE MARROW.—Encourage growth by giving shelter to those lately planted; see that they do not lack water.

Surplus produce is now met with, and anyone having such cannot do better than send it to one of the institutions charged with the care of our wounded sailors and soldiers. The R. H. S. of Ireland is also carrying on a laudable work through the Vegetable Products Committee in supplying the Fleet with fresh fruits and vegetables. What fresh vegetables to the seaman rarely ashore means, we snug at home in the centre of such comforts cannot fully appreciate. Particulars as to packing, forwarding, &c., will be given on application to the Secretary, 5 Molesworth Street, Dublin.

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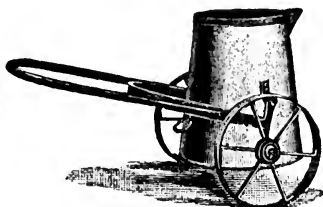
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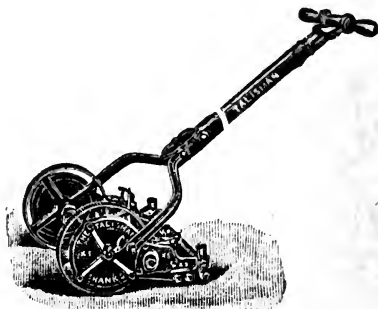
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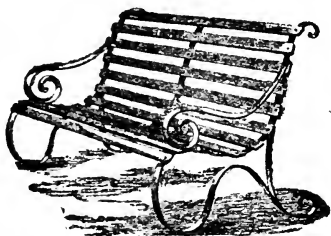
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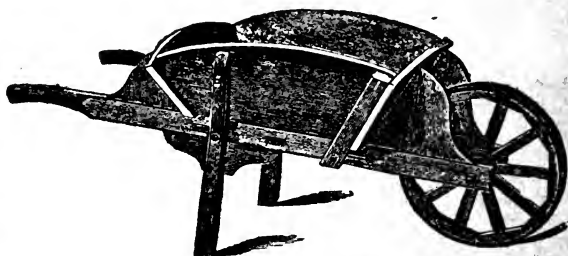
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EDITOR C. F. BALL

Some *Androsaces* of Recent Introduction.

This popular genus has within the last decade or so received several notable additions which may yet become fashionable in rock gardens, and in most cases will add considerably to the interest of that department of the garden.

Androsace bulleyana is, perhaps, the most striking of the lot, but is, unfortunately, only a biennial. It forms thick woody roots, the leaves arranged in a rosette, sessile, and in shape spatulate, an inch or more long and about a third of an inch wide, glaucous and ciliate. The flower stems are numerous, erect, reaching five inches in height, and bearing many flowered umbels of vermilion-coloured flowers. This is a somewhat miffy species to handle so far, and should be pricked out in permanent positions when small, as the young plants resent subsequent disturbance, and usually damp off.

A. bulleyana was collected by Forrest in 1906 in North Western Yunnan, and previously by Wilson in Western China in 1904.

It is closely allied, if not identical with, *A. coccinea* of Franchet, but is probably less hairy than the latter.

A. geranifolia, as the name implies, has leaves much resembling those of some *Geranium* species. They are produced from a common centre on long petioles, and lie close to the ground, the whole plant being rather hairy.

The flowers are borne in loose umbels on long peduncles, which also incline to be prostrate. The flowers vary from white to pale pink in colour. Numerous runners are produced from each plant, which form rosettes at their extremities, and soon form roots and become established.

A. Henryi is another Chinese species discovered in Western and Central China in 1904 by Mr. Wilson, and also previously by Professor Henry, now of the Royal College of Science, Dublin. It bears *Heuchera*-like leaves on short stalks, and umbels of white flowers varying to pink. So far it has not shown any disposition to increase rapidly by offsets, and nothing definite can yet be said as to its seedling proclivities. It is, however, so distinct in habit and appearance as to render it desirable for the rock garden.

A. spinulifera is a robust species covered with a silvery pubescence. In the winter state it forms a *Sem-*

pervivum-like tuft, the other leaves as they expand in spring growing from three to six inches long, broader at the top and tapering to the base. The flower scapes attain a height of from six to ten inches, bearing an umbel of rose-pink flowers, each with a yellow eye. It is a native of East Tibet and Yunnan, and was collected by G. Forrest in North Western Yunnan in May, 1906, at an altitude of 10,000



ANDROSACE HENRYI.

feet, in dry, shady situations on the margins of pine forests on the eastern flank of the Lichiang Range, and also by Mr. Wilson in Western China among leather.

A. tibetica is a delightful small growing species, much resembling *A. sempervivoides*, but with broader leaves, and the whole plant softly hairy like *A. villosa*. The leaves are arranged in rosettes and are spatulate in shape, about three-quarters of an inch long and half an inch broad. It spreads by forming new rosettes on short stolons, which arise at the time of flowering. The flowering stems are about an inch high, bearing an umbel of six to nine flowers on long pedicels, the flowers being white with a yellow eye. This plant was introduced by James Veitch & Sons from Kansu, China, through their collector, Mr. W. Purdom, who is again exploring the wilds of North Western China in company with Mr. Reginald Farrar.

The type of this species is a native of Tibet, and has narrower leaves. Forms found in Western China and Kansu, according to Pax in his monograph of the genus, are known as *A. tibetica var. Maria*.

A. Watkinsii is not a species, but evidently a form of *A. sarmentosa*, which hails from the Himalaya. It is a free-growing plant, spreading freely and flowering profusely, bearing many flowered umbels of deep rose-pink flowers. It seems scarcely separable from *A. Chumbyi*, and also much resembles *A. sarmentosa primulodes*, but all are very beautiful and desirable for the rock garden.

Celmisia coriacea.

This handsome New Zealand composite flowered finely in the Botanic Gardens at Glasnevin in the early days of June. The particular plant here illustrated carried flower heads about two and a half inches across, and made a most attractive picture. The leaves are some ten inches long, covered with silky hairs, which give the plant a peculiarly bright and silvery appearance, which, together with the showy flower heads with long pure white florets, render the plant a particularly desirable one for a choice position in the rock garden.

In the matter of cultivation the *Celmisias* are not exactly easy subjects, though some of the difficulties which presented themselves in the early days are not now so formidable. Imported seeds on which growers had formerly to rely are difficult to germinate and very hard to manage immediately after germination. No doubt during the long voyage from New Zealand their

vitality became impaired, and many certainly failed to germinate at all. This difficulty has to some extent been overcome by the production of home grown seeds, which, being sown when gathered, germinate readily, and with care grow away freely. To obtain a good crop of seed it is advisable to cross-pollinate the flowers, as it will be noticed that the anthers are ripe before the stigmas expand, therefore it is necessary to obtain pollen from younger flowers. The ripe seeds may be sown in a compost of very sandy loam with a little fine peat mixed through it. The pots should be thoroughly soaked previous to sowing, and the seeds lightly covered in. A cool house or frame is quite suitable for home saved seeds, though a warm greenhouse with a night temperature of 55° or thereabouts has been found better for imported seeds. With the home-saved seeds germination is fairly rapid, and the seedlings should be allowed to develop their first pair of true leaves before being potted off singly into small thumb pots. Thereafter, cultivation consists in potting on as required, using a similar compost in a rather more lumpy condition until the plants are strong enough to place in permanent positions.

Celmisias dislike too much overhead moisture, especially in winter, and prefer a sheet of glass arranged over them to throw off snow and rain during that season, at the same time admitting plenty of light and air. Although many hairy-leaved plants enjoy full sunshine, *Celmisias* seem to like a position in half shade, away from the full glare of the noon and early afternoon sun. Given such a position in well-drained soil, which can be kept moist in summer, there seems every hope that these handsome New Zealanders will prove as welcome to our gardens and no more difficult to manage than many Alpines from less distant lands.

In addition to the species quoted above, several others are proving amenable to cultivation.

C. vrbascifolia is also a fine plant approaching *C. coriacea*, but the leaves are less hairy on the upper surface, though densely covered with felt below. The flower heads are also large, the outer florets being pure white, the stems reaching a height of from 15 to 18 inches.

C. Mackenii has leaves up to 15 inches long, but narrower than in the previous species, tapering to a sharp point and smooth on both surfaces. The flower heads are fairly large, but the outer florets are thin and papery, of a pale lilac colour.

C. Monroi is a pretty species, with shorter and narrower leaves, rather hairy on the upper sur-

face, and densely covered with a felt-like tomentum below. In this species also the outer florets are white.

C. incana is a choice and rare species not often met with in cultivation. It early forms a woody stem bearing rather spoon-shaped leaves some one and a half inches long, densely covered with white silky hairs and feeling sticky to the touch. The flower heads are very pretty, one and a half inches across, the outer florets pure white.

C. longifolia is distinct with bronzy-green leaves from a quarter to half an inch in width, occasionally forked, hairy on the upper surface, and covered with a white felt below, and lying along the surface of the soil. Flowerheads two inches across on stems nine inches high.

C. spectabilis is one of the best doers, increasing by offsets and flowering freely.

Leaves some four inches long by one inch wide, stiff and erect, slightly hairy above, and, like others, densely woolly below. The

flower heads are almost two inches across, the florets white, and the stems reaching a height of five or six inches.

C. holosericea is a branching species with leaves about six inches long by one and a half inches wide, green above, and furnished with a dense felt-like tomentum below. The flower heads are two and a half inches across on stems seven to eight inches long, the outer florets white.

Exacum macranthum.

The genus *Exacum* contains upwards of a score of species, but the one quoted above is perhaps the most popular. It is a stove biennial, and not an easy plant to grow, but it is well worth the trouble to secure even moderate speci-

mens. It attains a height of eighteen inches, and the flowers, some two inches across, are a deep rich purple-blue, with large bright yellow stamens. The flowers are produced in terminal and axillary corymbose heads, and the flowering period is usually the winter months when blooms of this particular colour are rather scarce. *E. macranthum* is raised from seeds, which may be sown in April or early July. The seed is very fine, and should be sown on the top of the compost, which should have a fine surface. Cover with a piece of glass, and plunge in bottom heat or the propagating case. Directly the seedlings are large enough they



[Photo by]

CELMSIA CORIACEA

[S. Rose

should be pricked off in small pots containing a mixture of loam, peat, leaf-mould, and sand. Pot on as required, and grow on a shelf in the plant stove, remembering that such a temperature is needed throughout the plant's existence. Good drainage is essential, and a careful handling of the water pot is necessary at all times. Insect pests are not very troublesome, but a look out must be kept for thrip, which can be destroyed by vaporising the house with "XL All" or some other fumigant. T. W. B.

B.

The Freesia and its Culture.

By T. W. BRISCOE.

OF late years considerable improvement has been made among the Freesias, and now we have, in addition to the popular *F. refracta*, many beautiful forms of hybrid origin. They are all highly prized for their delightful fragrance, and the graceful spikes of bloom last a considerable time in water. *F. refracta*, with its variety *alba*, and *F. Leichtlinii* are well known, and among those of recent introduction are *F. Chapmani*, *F. Tubergenii*, and others which go under such fancy names as Fairy Queen, &c., while some firms offer a good mixed strain at a reasonable price.

Immense quantities of bulbs are sent to this country from Bermuda, the Channel Islands, and the South of France. They reach here, as a general rule, in August, and should be repotted directly the grower receives them, because Freesia bulbs if left out of the soil for any great length of time lose much of their vitality.

Unlike many bulbs employed for greenhouse decoration, it is not necessary to purchase a fresh supply every year. If they are properly ripened they will continue to give a good account of themselves for, one might say, an indefinite period. The saving of the old bulbs has its advantages in enabling us to repot them during the month of July. Early potting is the secret of growing Freesias to perfection, and when grown thus they are most delightful plants, while on the other hand inferior pots of bulbs are not worth house room. Receptacles five and six inches in diameter are usually chosen, and they are filled one-fourth of their depth with drainage.

Freesias repay for generous treatment, and the soil should consist of the best loam, three parts to one part leaf-mould. A fair sprinkling of rotten manure or a little bone meal may be included. The larger pots will take about twelve bulbs, and in the smaller size nine or ten will suffice. The tops of the bulbs should be two inches or so below the surface. When the repotting is finished, give a gentle watering, place the pots in a cold frame or at the base of a south wall, and slightly cover them with leaf-mould or coconut fibre. Some growers do not practice this method, but it prevents the soil from becoming too dry, and no harm is done if the covering is removed directly top growth begins. If a cold frame is employed, the lights must be off except during heavy rains, and at all times plenty of air must be admitted. The soil must be kept moist, and as growth advances water may be afforded in greater quantity, but any excess in this direc-

tion must be avoided at all times. It will be necessary to stake the plants to prevent the growths from bending over, and three or four thin bamboo tips placed around the edge of each pot, with a thin piece of raffia attached, will answer the purpose admirably. Neat staking should always be practised.

As winter approaches and frosts are likely to make their appearance, the plants must be removed to a heated pit or cool greenhouse, selecting a light and airy position. Plants so treated will bloom about February and March, but if desired they can be had in flower at an earlier date. For flowering at Christmas it would be necessary to place a batch in gentle heat about the second week in November, and by bringing in successive batches at fortnightly intervals a supply of bloom can be maintained. It should be borne in mind, however, that the flowers lack substance when forced to any great extent.

When the pots are filled with roots, alternate waterings with weak liquid manure will prove of considerable benefit.

After the spikes are cut the plants should still remain in a greenhouse, and be regularly supplied with water until the foliage shows signs of decay. At this stage the supply is gradually withheld until the leaves have died down. Then they are kept quite dry until the times arrives for the annual repotting. When the bulbs are turned out of their pots they should be graded, the best bulbs being used for pots and the small ones may be grown on in pans, thereby not taking up so much space.

Few insect pests trouble Freesias if the cultural details quoted above are adhered to as far as possible.

Phoenix Park and Stephen's Green in early June.

A RUN round the above parks in the first week of June found preparations for "bedding out" in full swing, and many June flowering plants in flower. In the People's Gardens a fine bed of *Lupinus Polyphyllus Moerheimii* was approaching perfection, and being nicely backed by dark-leaved shrubs, was admirably placed for effect, the beautiful soft pink of the blossoms showing up well against the dark background. June flowering perennials are extremely useful in keeping up a display in the flower garden during the transition stage between the spring flowers and the summer bedding. Further on, near the Parkgate entrance, a fine bed of the beautiful *Pyrethrum Queen Mary* was most attractive. Here again the value of a darker background was effectively shown, the fine pink colour immediately attracting one from some

considerable distance away. Not far from the *Pyrethrum* a fine mass of a dozen or so handsome plants of *Rhododendron Pink Pearl* was a glorious sight, the trusses and individual flowers of enormous size, the clear pearly pink colour being an admirable set off against the shrubs behind, and enhanced by a judicious mingling of orange-yellow *Azaleas*, the whole producing a unique and very lovely picture. Again, towards the entrance a long new border had been planted with *Antirrhinums* in variety, which were filling out fast, and which we hope to see and comment on later.

Two large beds near by were planted with the perpetual flowering *Carnations*—*Mrs. Burnett* and *Britannia* respectively—and should be productive of a wealth of bloom later on. A bay of *Anchusa*, *Dropmore* variety, was throwing up an abundance of spikes soon to be crowned with their handsome blue flowers. The hawthorns, a well-known feature of the Phoenix Park, were in their full beauty of red, white and pink, and formed a beautiful picture with many fine specimens of *Laburnum*. Time did not permit of a visit to the large shrubbery surrounding the Viceregal Lodge, where a fine collection of shrubs in generous masses always presents something beautiful and interesting no matter when visited.

At Stephen's Green the lifting of early flowering bulbs was in full progress, and the work of filling up again proceeding rapidly, so that by the end of the month a good display is again ensured. Meanwhile much of beauty and interest is to be seen, flowering shrubs and perennials again proving their value for maintaining the display during the interval between the spring and summer bedding. *Diervillas*, or as they are more commonly called *Weigelas*, were at once noticeable freely planted among the evergreens mainly composing the shrubberies. The bushes were laden with lovely sprays of pink, rose, and red flowers, making a truly beautiful display, and demonstrating the value of *Diervillas* for planting in a comparatively poor soil and smoky atmosphere. Here, too, *laburnums* and thorns, are used with fine effect, and certainly rank with any trees or shrubs of recent introduction, and many of the latest novelties are grown at Stephen's Green.

In the recently constructed rockwork many rare and beautiful plants are beginning to establish themselves, and in the course of another season or so should make a fine feature. *Oxalis enneaphylla* was represented by a lovely clump full of flowers, and although most of the plants had been too recently planted to show their full beauty, good examples were noted of *Lewisia Howellii*, *Pentstemon Davidsoni*, some of the new shrubby *Potentillas*, so useful for bold rockwork, and hosts of other new as well as older plants which only require time to establish

to show their beauty and delight the thousands who daily pass through this popular city park. Near the big lake, but cut off from it by a bank of trees and shrubs, a small pond of irregular outline was a year or two ago constructed for *Water Lilies*. The margins and slopes surrounding it have been planted with choice *Rhododendrons* and other shrubs and moisture-loving plants. *Rhododendron Pink Pearl* was here too in full flower, and near by a few plants of *R. Sappho* were well flowered. *Erigeron Philadelphicus* was flourishing in the moisture and just opening its pink flower heads, while *Primulas* and *Cypripediums* were also noted. A good bush of the uncommon *Daphne eucanescica* was bearing quantities of white flowers.

Many of the new *Barberries* and *Cotoneasters* from China have recently been planted in the shrubberies, and will, as years go by, become increasingly beautiful and interesting. An immense number of other plants are grown throughout the park, to which we hope to refer in a subsequent issue. From the foregoing brief remarks it will be seen that Dublin has reason to be proud of her parks. B.

Exochorda macrantha.

THIS handsome May-flowering shrub, which is shown on the right of our illustration, is one of the best plants in the garden at that season. In many gardens it will doubtless flourish as an open bush, but in the Dublin district it flowers most freely when trained against a wall. The flowers, which are pure white, are produced from the ripened wood of the previous year on racemes from three and a half to four inches long. The flowers are set close together, being individually an inch and more across. The petals are broad and touching each other, occasionally overlapping, the flowers presenting a fairly symmetrical appearance, as shown in the picture. The leaves are from two to four inches long by one and a half inches wide, the lower half of the leaf entire and the upper toothed towards the apex.

E. racemosa Wilsoni, shown on the left of the illustration, flowers about the same time as *E. macrantha*. It differs, however, as will be seen in the longer laxer raceme, the flowers set more widely apart, and the petals narrower, giving the flower a rather starry appearance. The leaves in this variety vary in length from two to four inches by one and a half inches wide, the toothing of the margins varying considerably, some leaves showing none, others wholly toothed, while yet others show dentation only towards the apex. *E. racemosa Wilsoni* is a recent introduction from China, and will yet become popular among flower lovers. The first named shrub is regarded as a hybrid.

Lawns and their Upkeep.*

By JAMES MACDONALD, F.R.H.S.

FROM very early times lawns have been subjects of considerable importance. Our own country has always excelled in their culture, and the heritage left by our fathers deserves from us a continuance of the same care and attention which they gave, so that we may continue the pre-eminence they have bequeathed to us. The old lawns scattered about the country in open places and in crowded cities are no mean legacy.

The old gardeners were proud of their lawns — or greens, as they were familiarly called — and instances are frequently recorded of the careful and skilful manner in which they transformed unsightly places into scenes of pleasure. I may mention a reference in this direction by that fine old writer, Evelyn, to a spot near our Hall. He

required a very considerable amount of skill and concentration of energy to keep the turf to the required smoothness. With the lawn-mowing machine the work is of a more mechanical nature, and the lawns have suffered accordingly.

The feeble and hoary tale of the Oxford college gardener, who is reputed to have said that lawns required centuries of ungrammatical culture to get them established, has long been exploited. Lawns can be formed in a few years or a few months, according to the skill and energy displayed in the work. One reason why occasional failures occur with lawns is that very little notice is taken of the peculiarities of the soil and situation. If we wish to plant trees or shrubs we generally take care to select varieties suitable for the locality, but with lawns it is sometimes considered that grass is only grass, and very little care is given to the choice of sorts likely to succeed. Not only is this so, but,



ANDROSACE TIBETICA.

writes: "One needs to go no further to see the effect of this husbandry than to St. James's Park, where, before the Canale, I remember all that pleasant valley now yielding most rich pasturage (with the fish decoy and walks planted with fragrant lime) was nothing but a noisome, unwholesome bog or morass of moss and rushes." The gardeners of the past were clever men, and it is due to their ability that there are such fine old lawns in the country.

But, fascinating though the subject of old lawns and their guardians may be, the modern lawn and its upkeep is the theme which most interests us. The lawns of the past were well adapted for the days of chivalry, and the old "gardens with their broad green walks" are being copied very freely by the modern landscape gardener. With the advent of the lawn mower, a great change occurred in the treatment and condition of lawns. The scythe was an implement which

because grasses will grow anywhere, the preparation of the ground is not always so thorough as it should be.

When it is remembered that the ideal lawn consists of myriads of grass plants, all equally healthy, it will be readily seen that great care is required to get such a condition of affairs. In making a lawn the local peculiarities have to be carefully considered, and as these vary very greatly, it is impossible to give directions that will be alike applicable to all. A practical demonstration in lawn-making is equally out of the question. I will, however, explain how we made lawns at Harpenden this year, and illustrate the work by reference to the figures.

Fig. 96 shows a general view of the turf nursery. The idea is to grow a bed of each of the most useful varieties of grasses, each divided from the others by a narrow gravel path, so that they can be kept in every way quite distinct. The two ends are treated so as to get the best results in lawn turf culture, while the centre is allowed to grow on for the variety to develop itself fully. Two spaces near the centre are

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treated as meadow land. The photographs were taken a little over three months from the date of sowing.

The space selected was partly orchard and partly arable land, with an irregularly undulating surface. The trees in the orchard were carefully rooted out and burnt, and every particle of rubbish cleared away from the arable land. Levels were then taken, and the whole area bastard trenched, taking care to retain the best soil on the top.

Frequently when this stage has been reached the ground is raked over and the grass seed sown. This method may be expeditious, but it is the cause of many failures. The grasses germinate and grow for a time, but in a few months—except in exceptional cases—the finer grasses die away, and only the coarser and stronger varieties remain. If grass seeds are good they may be sown on a ploughed-up furrow, and they will grow and look well for a time, but they will never make a lawn.

Instead of adopting this rough-and-ready method, the whole of the ground was sifted to a depth of about three or four inches. This may seem to some an elaborate system of preparation, but if a good result is desired no detail of cultivation should be considered too much trouble. Besides, it is the cheapest way in the long run. The ideal lawn must possess a perfectly smooth face, covered with a thick, close growth of grass. To obtain this result the sifting was necessary, and after it was done a sprinkling of chemical manure, consisting of 20 per cent. phosphates (mostly soluble), 7 per cent. nitrogen, 10 per cent. potash, mixed with a local preparation, was sown over the ground, and lightly raked in. Now, if instead of sifting the soil to get an ideal surface before sowing the seed, this important detail of cultivation was left until the seed had been sown, and a smooth surface tried to be got by the agency of a roller, the result could not have been nearly so good. There is only one way of getting a good lawn from seed, and that is the right way. Get the surface perfect before sowing the seed, and the after-process is easy.

In a few weeks, according to the weather conditions, the seeds will germinate, and growth should be rapid. Sometimes a spell of dry weather succeeds the sowing and causes anxiety,

but if the ground has been thoroughly prepared, and suitable varieties of grass seed sown, dry weather need cause very little trouble. At such times, if watering is resorted to, the result is almost certain to be anything but pleasing. A dry spell may delay the germination, but that should be all.

Like all other plants, the early days of grasses are times when care and gentle culture are a necessity. As soon as they are sufficiently long and strong to cut, this should be done with a sharp scythe, and the cut grass raked off—not swept, as is frequently the case. In all probability the mowing will have to be done with a scythe for some time, until the plants have thickened sufficiently for a lawn mower to be used. A common mistake in lawn turf cultivation is to consider that when the grasses have

reached this stage they can take care of themselves, if they are groomed occasionally with the roller and mowing machine. They resent such treatment.

At this stage it is most essential to give grasses suitable nourishment similar to that already recommended, but it must be given very carefully. The advantage of beginning to feed the grasses so early is that the roots are retained on the surface, and a finer, closer growth

of grass is developed than if they were allowed to grow on without this attention. But, in applying the plant food, care must be observed to sprinkle it frequently on favourable occasions, instead of as an annual or biennial dressing.

The period in which a lawn, after sowing, may be considered fit for use depends, as has already been mentioned, very much on the treatment it has received (Fig. 97). Indifferent preparation of the ground and inadequate attention afterwards can only result in failure. The great defect of seeding by the ordinary method is the length of time before the surface soil is a network of healthy roots, and covered with fine grass, so that it can be walked or played on, without mud being too strongly in evidence. This, by the usual system, will always be a drawback to it being so extensively done as it might be.

For many years we have recognised this disadvantage, and experiment after experiment has been tried to remedy the defect, and at last we succeeded. A fabric is specially prepared, and



ANDROSACE SARMENTOSA VAR. WATKINSII.

sufficient suitable plant food incorporated with it, to sustain young grasses for a considerable period. The seeds are sown on this, and when the plants are well started the fabric is transferred to the ground where it is permanently to remain. There are many advantages attached to this method, some of which I will refer to. Assuming, as is sometimes the case, that a structure has been erected either a new building or an addition to an existing house, the work may be completed at a time when it is impossible to lay down turf, and inadvisable to sow grass seed. In such a case the prepared fabric can be transferred to the desired place, and give the necessary finish to the work.

Another great advantage of this method over any other is that most weeds cannot grow through the fabric. Anyone who has had experience of a seeded lawn under ordinary conditions knows only too well how troublesome weeds are in the early stages. Being indigenous, they grow with greater vigour than the grasses, and occasion an enormous amount of labour to root them out, at the same time damaging the young grasses very considerably during the process.

Besides these weeds, there are always some native grasses that will grow at the same time as those that were sown, and as these are difficult to discriminate in the early stages they are allowed to grow with the others until their true character is developed, when they have also to be rooted out. Those disadvantages are avoided by this special system, and if a lawn is desired to be exclusively of any one particular kind of grass, it can easily be grown under these conditions. One point to be observed when this is desired is that the initial preparation of the ground is such that will suit the particular kind of grass it is intended to grow. For example, the preparation necessary to grow *Festuca rubra* will not answer so well for *Poa pratensis*.

City lawns could be produced more rapidly and more satisfactorily by this method than by the means generally adopted. The great length of time taken by the usual system of seeding in securing a lawn has caused turf in many instances to be introduced from country districts. This is rarely a success, and the reason is not difficult to find. There are but few grasses that will grow well in towns, and these are seldom introduced with country turf. The kinds introduced vary with the district they are imported from, and it is very rare, outside a city radius, to find turf so exclusively composed of *Poas* as that found within the city boundaries.

The species of *Poa* which are best suited for such places have been a matter of discussion for many years. My experience favours *Poa trivialis* for the more open spaces and *Poa pratensis* where there is more shade. Where the shade is exceptionally dense, I have used with great success the perennial dog's-tail (*Cynosurus cristatus*). Close to the stems of large trees I have found this to succeed better than any other grass. *Poa annua* is sometimes recommended, but rarely used, no doubt in some measure owing to the difficulty in obtaining the seed.

This, in my opinion, is a wise provision of nature, for, as its name implies, an annual grass cannot be good for a permanent lawn. *Poa distans* is sometimes confused with *Poa annua*, but, although they are in some respects alike, *Poa distans* is a perennial.

TURFING LAWNS.

Lawns that are to be turfed over require very much the same initial preparation as that advised for seeded lawns. The ground should be deeply and carefully dug as long before laying down the turf as possible, and the surface hoed over on every favourable occasion. Just before laying the turf, the surface soil ought to be sifted to a fine tilth, and well rammed with iron rammers. When this is done so that the ground presents a perfectly even and firm face, the turfing can be commenced.

Now, there are many ways of doing this, but the best method is to cut the turf in squares of a definite size. One foot square is as useful as any that can be suggested. Turf cut like this is easily handled, and is in every respect better than the primitive method of rolling them in lengths of three feet by one foot. However carefully it is cut in such lengths, there are certain to be some irregularities that are detrimental to the accuracy required for first-class lawns. Some who adopt this system will tell you that these irregularities will roll out to the desired smoothness. But even if this could be done it cannot be considered good workmanship, for if a mound is compressed to the level of a hollow there still exist two distinct conditions that will prevent the even growth of grass, which for the ideal lawn is as necessary as the level state of the ground.

When the turfs are cut into the one-foot squares already mentioned, each turf is trimmed to an even thickness. This is done by laying them grass side down on a shallow tray, the depth of which varies according to the thickness desired. The trays need to be made so that the cut turf can slide in and out, but otherwise to fit the turf so that there is no room for movement. Then, with a sharp two-handed knife, cut the under side to the gauged thickness. If the soil has previously been prepared to a firm evenness, the turfs can very quickly be laid down, fitting them closely to each other and presenting, when finished, an accurately dead evenness that requires only thoughtful cultivation.

This cultivation must necessarily vary somewhat with varying soils and conditions. The first thing to do is to give the newly-laid turf a dressing of chemical manure, and after this has been done apply a light sprinkling of finely-sifted soil or sharp sand. The chemical manure induces root growth, which unites the turf together, and the fine soil or sand fills up any joints that may be open. Occasionally at this stage it is well to sow some grass seed, especially if the turf laid down is inclined to be weakly or thin in texture. Very little rolling, if any, is necessary in the early days of the lawn, and when rolling is done the ground ought to be in a fairly dry condition at the time, and only a light roller used. I know this is opposed to a very general practice which consists of using a heavy roller when the ground is wet, so that it may "leave a good impression behind."

Such an impression, however, is distinctly harmful to the future lawn. All gardeners are aware that it is necessary for the welfare of a plant that the rooting medium should be of an even firmness throughout. No one would expect a plant to remain healthy, or to grow freely, where the surface is too lightly compressed. After all, grasses are plants, although the treat-

ment they sometimes get is sufficient to make one think that they are not always recognised as such.

Where this extensive rolling is persisted in, it generates conditions under which the finer grasses cannot grow, and eventually coarser kinds, weeds, and bare patches take their places. If a lawn has been well made and suitably attended to, very little rolling should be necessary. These conditions must have given to it an even, smooth surface, which can be easily retained with skilful cultivation.

Deeply as I have gone into the matter, I cannot find out the least excuse for the continuous use of a heavy roller on lawns. The most successful cultivator of lawns is the one who works conjointly with nature, which readily responds to gentle culture, but resents forceful treatment.

These later remarks apply chiefly to what may be termed the ordinary lawn. Lawns that are used for such games as lawn tennis need to be treated rather differently. An ideal tennis court should play fast, and be firm and true. To obtain these essentials a greater amount of rolling is necessary than I have previously advised, but this rolling must be done with caution and discrimination. Rolling, that

under certain conditions will do good, at other times may do harm. Winter rolling may be placed under the latter category. At this period of the year, or in early spring, it almost invariably does harm, and should be avoided.

Generally lawn tennis is played from May to October. As soon as the period of play is over, the treatment necessary to prepare the lawn for the succeeding season should be commenced. This may consist of re-tarling any very worn-out places with turf of equal texture to the existing material. Then loosen any very severely compressed places with a digging fork, and heavily rake over the whole area. When this is done apply chemical manure according to requirements. It is important that this chemical dressing should be of a nature that will benefit the turf.

The nature of the plant food, and the manner of its application, must necessarily vary very considerably, according to the kinds of grasses that exist, and the nature of the soil in which they are growing. Situation also has a con-

siderable influence on the growth of grass. This can be seen on almost any lawn by comparing the growth on a slope with that on the flat. It is these variations that in a great measure make the cultivation of grasses such an interesting study. I admit a certain amount of enthusiasm on the subject, and after many years of close attention to it I find that the greatest aid to successful culture is observation. Even in the application of food I find observation of far greater assistance than an analysis of the soil alone.

If one is thoroughly conversant with a plant, it almost tells you what treatment it should receive. Take a Poa or a Fescue, both very important lawn grasses, and examine it. If it is a small contracted specimen, it tells you at once that its emaciated condition is due to a lack of proper food. If it is a soft, loosely-

grown plant with abnormally fleshy roots, it is readily seen that the rooting medium is defective. Now, the same treatment applied to both alike will not give a satisfactory result. The weakly specimen needs free rooting conditions, and frequent light applications of suitable plant food, until it has recovered its normal vigour. The luscious growing plant requires something that will absorb the excess of orga-



ANDROSACE GERANIFOLIA.

nic nourishment existing there, and induce a more fibrous and firmer root growth.

Perhaps I can illustrate this better if we examine an undulating putting green on a golf course. The best putting greens are evenly clothed with close, fine grass, which is equally good on both mounds and hollows. The natural tendency of grassy mounds is to get impoverished and hard, so that the rains cannot penetrate, and eventually plant life gets to a low ebb. In the hollows the reverse is the case, and an over-luxuriant growth results. To equalise these growths, distinct treatment is necessary. Very little can be done in this respect during summer, but as soon as the autumn rains have moistened the ground very much can be accomplished. The mounds then need to be loosened rather deeply with a digging fork, and light sprinklings of chemical manure applied occasionally, when the ground is moist. This will strengthen the grasses and enable them to go through the drought of summer without damage. The hollows need frequent light sprinklings of sand or

sandy loam, until they reach a degree of firmness nearly equal to the mounds.

If the winter management of lawns has been thorough, the summer treatment is simple and easy. The cultivation they have received has trained the grasses to go through the heat of summer and the season of play. If either the drought is excessive or the play severe, they may get sunburnt or fagged, but they quickly recover after rain. There might occur exceptional cases where watering lawns may be necessary, but generally it is better avoided. The beneficial effect derived from rain is not due so much to the rain itself as to the altered climatic conditions and the dissolved air which accompanies it. Water applied to turf during hot weather causes the grasses to retain their greenness at the expense of their energy.

MOWING.

Mowing ought to be commenced as early in the season as possible; in fact, it will not require to be stopped at all if the winter is mild. But, assuming that the severity of winter has stopped grass growth, as soon as frost and snow have gone and vegetation reasserts itself mowing should be proceeded with on the first favourable occasion. This is an important detail in lawn-turf cultivation. If, as is frequently done, the grass is allowed to grow so long that it has to be cut with a scythe before the lawn mower can be used, the energies of the grasses are extended in the wrong direction. I have seen lawns allowed to grow until there were loads of luscious grass taken from them, and the surface that remained was not turf at all, but miniature stubble. If this practice is continued for any great length of time, the erstwhile lawn degenerates into a mass of moss, weeds, and undesirable grasses.

A suitably nourished, healthy lawn cannot be mown too frequently. A run over every day with the lawn mower when the weather conditions will allow—without the collecting box being attached—is not too frequent. By adopting this method of culture the lawn is always ready for any purpose that may be desired. Not only this, but by doing so the energies of the grasses are directed into the right channel. The manurial benefits derived from this practice are nil, but the equalised growth obtained by it conduces to make the fine, close, compact growth so desirable on a lawn.

RENOVATING OLD LAWNS.

Sometimes old lawns are ruthlessly dug up because they have got into a bad condition. Before adopting this extreme measure it is well to see closely whether they can be reformed, and unless the turf is too thickly overgrown with weeds I have always found it possible to do so. Where the lawns are very mossy they are generally amenable to cultivation, but this cannot be done by the agency of a garden rake, although it is a practice commonly adopted. It is impossible to rake away moss without rooting out grasses as well, and however closely the teeth of the rake may be placed, they will not clear away all the moss, and generally that which remains grows away with renewed vigour, so that in a short time the lawn is as bad as or even worse than it was before.

In February last we were called upon to improve a shady lawn. At that time it was prac-

tically a mass of moss, quite unsuitable for croquet or tennis, for which purposes it was intended. The conditions existing at that time were favourable for the growth of moss and unfavourable for the growth of turf. Accordingly the moss was first killed with a chemical preparation and afterwards raked off. Then another chemical dressing was applied to stimulate grass growth. Later on, during April, suitable grass seed was sown where necessary. After that frequent mowing and light rolling were commenced, and have been continued.

This is only one type of the neglected old lawns. They are many and varied, but at a meeting such as this it is impossible to go into the details necessary for their improvement. But they can be improved, and the work is well worth doing.

BOWLING GREENS.

A great expense is frequently incurred in the construction of bowling greens, and importations of seaside turf which very frequently degenerates. A far less expensive and equally effective method is to sow a good variety of Fescue on ground that has been carefully prepared and dressed with chemical manure that will retain the roots on the surface. Turf of this description can be obtained in six months from sowing if the weather conditions are favourable. It may be slow at first, but all greens of this nature are in their early stages.

The cultivation of lawn turf is a most fascinating occupation in itself, and if it develops into a study of grasses the work is rendered doubly attractive. Many years ago Professor Martyn wrote: "Grass vulgarly forms one single idea; and a husbandman, when he is looking over his enclosure, does not dream that there are upwards of three hundred species of grass, of which thirty or forty may be present under his eye. These have scarcely had a name besides the general one until within these twenty years, and the few particular names that have been given them are far from having obtained general use; so that we may fairly assert that the knowledge of this most common and useful tribe of plants is yet in its infancy."

Some of these words might be re-written today.

My Shrubs.*

I CONFESS that at first I received rather a shock to find on the title page of the latest work on arboriculture the name of a well-known and favourite novelist, though, of course, there is really no reason why Mr. Eden Phillpotts should not excel in two subjects as divergent as fiction and arboriculture. I believe both Dr. Salmon of Trinity and Dr. Taylor of Cambridge were in their day recognised authorities on both theology and mathematics, and I think the present Provost of Trinity at one time was an examiner in classics and music. At any rate, having just read for the first time Mr. Eden Phillpotts' delightful book on shrubs I look forward to further works of a similar nature from his pen.

Mr. Phillpotts will, I am sure, not misunderstand

* By Eden Phillpotts. With 50 Illustrations. Published by John Lane. 10s. net.

me when I say that his methods (perhaps one should say his *horticultural* methods) are to me reminiscent of those of Mr. Reginald Farrer. The author of "My Shrubs" has the same happy way of taking one round his garden, treating of its inmates: conversationally, giving us useful hints and descriptions as we go round, and avoiding technicalities. One can see his shrubs as one reads his pages, and the very numerous full-page illustrations (there are almost as many illustrations as there are pages) familiarise one with the many rare and beautiful shrubs with which his garden must be packed. He is evidently not only a keen collector, but one of

cruel drying north-east winds with which we in Ireland are annually cursed. Shelter from wind is, I firmly believe, the secret of whatever success we attain with tender shrubs. I have often brought shrubs such as *Helichrysum rosamarinifolia* and *Convolvulus encorum* (neither of which are really hardy here) safely through winters and 25 degrees of frost, only to lose them in the cold biting winds of April and early May.

With Mr. Phillpotts' *Calceolaria violacea* and *Cianthus* are fairly hardy, also *Diplacus glutinosus*. On the other hand, *Daphne odora* is only half hardy. *Indigofera decora* needs protection.



EXOCHORDA RACEMOSA WILSONI.

EXOCHORDA MACRANTHA.

rare discrimination; he has avoided that pitfall of the collector—growing plants for their rarity irrespective of their merits; and it would I think be difficult to find a more representative collection of interesting shrubs than those which he has got together in the limited space at his disposal. Of particular interest to the shrub grower are the author's notes on the growth and hardiness of particular species in his garden.

Mr. Phillpotts apparently lives in Devon near the sea. Such a situation should be similar to those one would expect to find on the east and south-east coasts of Ireland, with their mild and moist winters and summers and absence of severe frost. Plants and shrubs, however, are fortunately so incalculable that one need never despair of success with even those of doubtful hardiness in less favoured climes, provided one can give them adequate shelter in spring from the

and *Pentstemon scouleri* a warm wall. Here in central Ireland, with a winter alternating from 25 degrees of frost to 18 Fahr. and much rain, *Cianthus* and *Calceolaria violacea* never survive. *Diplacus glutinosus* is uncertain. *Indigofera*, after five winters, is apparently hardy in loose peat, and *Pentstemon scouleri* and *Daphne odora* seem as hardy as cabbages. Encouraged by these inconsistencies I shall attempt to grow many more of the delightful shrubs described in Mr. Phillpotts' book in the hope that some of them will take a fancy to my garden and stay in it.

The book is very well got up, and contains an excellent index. This, however, is but an added luxury, since the author by placing his descriptions in alphabetical order has made an index superfluous. This is not merely an interesting book to read—it should also be kept for reference.

MURRAY HORNIBROOK.

Mount Usher, Co. Wicklow.

A DAY at Mr. Waipole's garden is only worthily appreciated by those deeply versed in horticulture and it would require an abler pen to do justice to all that is to be seen there. At the same time every lover of nature finds delight in this famous garden, so beautifully situated and so naturally arranged that one scarcely observes either wall or boundary, the wooded Wicklow hills and meadows forming a perfect setting to the comprehensive collection of trees and plants which Mr. Waipole has brought together, and which are so well tended by his gardener Mr. Fox.

At the time of the writer's visit the Rhododendrons and Azaleas were almost past, also the greater part of the Primulas, which do so well there. With a few precocious exceptions the Roses were not yet in bloom, but there was an abundance of good things to entertain a visitor for as many hours as he cared to stay. The collection of rare shrubs and trees is very extensive and of absorbing interest. The well-known Chilean tree, *Abutilon vitifolium*, was in grand form; some specimens must be about 30 feet high, and were gloriously flowered all over with the charming porcelain blue flowers. The white variety was no less beautiful, and a deeper blue kind, raised from seed, was extra good. Amongst other large specimens nothing was more striking than *Crinodendron hookeri*, heavily laden with crimson flowers, and always a feature at Mount Usher, where it does extraordinarily well. Broad specimens 12 feet or so in height were only planted about ten years ago. *Eucalyptus* in many varieties were grand, the young growths shining like silk in the sun. *E. viminalis*, *E. cordata*, and the dwarfier intensely glaucous *E. coccinea* were specially noticeable. *Magnolia Watsoni* still bore some of its handsome flowers, perfuming its entire neighbourhood. The Judas tree was well covered on trunk and branches with its curious fascicles of pink or purplish flowers. No one could fail to admire the giant Potato Trees (*Solanum crispum*) ascending almost 30 feet, and profusely flowered both on wall and tree trunk. *Benthamia fragifera* was covered with bloom, and the Himalayan *Buddleia colvillei* was a huge specimen with abundant panicles of its beautiful rose-coloured flowers. There were large specimens of *Pittosporum crassifolium* with umbels of chocolate-crimson flowers, and *P. eugenioides* was a fine example. *Viburnum tomentosum* was specially good, one tree, 10 feet in diameter, flowering profusely on each tier of the broad horizontal branches. The now well-known and lovely *Rosa Moyesi* was in a prominent position alongside the broad undulating grass walk, where it is a pleasure to linger, and never more beautiful than in the late afternoon of a fine day, when the western sun slants across the gardens and lights up in charming fashion the more distant grounds about the house, which are gay with herbaceous flowers and alpine plants. But before passing to these, mention must be made of the crimson-barked *Prunus aromatica*, *Kalmia latifolia* covered with its pretty rosy flowers, the neat-growing *Jamea americana* in flower, *Illicium religiosum* (held sacred by the Japanese), and the charming *Calceolaria violacea* which flourishes in great

masses in this favoured garden, being smothered with flowers against walls and under trees, *Brugmansia sanguinea* and other varieties do well here and were well flowered; and *Cercidiphyllum japonicum* was striking with its beautifully tinted foliage, but space only admits of reference to a few of the numerous shrubs which attract attention.

Amongst rock plants *Pentstemon pygmaea*, *Geranium lancestrifense*, *Lithospermum infermedium*, and countless others, were in splendid form, and there was a remarkable specimen of *Hypericum reptans* with growths some feet in length; it will be a sight when it flowers. The water and bog gardens were very attractive, showing good masses of *Primula cockburniana*, *Primula billeyana* in very rich colour, *Ajuga genevensis*, *Polygonum sphaerostachyum* doing better than it is usually seen, also the pale pink *P. viviparum*; *Myosotis Welwitschii* was beautiful, and *Houstonia corulea* had been a mass of flower.

The water arrangements are delightful, and a walk along the plank path over the fast-running stream, gently brushing past the ferns which clothe the high banks on either side, leaves one's appetite for further study of this wonderful garden refreshed and stimulated.

The woodland is to the visitor a place of many "finds," and here the seedlings from *Meconopsis aculeata* afforded one of the chief of a day of many pleasures. Its cool blue flowers—and such a blue! with golden stamens—were perfectly delightful. *Aquilegia corulea*, near by, was another treasure, and on a well-clothed wall bounding the wood the climbing *Hydrangea* (*Schizophragma hydrangeoides*) was rampant and covered with flowers. One leaves Mount Usher well filled and regretting the impossibility to absorb more fully in one visit so rich a horticultural feast.

J. M. W.

Thalictrum aquilegifolium.

THIS handsome herbaceous plant has been particularly good this year when other border plants have suffered through the long continued drought.

When visiting several gardens in Antrim and Down during the early part of June I was struck with the happy appearance of this *Thalictrum*, which was always conspicuous among other herbaceous plants. At Springfield, near Lisburn, Mr. Richards on grows it well, and numerous self-sown seedlings were springing up in abundance. The plant is attractive in all its parts, the ample Columbine-like foliage surmounted by feathery plumes of pale lilac flowers presenting a combination not easily excelled. This is a European species of which there are several varieties, the most distinct perhaps being *T. aq. atropurpureum*. Of similar, but more elegant, habit are the two new Chinese species—viz., *T. Delavayi* and *T. diptero-carpum*—both of which one hopes soon to see planted as freely as the older kind. In the case of the Chinese species the flowers are improved by the development of the sepals, which are wanting in *T. aquilegifolium*.

Gardening in the Phoenix Park.*

AN AMERICAN APPRECIATION.

PERHAPS the most interesting and attractive of flower beds I saw in Great Britain last autumn were those in Phoenix Park, Dublin, Ireland. Most of these beds were composed of a variety of ever-blooming and foliage plants, and many of them were large and elaborate. The plants were not all of one height, and were grouped so that the low-growing ones formed a ground-work, and constituted an admirable setting for the taller plants that were grouped between. The general plan of these beds can be conveyed to the mind more intelligently by a photograph of one I took on August 17th, while spending some time at Dublin. This bed had square corners, and was probably 25 by 12 feet in size. The day was bright and beautiful, and many people were in the Park. Two little Irish girls were on the near side of the bed, and at my suggestion they went to the rear, and you see them posing back of the flowers. Back of the distant trees at the right is the old city with its wealth and poverty, its fine homes and its squalor. But all, rich and poor, can visit the beautiful Park and enjoy the sunshine and lawn and flowers, and breathe the pure air from the surrounding hills and sea.

The bed shown was bordered with a double row of *Leucophyton Brownii*, with *Achyranthus Lindenii* between. The former is a silver-leaved dwarf plant, and the latter has red foliage. These plants enclosed the bed, which was carpeted with white Violets, with dwarf *Semperflorens Begonia* set a foot apart among them. Then, grouped among the Violets and *Begonias*, at a distance of 5 feet apart were specimen plants of *Fuchsia Brilliant*, each plant 5 or 6 feet high, supported by a neat stake. The blooming plants were all covered with flowers, and made a showy and pleasing display, for in the cool, moist climate of Ireland Violets, *Begonias* and *Fuchsias* are hardly surpassed as bedding plants.

In other beds in this Park *Heliotropes* were used with good effect. One bed was edged with *Campanula muralis*, a low, compact plant with a profusion of lavender flowers. Next to this were silver-leaf *Geraniums* 10 inches high, with pink-eyed white flowers. The third row was of *Fuchsia Heinrich Henkel*, 15 inches high, the flowers scarlet, in terminal clusters, the foliage dark, bronzy red. The body of this bed was of *Lobelia Morning Glow*, 2 feet high, mixed with *Eucalyptus viminalis*, bronzy-red stems and narrow leaves, and here and there plants of *Calceolaria flexicaudata*, bearing golden flowers in clusters.

In Kew and other gardens in England I found more or less of this promiscuous planting, the effect always pleasing; but in no place did I see any beds that compared with those at Phoenix Park in the diversity of plants used and the tasteful manner in which they were grouped. The display indicated much experience in planting and good taste in contrasting the colours to secure the most admirable effects.

Hints to Novices.

By R. M. POLLOCK.

LAYERING CARNATIONS.—This may be done during the month, and is the most satisfactory way and the method usually adopted. It is quite simple, and after layering a few plants one gets very "nippy" at the work. The best material to use and the easiest to manage, if it is obtainable, is pure sand, but if this is not to be had, fine soil with a mixture of leaf mould will do well, and if slightly damp can be conveniently managed. All flowering shoots on the plants which are to be layered should be carefully tied up out of the way, fork the soil round the plants lightly, and place a thick layer of the fresh soil round these plants. Select good strong shoots, and with a sharp knife cut a tongue upwards about an inch long, passing through a joint, then with a peg, made either of wood or wire, peg the cut shoot down into the soil in such a way as to keep the tongue open, and cover firmly and neatly with soil. Water the soil if the weather keeps dry, but do not disturb the layers again until they are fit to cut. If cuttings are to be put in, take the same class of strong shoot, cut them off with a clean sharp knife just below a joint, and dibble them firmly into a prepared spot in a shady border.

"Prepared spots," "shady border," and such like expressions always suggest that there is an endless amount of room. This may be so in large gardens, but it is not the case in villa gardens, and semi-attached, or terrace gardens, and then there is no reason why if cuttings are put in they should not be just dibbled in anywhere where there is space in the border, preferably near the front, where they can be watched and not allowed to suffer from drought or get covered over. The few that would be required in a garden where so little space was available would not cause any over-crowding, and by the spring they would be rooted, or not, as the case may be.

Some of the single Pinks, correctly known as *Dianthus*, make charming rockery plants, especially where bright effects are called for, as well as in moorlands and the rock garden. Some are very easily managed and grow freely, others are more fastidious, and they all have a very upsetting habit of suddenly going off for no apparent reason. Surely the mere fact of some of them being, in places, difficult to grow should tempt many gardeners to try their luck. Most people know the Cheddar Pink, *Dianthus casius*, and those who do not know it will probably place it somewhere rather high among those they care to grow. But for others who do not know it, it must be described, and to do it full justice in a description is difficult, as it is one of those colours about which there is some uncertainty. Books give it as rose, rosy-pink, rosy-purple, and magenta, according as the writer pictures these colours, but it is very pretty. The flowers are small, delicate, clean cut and single, borne on 6-inch stems which rise out of tufts of glaucous green foliage. It is a splendid plant for walls and very easily raised from seed.

As a companion to this may be noted *D. suavis*, just as easily grown and just as simple in its requirements. Here again the foliage is in close clumps, but dark green, and covered in early summer with small, flat, pure white single flowers

* From Park's *Floral Magazine*, La Park, Pa., June, 1915.

on slender stems about 6 inches high. A very dainty and charming plant.

D. sylvestris is another well worth growing. In this species the flowers are a true clear pink, larger than the two foregoing. This plant varies greatly, but as a rule the flowers come two and three on stems from 6 to 8 inches high.

D. fragrans, which comes from the Caucasus, has white flowers with fringed edges, and is very sweetly scented.

D. monopetalanus, a quick grower and a very free bloomer, accommodating itself anywhere, either border or wall. The stems are often ten inches or so high, and the flowers pale pink and deeply fringed, but its real attraction lies in the calyx tube, which is deep purple, and the buds form a charming contrast to the open flowers.

Then there are the dwarf species, *D. alpinus*, with dark glossy leaves in tufts and largish flowers about the size of a penny, a good bright pink about 3 inches high. This is a small plant which seems to prefer semi-shade to the baking sun, but like others of its family, has a way of going off suddenly.

D. neglectus, something like the foregoing, but with narrower foliage and the reverse of the flowers, is buff colour.

D. sub-acaulis is the gem of the genus, and forms close tiny tufts of small narrow leaves. The flowers are produced singly on short stems 3 inches high, not more, and not as big as a six-penny bit of a curious shade of pinky red. A fascinating little plant and the smallest of the *Dianthus* tribe.

These are only a few of the many good garden and rock plants in this large family. There are many more singles, taller growers and requiring more space, which late in June and early in July form a very pretty effect when grown among grey stones and dwarf *Campanulas*.

All bulbs which require lifting may now be got out. Use a fork—not a spade—when lifting, as then there is less chance of splitting the bulbs. In small gardens, where there is little accommodation for storing, if the weather is dry, these bulbs may be lifted, cleaned and replanted at once. When cleaning remove only as much of the brown coatings of Tulips as will come away easily in the hand when rubbed. In the case of *Narcissus* bulbs, only divide where they will come apart freely, too severe dividing will only weaken them, and when replanting only put back the largest and strongest bulbs. The small ones may either be kept and grown on for another year or else given away. Where bulbs have been in grass which is usually cut by the mowing machine, this may now be done, and the place cleaned up and tided.

For plants attacked by insect pests, such as caterpillars or beetles, &c., there is no better or surer cure than Swift's arsenate of lead. This can be bought in thick bottles, and is in a firm paste. Directions for use are given on the outside of the bottle. It should be applied with a fine syringe or sprayer, and will leave a white coating on the leaves after being used, which will do no harm to the foliage, and will disappear after a shower of rain. Arsenate of lead should not be used on fruit which will be eaten in the uncooked stage, within a fortnight of its being applied, but where the fruit is to be cooked it does not matter. It is not expensive, and is very simply prepared.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Deuleath, Ballywatter Park, Co. Down.

HEDGES. The present is a good time to clip evergreen hedges. They will not make much fresh growth before winter, therefore they will present a trimmed appearance until next spring; thus it is possible to do with but the one clipping in the year. Specimen trees of Yew or of Conifers, whether of pyramidal or other shape, may also be trimmed at the present time. The shears should have thin blades with very sharp edges in order to insure clean cuts. The trimming of hedges and trees can be carried out most conveniently in dull weather, and when the foliage is slightly moist. Any of the commoner shrubs may be examined, and if any pruning is needed this operation can be carried out with the knife or one of the handy pruning instruments available for the purpose. If shrubs are pruned neatly and regularly with care they will scarcely show that they have been trimmed at all.

THE MIXED FLOWER BORDER.—The plants introduced to fill the spaces which were occupied earlier in the year by flowering bulbs have now nearly or quite furnished the ground, and the borders as a whole are looking well. The necessary work on the flower border for some time to come will be largely of a routine nature, such as the removal of weeds, the tying of rapidly-extending plants, and the removal of dead leaves, withered flowers, and any other material that causes untidiness. Any novelties that were planted for trial and that failed to satisfy expectations should be removed and replaced by some proved subjects from the reserve garden, no matter how common they may be. Old plants are sometimes overlooked, whereas they may be associated with others that will act as a foil, with good results.

THE FLOWER BEDS.—The plants in the flower beds are fast filling their quarters, and a systematic inspection of them should be commenced. This should also be done in the case of carpet bedding at intervals of a week; but in the case of ordinary flowering plants it may be done less frequently. All the same it takes a shorter time and not so much labour to attend the plants at frequent intervals than when they are permitted to grow for a long time unchecked. Moreover the garden presents either a rough or over-trimmed appearance if this latter system is adopted, whilst by the other it is maintained in a uniformly tidy condition.

GYPSOPHILIA PANICULATA.—This decorative plant is a perennial that may be grown easily from seed. The plants do not require much room the first season, but afterwards they develop into bushy specimens requiring considerable space. A few plants may be included in the mixed border, and a good bed planted in the reserve garden for purposes of cutting. For use in the dry state it should be cut when at its best condition, and suspended in a clean, dry place. The double-flowered variety has become very popular, and should be included in the mixed border or rock garden.

WALLFLOWERS.—Seeding wallflowers should be pricked out from the seed beds before they

become drawn and spindly. Plant them in rows of one foot apart and allow a space of about nine inches between the plants. They are best planted in a firm and not over-rich soil, which induces a solid growth, which is able to withstand the severe weather of the winter. In loose rich soil the growth is apt to become very soft, and such plants do not transplant well, besides being often harmed by the wet and cold.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitzgerald, Carrigoran, Co. Clare.

At the time of writing my "fruit notes" for June, prospects were not of a very cheery nature or "the elements" in at all a genial mood. However, it seems the clouds must have had a "silver lining" for fruit growers, as so far as I can at present learn, there is generally a bountiful crop of all kinds of fruits; and apples, which appeared to be having a most critical time, have set good crops, and on the whole have set much more freely than could have been anticipated, after such heavy crops as were carried last year: the most noteworthy exceptions I have met with are old trees of Blenheim Pippins and Allington Pippin.

Small fruits of all kinds derive considerable benefit from timely attention after crops are removed. Strawberries being the first to be cleared of fruit, the beds should be thoroughly cleared of weeds and runners cut away, except such as are required for layering; if hot, dry weather has prevailed during the latter part of the fruiting season, a thorough soaking of water will much relieve and considerably improve the embryo crop of fruit for next year: this watering during an excessively dry summer is a most important item in the cultivation of strawberries to produce heavy crops of high-class fruit. If liquid manure water is available so much the better; this may be diluted with clear water if very thick or strong, though strawberries do not by any means resent strong manure water; the manure water must not be poured over growing foliage. Lacking manure water, apply a dressing of guano or some reliable quick-acting fertiliser previous to giving a good soak of clear water, and, if at all practicable, give successive waterings until plentiful rainfalls ensue; if showery or wet weather prevails, a dressing of guano or other fertiliser will prove very beneficial. I may here supplement my remarks on strawberries, written for June, by recommending an auxiliary planting of strawberries, on a northern aspect, such as a narrow border running on the north side of a garden wall, &c. A plantation of late varieties on good ground, in such a position materially extends the picking of useful and good fruits, where they may be specially required; though, generally speaking, if late fruiting varieties, such as Givon's Late Prolific, "Latest of All," or "Waterloo," are planted with the earlier varieties the strawberry season is sufficiently prolonged. Bush fruits, and especially large vigorous bushes, should be pruned after the crop of fruit is gathered, to the extent of cutting out surplus young growths and such old branches as are too near the ground, and wherever practicable, as in black currants, the old fruiting branches (this summer pruning of black currants is specially

beneficial). Go round the bushes, cutting out altogether or shortening branches that have attained too great a length, and make plenty of room for daylight and sun to permeate the centre of bushes. Much improved fruit will be produced where this practice is carried out annually.

GENERAL REMARKS.—Pay continued attention to the training, or laying in, of extending shoots on all kinds of trained fruit trees, whether against walls or on wires, and towards the end of month. In early districts, summer pruning may be commenced, taking first the early varieties of pears against walls, following on with other fruits in succession. With Morello cherries, tie in a sufficient number of young shoots to carry next year's crop, cut others clean away, shorten the young shoots to five or six leaves and cut puny, weak shoots clean out; do not shorten the leading shoots at all on either trained trees or those trees growing in the open; better, defer this pruning somewhat longer than commence too soon, especially so in a dry season such as we are now experiencing, when, for instance, heavy rains may follow the dry period and induce a sudden influx of sap which would in all probability induce a great crop of secondary growth, which is most undesirable. Whenever this secondary growth follows summer pruning, it should be checked by pinching out each successive growth to one or two leaves. Where summer pruning is desirable, notes should be made from year to year of the date of commencing, nature of season, and definite results of summer pruning, as a guide for future practice; no tree should be summer pruned until the young shoots bear the appearance of almost completed growth, and are more or less hardened and firm according to influence of weather conditions on the growth.

Judging by weather conditions here, and notes from other localities, the value of watering and mulching will be well demonstrated this year amongst fruit trees, &c. The rainfall here for the months of March, April, May, and about mid-June has been for that period only 5.83 inches, almost exactly half the average rainfall for this locality over the above-named months; this shortage of rain, combined with the great prevalence of parching N.E.S.E. winds, and on many days unusually prolonged and powerful sun, has produced a dryness and baking of land seldom experienced. Wherever such parching conditions prevail (or anything approaching such) watering should be freely practised, and especially with trees growing against walls, which feel the strain of severe drought much more than trees growing in the open—here the old maxim "well done is twice done" is very aptly applicable. New planted trees and trees carrying heavy crops of fruit should receive first attention; give the first-named a thorough soaking of clear water, and afterwards apply a mulch of any material which will prevent too rapid absorption of the water; in case of bearing trees, give them a half-watering of clear water, following this with an application of manure water if available, otherwise mulch the trees with good rich manure 3 or 4 inches deep, and over this mulching give a good soaking of clear water; under conditions of severe drought this mulching greatly enhances the value of watering by conserving the moist condition of ground and stimulating the growth of fruit. Where neither liquid nor solid manure

is available, take the next best thing, and apply a dressing of chemical manure in the shape of one of the many Horticultural manures sold by all reliable seedsmen. Hoing amongst fruit trees is particularly desirable in such a season as the present, tending as it does to keep the ground surface fine, and materially assist in conserving moisture and rapidly destroying weeds. There is considerable satisfaction in seeing successive crops of weeds promptly despatched, and the resulting clean, tidy grounds. Last, "though not least," have an eye to insect and fungoid enemies, and especially woolly aphids, which increase at an almost incredible rate in hot, dry weather unchecked.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. Sharman-Crawford, Esq., Lota Lodge, Glanmire, Cork.

JULY being the hottest month of the year, all vegetable growth requires attention to surface mulchings and waterings. Where mulching is impossible, surface hoing is of the greatest value.

Winter crops now engage the attention, according to the winter and spring needs, so must the planting and sowing be arranged. Many summer crops now passing must be removed, and the empty spaces made ready for winter crops.

BROAD BEANS.—Earth up and pinch out the points of flowering plants. Cropping plants should be thoroughly watered if dry weather prevails, and afterwards mulched.

KIDNEY BEANS.—Sow on poor soil for late crops. Earth up forward plants.

PEAS.—Early dwarf sorts are the best to sow now, on the chance of getting a late crop. See that growing ones are staked early.

BROCCOLI, BRUSSELS SPROUTS, SAVOYS.—Plant the main winter crops now. Two and a half feet each way is not too much space for sprouts, while broccoli and savoys must get the room their respective varieties demand. Ground vacated by early potatoes or strawberries, without any more preparation than clearing and levelling, suits winter brassicas admirably. If chubbing at the root prevails, puddle the roots before planting in a mixture of soot and clay of a creamy consistency.

CABBAGE.—Sow Coleworts and a small sowing at the end of month for an early spring supply, but defer till August the main sowing for spring use.

CELERY.—Complete the planting, and if the weather keeps dry, water freely. Dust lightly the foliage with soot weekly to prevent the fly attacking. Spray forward crops with potato-spraying mixture where celery disease is known to prevail.

CARROTS.—Where small tender roots are required, sow one of the Shorthorn type for winter drawing on a border easily covered by frame or other shelter.

CUCUMBER.—Plant the last batch of autumn varieties. Mulch and water if necessary the earlier ones.

ENDIVE.—Sow for winter use, treating similar to lettuce.

LETTUCE.—Prick out on north border on

heavily-manured soil to prevent premature running to seed, and make small sowings on south border.

LEeks.—Plant maincrop in shallow trenches or deep drills.

POTATOES.—Lift early crops as soon as the haulm ripens. Spray the maincrops with the ordinary commercial spraying powder, choosing fine weather for the operation.

PARSLEY.—Sow now for winter pickings on a border where frame shelter can be given.

SPINACH.—Sow the prickly sorts for winter use.

SEAKALE will benefit by dressings of salt and mulching of farmyard manure. Water if required.

TURNIPS.—Sow at the beginning and again at the end of the month for winter crops. Orange Jelly, White Stone, and Chirk Castle are useful varieties for present sowing.

TOMATOES.—Plants growing outdoors should be disbudded regularly, and where the foliage is heavy, thin out to permit the sun's rays to penetrate to the fruit.

Vegetables of many sorts will now be plentiful, and bottling for winter use may now be undertaken. Peas and beans, both broad and kidney sorts, preserve well, and indeed every root and stem vegetable can be utilised by sealing in jars or bottles, while vegetable marrow makes excellent sweet preserve.

As this is no ordinary year, the augmentation of our food supplies is not only a sound investment but an imperative duty on everyone who grows a spare root or fruit.

Æthionema Amoenum.

This is distinctly one of the best of the *Æthionemas*, and should be included in all collections of alpinæ. It resembles, and has been much confused with, *A. pulchellum*, but produces much larger flowers of the same soft pink colour. The writer saw it recently in several gardens in the North, notably at The Bush, Antrim, where Mr. Barton grows *Primulas* and many other things so superbly, and also in the always wonderful collection at Daisy Hill Nurseries, Newry. Considerable doubt was in evidence as to the proper name of the plant, most growers recognising it as distinct from *A. pulchellum*, but Mr. W. Irving, of Kew, who has recently been visiting Ireland identified it as *A. Amoenum*.

A. schistosum is also apparently confused with *A. pulchellum*, and bears some resemblance to the latter species. The plant, which is grown in the Botanic Gardens at Glasnevin under the name of *A. schistosum*, flowers at least three weeks or a month before *A. pulchellum*, is more shrubby in growth and with shorter leaves. At the time of writing—viz., the last week in June—*A. pulchellum* is in full flower, while *A. schistosum* is forming seeds.

Another pretty little species which has been very charming for some weeks is *A. gracile*, which produces numerous branches terminated by short spikes of rosy-pink flowers. The shoots are slender, and hang down under the weight of flowers, while the leaves are of a pretty glaucous blue colour. It is a charming plant for a cleft alpinist.

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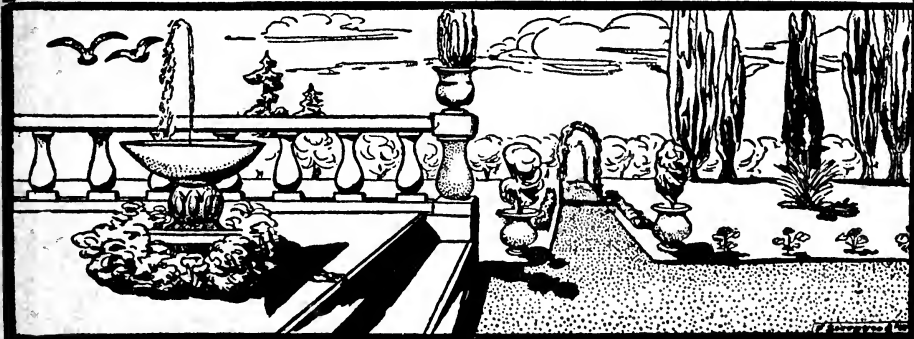
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Irish Gardening

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Department of Agriculture and Technical Instruction for Ireland.

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EDITOR C. F. BALL

Haberleas.

AMONG lovers of rock plants these are reckoned indispensable for moist shady positions, and rival their near allies the *Ramondias* in beauty of flower and leaf. Their cultural requirements are fairly simple, and in Ireland, with a moist atmosphere should present no difficulties. A vertical position between rocks and a moist

peaty soils suits them admirably, and a glance at our illustrations will do more than words to convince readers of the suitability of such a soil and position. The aspect is practically north and little or no sun reaches the plants; nevertheless they flower freely. Many of the plants here illustrated were collected in the Shipka Pass in the Balkans by

Mr. C. F. Ball, and, strange to say, Mr. Ball found large quantities of the plants in full sun, frequently growing horizontally on flat shelving rocks and apparently quite shrivelled up. The torrential rains, however, which are experienced in that part of the world soon revive them, and by spring they have plumped up and are ready to flower. It is quite possible, however, that under good cultivation they will flower even more freely than in nature. Collected plants exhibit considerable variation in shape of leaf and size of flower. Generally the long narrow-leaved forms produce the smaller flowers and the broader-leaved forms the larger. Variation

occurs also in the colour of the flowers, some being bluish lilac and others charmingly spotted in the throat with yellow and purple, while others are nearly white. A pure white form is in cultivation under the name of *H. rhodopensis virginalis*.

Much the finest *Haberlea* grown in gardens is *Haberlea Ferdinandi-Coburgi*, which is distinct in several ways from *H. rhodopensis*. The leaves are shorter, much broader, of a

glossy dark green colour, and with crenate margins. The flowers, too, are much larger, with a shorter tube, but the petals more reflexed. The general colour is lilac with yellow and purple markings in the throat.

Propagation is easy by division or seeds. Many of the pieces brought home by Mr. Ball contained dozens of plants when separated, and



HABERLEA FERDINANDI-COBURGI AT GLASSEVIN.

they soon grow away when potted up in peat and leaf-mould with a little sand and loam. Seeds are produced fairly freely by *Haberlea rhodopensis* and germinate readily in a warm greenhouse. When large enough they may be pricked off in boxes and either kept in the house or transferred to a cold frame when growing. In about two years they will be fit for planting out. *H. Ferdinandi-Coburgi* does not seed so freely, but may be treated similarly when obtainable. As years go by we may expect to see much improvement in the size and colouring of the flowers by saving seed from the best forms only.

J. W. B.

Some Northern Gardens.

EARLY in June I had an opportunity of visiting several gardens in Antrim and Down, and found there much to admire and envy. The first was at Springfield, near Lisburn, where Mr. H. Richardson cultivates many plants well, and does not confine his attention to one particular class, but finds pleasure in alpinæ, herbaceous plants, and those requiring the protection of a greenhouse.

Quite early I noted nice plants of *Oenothera ovata*, a dwarf low-growing species of the Evening Primrose family, with comparatively large flowers produced not much above the leaves which form a : at rosette : near by a distinct form of *Sax.* cotyledon was flowering freely, the distinct reddish tinge of the flower stems being noticeable. *Papaver tauricula* with tawny yellow flowers in the way of *P. pilosum*, was effective in the herbaceous border, as also was a prettily variegated variety of Rock Rose or *Helianthemum*. *Pentstemon Roczlii*, a dwarf shrubby species valuable for the rock garden, was doing well, while in a sunny moraine good plants of *Silene pumilio* were flourishing and bearing several large pink flowers. *Ethionema amœnum*, which is like a glorified *A. pulchellum*, was conspicuous in several places, and is a decided acquisition. Mr. Richardson succeeds remarkably well with *Gentiana verna*, and believes in growing it in firm loam: he had several fine colonies in good health. Another lovely plant was *Minulus radicans*, which at Springfield was flowering freely in good heavy soil. Perhaps the plant which I admired most was a grand tuft of *Androsace levigata*, which was flourishing in a granite moraine, and had apparently flowered freely some time earlier. *Mesembryanthemum Brownii* was, curiously enough, flourishing outside, though it hails from S. Africa, while the new grey-leaved *Campanula tomentosa* was happy, though not in flower. Most of the choicer dwarf plants are grown in a series of moraines made comparatively flat in different parts of the flower garden, and enjoying various aspects. Nothing in the nature of an elaborate rock garden is to be seen, though many alpinæ are flourishing. Herbaceous plants were numerous, and all in robust health. *Lupins* and *Delphiniums* at the time of my visit were just coming in, while a huge mass of *Campanula lactiflora* gave promise of a fine display. *Primula cockburniana* in a shady bog bed was remarkable for the size and intense colour of the flowers; in the same bed *Meconopsis aculeata* and other moisture lovers were flourishing. Throughout the flower garden *Violas* were prominent, their rude health testify-

ing to the beneficial effect of the cool northern air.

Under glass Mr. Richardson grows Carnations very well, most of the newer "perpetuals" being in evidence, and all showing the clean growth and glaucous blue foliage, a sure sign of good cultivation. Shrubs are not grown extensively, though some fine bushes of *Olearia stellulata* were evidence of the hardiness of this excellent evergreen flowering shrub even in the cool north, and a magnificent bed of *Rhododendron Pink Pearl* was just on the wane, but must have been superb. In the frames were fine stocks of seedling *Incarvilleas*, *Meconopsis*, *Primulas*, &c.; but of these and many other things, let us hope Mr. Richardson will tell us more some day.

The Bush, Antrim.

This, the residence of Mr. Barton, is situated within sight of Lough Neagh, and is by no means a warm part of the country. Nevertheless, so generous is the soil—a deep, moist, peaty loam—that the vigour of all kinds of plants was remarkable, and something I fear which no made-up soil will ever equal.

The rock and water garden is admirably arranged for a bold display, and consists of a series of mounds and valleys so constructed that comparatively few rocks are in evidence, and demonstrating the fact that where soil and aspect are right, immense quantities of large stones are quite unnecessary. Water is plentiful, and forms little streams and pools here and there, in and around which moisture-loving plants have established themselves quite naturally. *Primulas* are a notable feature, planted not in dozens, but frequently by the hundred, judging from the size of the masses. Never have I seen in any garden anything to equal the glorious masses of *Primula japonica*, *Primula pulverulenta*, *P. Unique*, and many seedlings of a similar nature, showing the most delightful variations in colour; *P. siberica*, so tall and strong as to be almost beyond recognition; *P. rosea*, long out of flower, but growing vigorously; *P. sikkimensis*, just coming on, and in fact all the old and new *Primulas* of the bog-loving section, not omitting *P. cockburniana*, were taller, stronger and more floriferous than I have ever seen them before. In addition to the *Primulas*, *Meconopsis integrifolia* showed immense vigour, each spike carrying numerous flowers and several seed capsules rapidly swelling, and giving promise of a rich harvest presently.

Though the *Primulas* were the most striking objects in that particular part of the garden at the time of my visit, there was no lack of

other choice plants to maintain interest and carry on the display indefinitely. Masses of *Dianthus alpinus* were very fine, and also some good forms of *D. neglectus*. Campanulas were promising, and great cushions of Thymes were preparing to take up the display by covering themselves with dainty flowers of various shades. A recently constructed moraine of irregular outline is being gradually furnished, and already small plants of *Gentiana verna* were beginning to establish. *Saponaria ocymoides grandiflora* was prominent on a higher portion of the garden, and a dainty little *Orchis* from Cambridgeshire, probably *O. ustulata*, was bearing its tiny dense spikes of pink and white flowers. Shrubs, as well as bog and alpine plants, find a congenial home at The Bush, and one of the grandest sights I have seen was three fine old bushes of *Cytisus albus*, Tombe's variety (*C. albus incarnatus*?) smothered in flowers each with a suffusion of pink deepening towards the centre of the flower. Near by *Solanum crispum* was enormous, quite a tree, and full of flowers—a truly wonderful sight. *Abutilon vitifolium*, *Roses* and *Clematis* were opening a few flowers soon to develop into a glorious display. *Roses* everywhere and in all sections were wonderfully vigorous, and herbaceous plants were equally happy. A fine old plant of *Abutilon vexillarium* had reached to the eaves of the house, and is apparently hardy enough on a wall.

A quaint archway has been formed, very many years ago, by planting saplings of Mountain Ash, one on each side of a walk and bending over the tops till they could be twined round each other. In such a way they have become firmly grafted together, and now form a series of living arches making little annual growth and supporting Rambler *Roses* and *Clematises*. The stems of some of the Mountain Ashes are remarkably thick and rugged, testifying to their great age.

Out and beyond the garden proper Mr. Barton has many acres under small fruit, chiefly gooseberries and black currants. Here again the richness of the soil is evident in the huge size of the bushes, which are nevertheless shapely with a minimum of pruning, and carrying fine crops. The total tonnage must be enormous, but is readily disposed of, the quality being of the best, and buyers are sure of the large quantities which they desire. A huge field of flax, showing a magnificent level crop, was of great interest at this time.

Although a busy man leading a strenuous life, Mr. Barton still finds time to supervise his garden, to plant and plan, and anon to show wandering visitors the wonderful results he obtains.

Rostrevor House.

Here on the slopes of a wooded hill, from which are obtained delightful views of Carlingford Lough and the mountains beyond, Sir John Ross of Bladensburg has formed a garden and arboretum, containing a collection of trees and shrubs such as is probably not to be found elsewhere within the three kingdoms. Favoured with a genial climate and apparently a generous soil, many plants from sunnier lands are making themselves at home, and will eventually provide living examples of the vegetation of the far south. Thus we find numerous plants from Australia taking kindly to the genial air of Rostrevor, many New Zealanders quite at home, and even sunny Ceylon is represented.

Almost the first object to be noted was a large specimen of that brilliant Chilean tree *Embothrium coccineum* literally covered with its lovely scarlet flowers, worth going miles to look at. Many intensely interesting plants were noted in the nursery beds, most of them yet to be tried as to hardiness, but promising well. Young plants of the little known *Pinus Nelsoni* looked happy, and will be a source of interest as they develop. Much had to be seen during the day, and a move towards the more permanently planted specimens at once brought us into contact with the collection proper. *Parsonsia albiflora*, a climbing member of the *Vinca* family, was early brought to notice, as was *Hoheria Sinclairi*, a native of New Zealand. *Viburnum japonicum* was represented by a flourishing young bush, and the new *Neillia longercacemosa* from China was in flower with its racemes of coral pink. *Genista spinosa*, usually a greenhouse plant, was here establishing out in the open. *Eucalypti* are to be seen in the woods in numerous fine examples, including a number of species, while the handsome-foliaged *Panax arboreum* and *P. colensoi* from New Zealand looked happy and flourishing. *Leucothoe Davisiae*, a very beautiful member of the *Erica* family, thrives remarkably at Rostrevor, and although hardy also in less favoured situations is not so often seen as one could wish. A very rare specimen was seen in *Drimys colorata*, a little known species which came from the wonderful collection at Edinburgh. *Lomatia tinctoria*, an Australian plant, attracted attention, and though not so well known as *L. ferruginea*, which flourishes in the open in several Irish gardens, yet promises to make an interesting shrub; another species, *L. longifolia*, was also seen. *Ceanothus divaricatus* makes a fine bush or small tree, and the uncommon *Hymenanthera dentata*, or *Augustifolia*, was growing freely, though requiring in most gardens the protection of a wall. *Arbutus*

furiens has grown into a fine bush, and looked handsome in its dark green leathery leaves, and earlier in the season bears quantities of small white flowers in racemes. Extremely interesting was *Ligustrum Walkeri*, the Ceylon Privet, an instance of what can be grown at Rostrevor. Later on *Rhododendron Zeylanicum* was seen, and it too hails from Ceylon.

Olearias of many kinds revel in the sunshine and warmth, and seed profusely, seedlings springing up in quantity, not a few showing considerable variation, so that it is not improbable that there may be some natural hybrids among them. *Betula globispica*, a rare Birch, was growing away freely, and seemed likely to make a nice tree: in general appearance it is much like an Alder. *Juniperus Cedrus* had made surprising growth, and was apparently as happy or happier than on its native mountains in the Canaries. Of *Acacias* there are many species mostly in perfect health, and in a few years many handsome specimens will be found through the collection.

At a future date I hope to be able to give an account of the progress of some of the plants and also of the wonderful collection of trees.

Daisy Hill Nurseries, Newry.

This was the only commercial garden visited, and readers need no introduction to what is probably the most comprehensive trade collection of hardy plants, trees and shrubs in Europe or anywhere else. If it be true of some large establishments that they can supply anything from a needle to an anchor, it is equally true of Daisy Hill, that there practically everything necessary for the furnishing and embellishment of a modern garden can be obtained, excepting perhaps purely tropical or stove plants.

Meeting many plants as one journeyed up and down the steep slopes of Daisy Hill, there was no time to separate Alpines and herbaceous plants from trees and shrubs, and here they are set forth as they occur in my notebook. *Saponaria Boissieri* was there in good form, a fine rock plant, and suited to the moraine, now so popular. *Veronica canescens* was noted that dainty tiny Speedwell so easily lost in winter, not because it is unduly tender, but because the thread-like creeping stems are easily missed, and may be taken for dead while only resting. *Campanula fragilis*, a gem for the rockery, was there in plenty, as also was *Silene Elizabethæ*, a rock plant of much charm bearing pink flowers on short stems. *Gaultheria oppositifolia* is a pretty shrub for a peat bed, and the charming little *Gaultheria trichophylla*, with tiny leaves on slender stems, and in its season bearing small pink bells, was seen in quantity. The

dainty *Erepetion reniforme*, or as it is properly called *Viola hederacea*, is always a feature at Daisy Hill, and was there as usual in robust health. *Verbena radicans*, a low-growing creeping species with finely cut leaves and corymbs of bluish violet flowers, was attractive, as also was the white flowered *Gazania montana*. *Ethionema amonum*, here as elsewhere in the north, was very fine with its spikes of large soft pink flowers, and an extremely brilliant shrub was seen in *Cytisus Daisy Hill fulgens*, deeper and more striking in colour than the now well-known *C. Daisy Hill*.

Dianthus fl. pl. was most attractive, the pure white double flowers suggesting a nice effect on the rockery: very pretty, too, was *Dianthus Priebradii*, another double form with pink flowers. As usual, the *Dubacias* were noted in great quantity, and a neat little shrub is *Andromeda mariana*, now called *Pieris*, and a native of America; it belongs to the *Erica* family, and bears small clusters of white and pink flowers in spring. *Clethra alnifolia alborosea* was recommended as a good and desirable plant for a peaty or non-calcareous soil. *Iris sibirica atrocaerulea* and *I. sib. azurea* were in very fine form, and were two of the finest forms of this popular waterside *Iris* I have seen. *Iris tenax* was magnificent in full flower. *Primula grandis*, with spikes of small yellow flowers quite belying its name, was noted near by some hybrids of *Iris tenax* × *I. douglasiana*, which were smothered in flowers of various shades forming one of the finest sights in the nursery.

Veronica virginica alba was splendid seen in a mass, and at once showed its worth for the herbaceous border in deep cool soil.

The little golden-leaved *Sibthorpia* in a cool house was attractive, and should be useful for an edging in the greenhouse. *Kniphofia Quartiniiana*, seen in the distance in full flower, showed its value for bold massing, and a bush of the golden-leaved Blackberry suggested its suitability for providing colour in a large shrubbery.

Calcolaria alba, often a difficult subject outside, flourishes at Newry, as also does that lovely native of the Scotch mountains, *Azalea* or *Loisleuria procumbens*. Of the lovely *Campanula Zoysii* there was a good stock, also of *Primula glutinosa*, *Oenothera brachycarpa*, *Xerophyllum asphodeloides*, *Aletris farinosa*, *Anemone pulsatilla chinensis* which has red flowers, *Gentiana cruciata*, and the quaint and charming little *Phyteuma comosum*, so much sought after by lovers of true alpine. These and many others I saw and admired, yet left with the knowledge that another day or two would scarcely exhaust the treasures of Daisy Hill.

Eremuri.

THE great family of Liliaceous plants contains no more noble members than the various species, varieties and hybrids of *Eremurus*.

At one time considered somewhat difficult to grow, a better understanding of their requirements has led to a relinquishing of that idea and a large increase in popularity. Quite recently at the Holland House Show in London, Messrs. Wallace, of Colchester, put up a remarkable exhibit of *Eremurus* hybrids which Irish visitors have reported as something unique.

Ireland, generally, is well suited to the cultivation of *Eremuri*, and, as our illustration from the gardens of P. La Touche, Esq., D.L., at Harristown House, Co. Kildare, shows, they are not being neglected. *Eremuri* usually seed freely, and the seeds germinate readily, but patience is required ere they reach the flowering stage. Five years, and possibly longer, is not too long to wait, and for the first two years the seedlings may remain undisturbed. Afterwards they may be given more space, as found necessary, lifting the roots carefully after the leaves have died off in late summer. A deep, warm, loamy soil is ideal for the growth of *Eremuri*,



EREMURUS ROBUSTUS
In the Gardens at Harristown House.

and the crowns should be quite six inches below the surface when planted. During winter a covering of dry ashes is beneficial, and some protection should be given to the young growths as they advance in spring; in fact spring frosts are more injurious to the plants than anything else, and are probably the cause of failure to flower more frequently than any other. The best flower spikes are produced from single crowns, and when, after a year or two, several crowns appear, and the thong-like roots are seen to be coming to the surface, they should be lifted carefully, separated, and replanted as detailed above.

Of late years a considerable extension has been

given to the flowering period by the discovery and introduction of new later flowering species and by the successful efforts of the hybridist, who has succeeded in producing a number of magnificent hybrids, showing considerable variation in colour, and it is quite probable that other charming colours will shortly be produced. The best known species are:—

E. himalaicus, a native of the Himalayas, and producing handsome spikes of pure white flowers; total height of the flower stem—4 to 5 feet; introduced over thirty years ago.

E. Bungei, a Persian species, introduced about thirty years ago, is a beautiful plant, producing a spike of lovely clear yellow flowers. This species has been used by the hybridist to produce some of the beautiful bronzy shades now coming into vogue. There is a very fine variety of this species known as *E. Bungei* magnificent, a considerable advance on the type, growing much taller, the flower scape reaching seven feet and producing a large number of lovely clear yellow flowers.

Eremurus Olgae, a Turkestan species, was originally described in the Dictionary of Gardening as white flowered, but the plant now obtainable under that name has pink

flowers, and has also been used in hybridizing with excellent results.

E. robustus, also from Turkestan, is one of the giants of the genus, reaching, when well grown, a height of 8 to 9 feet, and clothed for several feet on the upper part of the scape with charming soft pink flowers. The variety *E. rob. Elwesianus* is even more gigantic, producing very large pink blossoms, and the white form *E. rob. Elwesianus albus*, which is similar in habit, but has large pure white flowers, is considered by some the gem of the family. It certainly is a noble plant worthy of the best attention possible.

Sweet Pea Notes for August.

By W. BARRETT, Ballyheigue Castle Gardens,
Co. Kerry.

MOST Sweet Pea growers, both professional and amateur, will now be cutting plenty of good peas, especially so because most of our best shows take place in July and August. During the present very mixed weather we are having and have had for some time now, of rain, wind, and sunshine, the blooms, of course, will have suffered rather in colour, and also they could not have that nice brilliant finish they always have in bright sunny weather.

One of the most important things at present to be attended to is the tying and staking of the plants: wet weather always makes the plants grow rather soft, and for that reason they are very easily thrown over in the tops: these should be attended to at once, or, if left so, the grower, instead of having good, long straight stems, will

have very crooked stems, almost impossible to arrange on the exhibition board, and very much against the exhibit. I approve most, though it entails a little more labour, of tying the growths with pieces of raffia, it pays in the long run: also try and have your peas so placed when growing that they will not be rubbing with their neighbours or with the twiggy parts of the stakes—of course where bamboos are used the scratching and rubbing of the blooms does not occur so much. Above all, when exhibiting you must have freshness of bloom, that is, nice clean blooms, free from spots and marks, and also bright in colour, not dull and faded, as one often sees at shows, with perhaps in many cases where there are mostly four blooms on a stem three of these are open and fresh, and one very often

past and closed. To avoid this, try and have all the flowers as near perfection as possible by cutting only blooms with, say, three flowers nicely open, and the fourth, or top flower, just ready to unfold. This, I think, you will find a very good guide in cutting your blooms.

Most growers will have been flowering their peas very sparingly until about a month before the shows, some perhaps three weeks, it all depends on the weather, and at this stage frequent waterings of liquid manure, and also a little artificial will much improve the colour of your peas, length of stem, and size of bloom. It is a very good plan (and we have found it so here in our very light soil) to earth-up the peas



OLEARIA LILIFOLIA
(See page 119).

in about the month of June rather heavily, as this helps one greatly in watering the plants. It keeps them more moist in very dry weather than it would naturally do if not earthed-up: it also proves to give your plants greater strength of stem and leaf.

In cutting your peas for show, the grower must use his own discretion. Much depends on what help he can secure at time of picking, what distance he has to go to a show, &c. But I hold that no matter how short the distance to the show, always cut not later than the evening previous to a show. Never cut in wet weather if possible, but this is not always possible, as most growers know to their grief. Whatever happens, always get your blooms dry as possible before packing. Blooms packed wet or damp must suffer and get discoloured and destroyed. Last, but not least, it is very important indeed to arrange the vases with best possible taste, never have two colours together that clash. This often spoils a superb collection of peas. I forgot to mention about the salmon and orange scarlet shades. Shading with tiffany or other material is very necessary, all salmon shades need it. But not all orange scarlet shades, and

also never leave salmons too long in water, they are very apt to run in the colour and spoil the whole vase. It is very good experience for all of us to do a little experimenting before the shows in trying the blooms in water, and see for ourselves the results in the different peas. Those of us who grow peas just for decorative purposes alone will, of course, find it much easier, but what a difference in quality of the blooms.

With a little trouble in following in a rough kind of way the exhibition style of growing your peas for decorative purposes, such as a little disbudding of the stems and side shoots, or laterals, watering when necessary, using a little artificial manure and a little liquid occasionally, keeping off all seed pods, &c., we shall find a vast difference in the quality of the blooms both in size, colour and length of stem, and will find also that the peas continue to bloom much longer and better.

Pratia arenaria.



Photo by]

PRATIA ARENARIA.

[H. C. Elsdon.

A MORE unique or accommodating plant would be difficult to find than *Pratia arenaria* for imparting a verdure of low-creeping green foliage and a profusion of small starry-white flowers to fill a damp spot in the rock garden. Anyone who has seen a patch of this plant thriving could not fail to appreciate its charming effect.

The plant keeps in close contact with the soil, and the tiny white flowers are produced for several weeks, scarcely attaining half an inch in height, and, given suitable conditions extends its radius to almost unlimited bounds if not kept in check.

The subject of the illustration depicts a well-established patch in a semi-shaded position at the base of some rock-work; the soil in which it is growing is composed of loam and leaf soil in about equal proportions. There it thrives in a remarkable manner, annually endeavouring to encroach upon the neighbouring plants, and

if not thus prevented, it would certainly be a case of the "survival of the fittest."

The plant produces seeds in abundance, and is easily propagated by sowing the seed as soon as ripe; division of the plant also secures another means of artificial increase.—H. C. ELSDON.

Olearia ilicifolia.

The true plant of this name is by no means common, but to lovers of rare shrubs it has much to recommend it. The better known *O. macrodonta* usually does duty for it, but is altogether distinct. The leaves are scarcely more than half as broad as those of *O. macrodonta*, and taper to a fine spiny point. The undulate margins are sharply toothed, the teeth being quite stiff and horny. The upper surface of the leaf is greyish green in colour the under surface furnished with a dense silvery grey felt. The flower heads are produced in corymbs rather similar to, but more compact than those of *O. macrodonta*,

and appear some weeks later. In the Dublin district young plants occasionally have the leaves injured by frost, but as they get older and grow above the frost line, it is probable that *O. ilicifolia* will be quite hardy. Our illustration is of a young plant, which has been growing in a shrubbery in the Botanic Gardens at Glasnevin for some two or three years.

Gentiana Froelichii.

THIS is an easy *Gentian* to grow, it is astonishing, therefore, that it is so rarely seen in gardens. It comes I believe from Carinthia and Eastern Europe, and grows here quite freely in a mixture of peat and leaf mould rather low down on the rockery in nearly full sun. Its foliage is very narrow, and its flowers are of the most wonderful Cambridge blue, without spot or marking of any kind. With the plant increases, but slowly, and is considerably smaller than *G. Acaulis*.—M. H.

Fruit Crop and Fruit Crop Prospects (Ireland), 1915.

NOTE.—The reports here compiled refer to the crops and prospects as far as ascertainable in mid-July. In order to secure as much uniformity as possible in the Returns a scale of descriptive terms was agreed upon viz.: (1) Very good, (2) good, (3) average, (4) below average, (5) bad. The names of the County Horticultural Instructors are starred (*).

County and Locality	Apples	Pears	Plums	Cherries	Gooseberries	Currants	Raspberries	Strawberries	Name of Correspondent
ULSTER									
<i>Down</i> —County	Good	Average	Very good	Average	Good	Below av.	Average	Good	R. H. Clarke*
Shane's Castle	Average	Good	Very good	Average	Very good	Very good	Good	Average	W. G. Wadde
Larne	Average	Average	Very good	Below av.	Very good	Very good	Very good	Good	J. Guy
<i>Down</i> —County, North	Good	Average	Below av.	Average	Average	Bad	Below av.	Good	F. Tunnington*
Portadown	Below av.	Average	Below av.	Below av.	Below av.	Bad	Below av.	Very good	T. H. Spence
Armaghmore	Bad	Bad	Below av.	Bad	Average	Bad	Good	Good	J. J. W. Dunlop
Enghish	Average	Below av.	Average	Bad	Below av.	Bad	Very good	Very good	A. Robinson
Loughgall	Average	Below av.	Average	Bad	Below av.	Bad	Very good	Very good	W. R. Spence*
<i>Carraig</i> —County	Very good	Below av.	Good	Average	Very good	Average	Good	Below av.	J. Moohan*
Mr. Nugent	Good	Average	Below av.	Below av.	Very good	Very good	Very good	Very good	J. McAnan
Ballyhaise	Good	Average	Very good	Average	Very good	Good	Very good	Very good	J. Fonge
<i>Down</i> —County	Good	Below av.	Very good	Very good	Average	Good	Very good	Good	J. Dwyne*
Palearcagh	Good	Below av.	Below av.	Bad	Good	Good	Very good	Very good	W. Stewart*
Mulroy	Average	Average	Good	Good	Good	Very good	Very good	Average	F. Fitzell
<i>Down</i> —County, North	Below av.	Average	Good	Average	Average	Very good	Good	Below av.	T. Scott*
South	Very good	Average	Average	Average	Average	Bad	Very good	Very good	D. W. Boylell*
Hillsborough	Good	Bad	Bad	Bad	Bad	Very good	Good	Below av.	T. Bradshaw
Boyle Park	Below av.	Average	Bad	Average	Very good	Very good	Good	Good	W. Alban
Mayallen	Very good	Below av.	Good	Below av.	Average	Average	Good	Very good	J. Lyons
<i>Fermanagh</i> —County	Below av.	Average	Average	Average	Below av.	R. & W. Gid	Good	Good	F. Brock*
Ballinamallard	Windy, bad, others, gd.	Average	Average	Average	Below av.	b. bad, av.	Good	Bad	H. A. Burke
Florence Court	Below av.	Average	Average	Average	Very good	Very good	Average	Very good	J. Monruffell
<i>Londonderry</i> —County	Good	Average	Below av.	Average	Average	Below av.	Good	Very good	A. M. L. May*
Tobermore	Below av.	Average	Below av.	Good	Below av.	Good	Average	Average	J. Dalmond
<i>Monaghan</i> —County	Good in S, bad, av. in S	Average	Average	Good	Good	R. & W. Gid.	Very good	Good	J. G. Tenor*
<i>Tyrone</i> —County	Below av.	Good	Average	Below av.	Below av.	Bad	Good	Average	S. Magill*
Clogher Park	Below av.	Good	Bad	AV-onwalls	Good	Bad	Good	Bad	D. McLaren
LEINSTER									
<i>Carlow</i> —County	Very good	Good	Good	Average	Very good	Very good	Very good	Good	J. M. Kenzie*
Borris House	Below av.	Below av.	Below av.	Very good	Very good	Very good	Good	Very good	L. O'Neill
Ponagh House	Good	Average	Very good	Average	Very good	Very good	Average	Very good	S. Colvin
Ussavaugh	Good	Good	Very good	Average	Good	Very good	Good	Good	W. M. Foulds
<i>Dublin</i> —County	Below av.	Good	Very good	Good	Very good	Good	Good	Very good	W. J. Gray*
Brennansdown	Below av.	Below av.	Below av.	Below av.	Average	Average	Good	Below av.	W. T. Sher*
Kenure Park	Average	Below av.	Good	Good	Good	Good	Good	Very good	C. Brennan
<i>Kildare</i> —County	Very good	Good	Good	Good	Very good	Very good	Very good	Below av.	J. Springour
Albert Col., Glasnevin	Average	Bad	Bad	Bad	Very good	Very good	Very good	Below av.	W. Tyndall*
Moore Abbey	Very good	Good	Average	Average	Average	Very good	Very good	Below av.	C. Pilgrim
Carton	Very good	Average	Average	Average	Very good	Very good	Very good	Below av.	A. Black
<i>Kilkenny</i> —County	Very good	Very good	Good	Average	Very good	Average	Very good	Good	T. Rea*
Bessborough	Very good	Very good	Very good	Average	Average	Very good	Very good	Very good	T. E. Tomahlin
Woodstock Park	Below av.	Below av.	Average	Average	Very good	Very good	Very good	Good	J. W. Perry
Silverspring	Average	Average	Very good	Average	Below av.	Good	Good	Good	A. G. Bowers

Fruit Crop, Ireland, 1915.

By W. S. IRVING.

It is gratifying to learn that much more interest is being taken in fruit growing in general, and especially apple culture, as regards pruning, spraying, and searching for insects and trying to combat their ravages; also purchasing and planting only suitable varieties and discarding those unsuitable and worthless trees, either by uprooting and burning or by re-grafting with varieties doing well in the district. This does much to improve the industry as a whole by increasing the number of good plants and by decreasing the number of unsuitable ones, which are in most cases a source of infection of fungoid and insect pests, especially canker and scab. Much more spraying is being carried out, and the number of old moss-covered trees is slowly decreasing.

The early spring weather was very dry in general, March being the driest month of this year, with a rainfall of 1 inch. April, May, and early June were also very dry, and seriously affected the crop of bush fruits and strawberries. More rain has fallen during the first fourteen days of July than fell in any previous month this year. The season is, as a whole, about ten days later than last year. Apples promise to be a good crop. In the North the crop is, on the whole, from average to below an average one. The trees flowered freely, but the frost and dry, cold N.E. winds during May, and especially on 3rd and 11th, did much damage, in many cases killing all the flowers on a number of the trees in low-lying situations; trees on higher situations did not suffer so severely. Early and late varieties, especially Bramley, seem to have suffered most in the North, as in most cases the mid-season varieties are bearing well. The trees which suffered most are those which bore good crops last year—the heavy crop and dry autumn caused the trees to produce small, weak, and deformed flowers, which were easy victims to the severe frost. Young trees are, in general, bearing better than old orchard trees, and those bearing heavy crops are either shedding a large number of fruits or many are falling to swell. Victoria, Allington, Bramley, Lane's Prince Albert, Beauty of Bath, Golden Spire, Irish Peach, C. Ross, Newtown Wonder, and Worcester Pearmain are bearing good crops, especially in the South and West.

Pears generally are a poor crop in the open, and even on walls it is not up to the average, except in very favourable situations, very few correspondents returning a good crop.

Plums flowered freely, and damsons were a perfect mass of bloom. The crop, as a whole, is a fairly good one, and the quality promises to be good. Victoria, Early Rivers, Monarch, and Violette are bearing fairly well in the open. On walls, Coe's Golden Drop, Mogul, and English Orleans are bearing well. Belle de Louvain is bearing fairly well on large trees. Of damsons, The Cluster is bearing the best crop.

Sweet cherries on a whole are a poor crop, and though they flowered freely and set well, very many failed to swell, and many that did partially swell failed to stone properly and dropped off. There was a good crop on the commercial plantations near Dublin. Morellos are a good crop in most gardens where grown.

Gooseberries are the surprise of the season. They bore a very heavy crop last year, but this

did not appear to deter them from bearing well this year, and they are much better than growers expected. The fruit, on a whole, is of very good quality, and ripening up well. Very good prices have been obtained in the market for good samples. Whinham's Industry, Rom-bullion, Lancashire Lad, and Keepsake bore heavy crops.

Black currants are very poor on the large commercial plantations. The bushes flowered well, but the frost of 11th May and continuous cold winds prevented much fertilisation, and caused many of the small fruits which did set to drop. This, coupled with a very severe aphid attack, sealed the doom of the black currant crop for this year. In small gardens there is a fairly good crop of fruit. Northern growers have suffered ever so much more than those in the South. Red and white currants are a good crop in general, and the fruit is of good quality. Very few are grown for commercial purposes.

Raspberries are an excellent crop, in one district the heaviest on record. The fruit in some cases is scarcely so large as in other years, in other cases it is very large and in great quantity. The dry period appeared to have very little effect on the crop. Superlative is not only fruiting well, but where well treated is producing very good canes. In the Meath districts Falstaff, Bath's Perfection, and their local Seedling are bearing well. The Seedling gives the best results.

Strawberries have, in general, turned out a good crop, though the season was a short one, especially in the South. Royal Sovereign is still the best of the commercial varieties. Leader and Monarch also bore well. Two varieties which promise well are King George V. and Bountiful.

Insects, excepting aphids, have, in general, not been so troublesome as in past years. Aphid have been very destructive on almost all fruiting plants, especially plums, damsons, cherries, apples, currants, and gooseberries, no less than one-half of the correspondents giving it as one of their worst insects. Gooseberry sawfly was also very bad, thirty-four reported it as doing much damage to gooseberry and red and white currant foliage. American blight, winter moth caterpillar on apple, and apple sucker are stated by seventeen, sixteen, and fifteen respectively as being most injurious insects. Codlin moth appears to be on the increase, as twelve report the caterpillars as causing much injury to the young fruits of apples. Magpie and ermine moth appear to be on the decrease, as only two and three respectively record it. Black currant mite and red spider are recorded by four and three respectively as doing much damage.

Of fungoid pests, canker and scab still do much damage, no less than thirty correspondents stating that each is one of the worst pests they have to deal with. These cause much damage to the apple and pear crops in this country. Gooseberry mildew is recorded by seventeen as doing much damage to the bushes, and apple mildew by eight as being a serious pest. Brown rot on apple and silver leaf are given by three and two respectively as causing much damage.

Taking the fruit crop on the whole, it is well up to the average.

I can but again offer my sincere thanks for the great kindness of the correspondents in so promptly filling in and returning the report forms.

Irish Rose and Floral Society Summer Show at Belfast.

ON the 23rd of July the above Society held its show in the Ulster Hall, and more than justified the committee's decision to hold the show in spite of the adverse times we are now passing through.

Colonel Sharman Crawford, D.L., M.P., who was in uniform, in a few appropriate remarks called on the Dowager Marchioness of Dufferin and Ava to perform the opening ceremony.

Her ladyship, having alluded to the fact that the proceeds of the show were to be devoted to the aid of the funds for the benefit of the wounded soldiers and sailors of the city, emphasised the great necessity for supporting such funds, and congratulated the Society on the wonderful display, concluding by declaring the show open.

This year the prizes consisted of trophies only, no money prizes being offered. The competition, nevertheless, was keen, and the quality of the exhibits of much excellence, notwithstanding the inclement weather experienced during the month, and particularly the few days just previous to the show.

As was to be expected in Belfast, Roses were prominent and very fine, the North of Ireland nursermen supporting the exhibition most loyally.

Messrs. A. Dickson & Sons, Newtownards, were prominent with a fine exhibit of Roses and Sweet Peas, the latter one of the finest exhibits of its kind we have seen. Mr. Hugh Dickson, of the Newtownards firm, is a well-known Sweet Pea enthusiast, and is to be congratulated on the fine exhibit put up. Some of the varieties noted as being prominent were—Barbara, rich salmon-orange; Constance Hinton, a magnificent pure white; Hawthorn Gladys, salmon-pink and primrose; Hilda, rich orange-salmon; Lillian, soft salmon-pink; May Unwin, orange-scarlet; Melody, salmon-pink; Mrs. J. C. House, rosy mauve; Phyllis, orange on white ground; Sincerity, a beautiful large flower, glowing cerise; Stirling Stent, in fine condition; Wenvoe Castle, rosy mauve; and others. Of the Roses shown by this firm, we especially noted Red Letter Day; Mrs. Weynss Quinn, lemon-yellow; Donald McDonald, red decorative; Madame Ravary, a chrome yellow H. T. not always seen in good form; Carine, a combination of buff, orange, and carmine; Killarney Brilliant, deep rose-pink; Edward Bohane, crimson; and Margaret Dickson Hamill, a beautiful rich yellow.

Near by, Messrs. Hugh Dickson, of the Royal Nurseries, Belfast, arranged a most beautiful display of Roses, composed of pillars, huge bouquets, baskets, &c., each of one variety, the whole combining most effectively. Here we noted particularly British Queen, pure white; H. D. M. Barton, a fine, dark, velvety crimson, which was awarded a gold medal, Lady Pirrie, H. T. of a deep coppery salmon; Mad. Edouard Heriot, H. T. of a deep reddish copper colour; Mrs. Chas. E. Pearson, H. T., orange-apricot; Old Gold, H. T., so delightful in its orange-gold buds; Rayon d'Or, the fine yellow; and others too numerous to mention.

Messrs. Samuel McGredy & Son, Portadown, who have a world-wide reputation for Roses, put up an exhibit of rare beauty and interest,

composed chiefly of elegant pillars and baskets of choice varieties. A few of the chief were—Edith Part, H. T., a combination of red, salmon, and coppery yellow; Edgar M. Burnett, H. T., deep rosy pink; Mrs. Chas. E. Pearson; Mrs. Ambrose Ricardo, yellow; Geo. Dickson, H. T., dark velvety crimson; and that beautiful white variety, Florence Forrester, perhaps the best of its kind to-day. Other varieties shown were—Sir Frederick Moore, Mrs. George Marriot, Ina Anderson, Old Gold, &c. Crimson Emblem, a magnificent new variety shown by Messrs. McGredy, was awarded a gold medal.

A trade exhibit of an entirely different kind was that arranged in the vestibule by the Donard Nursery Company. It was composed chiefly of rare and beautiful shrubs and herbaceous plants, and attracted much attention. Some of the more prominent plants on exhibit were *Dierama pendula*, pink and white varieties; Japanese Irises; *Tropaeolum speciosum*; *Mimulus Scarlet Queen*; *Chrysanth. max.*; Mrs. F. W. Daniels, a beautiful variety, in no way coarse, and some good varieties of Phloxes. The principal shrubs on view included *Desfontainia spinosa*; *Leptospermum scoparium Boscawenii*, with lovely pink flowers; *Cornus Kousa*, well flowered; *Pittosporum Silver Queen*, a pretty foliage shrub; *Lonicera nitida*, a neat growing evergreen; *Lomatia ferruginea* in flower; *Olearia semidentata*; *Plagianthus Lyallii* in flower; excellent young specimens of various Cupressus, very finely coloured, and many other interesting plants.

Messrs. Frank E. Smith & Co., High Street, Belfast, showed numerous floral designs of great beauty, and showing considerable ingenuity, as for instance the flags of the Allies done in correct colours with Immortelles. Another showed the regimental insignia of the North Irish Horse, while numerous crosses, anchors, and bouquets were on view, composed of choice Sweet Peas, Carnations, and Orchids.

The amateurs' exhibits were of great excellence, and not only were Roses and Sweet Peas of superior quality, but it is doubtful if better herbaceous flowers could be seen anywhere, and considering the violent rainstorms of the previous few days, the immense spikes of *Dolphins*, *Liliums*, *Phloxes*, *Eryngiums*, *Alstromerias*, &c., reflected great credit on the exhibitors.

We cannot omit a brief reference to the competition for a collection of cut flowers, cut foliage, or berries of rare or uncommon plants or shrubs. There were only two competitors—Mr. H. D. M. Barton, The Bush, Antrim, and Mr. H. Richardson, Springfield, Lisburn. The former gentleman had easily the best collection of rarities, and was placed first, Mr. Richardson, however, showing a very fine table.

In Mr. Barton's lot we noted *Primula hittoniana*, *Gentiana Przewalskii*, *G. saponaria*, *G. cruciata* var. *macrophylla*, *Zenobia speciosa*, *Patrinia palmata*, *Roscoea purpurea*, *Lilium Razzii*, *Mycosotis azorica*, *M. Marie Raphael*, *Meconopsis sinuata latifolia*, *Dalibarda repens*, *Allium cernuum*, *Trollius patulus*, &c. Mr. Richardson showed, amongst other things, *Meconopsis chelidoniifolia*, *Campanula Wahlenbergensis*, *C. acutangula*, *Cyananthus lobatus*, *Primula capitata*, *Cheiranthus linifolius*, *Pentstemon isophyllus*, *P. heterophyllus*, *Wahlenbergia saxicola*, *Verbena Chamadryoides*, &c.

Much interest centered in the huge baskets

of Roses presented by the various nurserymen, and which were put up for auction during the afternoon and realised good prices. At 8.30 all the exhibits were sold, the proceeds, together with that realised for the baskets of Roses and many fine pots of Carnations presented by Mr. Richardson, going to swell the fund for the soldiers and sailors.

PRIZE LIST.

ROSES.—Twenty-four blooms, distinct varieties (championship class)—A Challenge Cup, value £10, presented by Mr. H. E. Richardson; 1, Joseph H. Welch, Londonderry; 2, Dr. J. Campbell Hall, Monaghan.

Twelve blooms, distinct varieties—Prize, piece of plate—1, Mrs. Herbert Brown, Helen's Bay; 2, E. Godfrey Brown, Holywood; 3, Joseph H. Welch.

Best bloom in classes 1 and 2—Silver medal, given by Mr. E. Godfrey Brown—Won by Joseph H. Welch.

Six blooms, distinct varieties—Prize, piece of plate—1, John Paisley, Carrmonee; 2, J. A. Stewart, Marino; 3, T. D. Prenter, Castle View, Belfast.

Six blooms, any one variety—Prize, piece of plate—1, J. Milne Barbour, D.L., Dummurry; 2, W. J. Richardson, Dummurry; 3, Mrs. Herbert Brown.

Table roses arranged for decorative effect—Challenge Cup, presented by Mr. W. Virtue—1, E. Godfrey Brown; 2, W. B. Blackwood, Ebony Grange, Belfast.

Twelve bunches of decorative roses, at least nine varieties, to be staged in vases—A Challenge Cup, presented by Colonel Wallace, C.B., D.L.—1, Mrs. Dunlop, Holywood; 2, Colonel Sharman-Crawford, M.P., Crawfordsburn; 3, Mrs. Craig, Tyrrelia.

Five baskets of cut roses, distinct varieties—A Challenge Cup, presented by a member—1, J. Milne Barbour, D.L.; 2, W. J. Richardson.

SWEET PEAS.—Twelve bunches, distinct—First prize, a Challenge Cup, presented by the proprietors *Northern Whig*, Belfast—1, Edward Cowdy, Loughgall.

Twelve bunches, distinct varieties—First prize, a Challenge Cup, presented by Messrs. A. S. Ritchie & Co., High Street—1, Edward Cowdy; 2, Colonel Sharman-Crawford; 3, J. Milne Barbour.

Six bunches, distinct—First prize, a Challenge Cup, presented by Messrs. Frank E. Smith & Co.—1, Thomas Scott, Armagh.

Four bunches, distinct—Prize, presented by Mr. H. E. Richardson—1, Thomas Scott.

HARDY GARDEN FLOWERS.—Eighteen bunches, distinct varieties—Prize, piece of plate—1, H. E. Richardson, Springfield, Lisburn; 2, H. J. M. Barton, Antrim; 3, Colonel Sharman-Crawford.

Nine bunches, distinct varieties—1, Mrs. Craig; 2, W. J. Richardson.

Silver medal for best bunch—Won by H. D. M. Barton.

HARDY ANNUALS.—Nine bunches, distinct varieties—1, H. E. Richardson; 2, Colonel Sharman-Crawford.

CARNATIONS.—Six vases, perpetual flowering Carnations, distinct varieties—1, H. E. Richardson.

OTHER AWARDS.—Collection of cut flowers, cut foliage, or berries of rare or uncommon

plants or shrubs—Prize, piece of plate—1, H. D. M. Barton; 2, H. E. Richardson.

Rose decoration of dinner table—Prize, piece of plate, presented by Messrs. Hugh Dickson, Ltd.—1, Miss P. K. Ewing, Belmont; 2, Mrs. J. A. Stewart, Marino; 3, Mrs. Richard Draper, Dummurry.

Sweet Pea decoration of dinner table—First prize, piece of plate, presented by Messrs. Weir & Sons—1, Mrs. H. Neill, Craigavad; 2, Mrs. R. J. Porter, Greenisland; 3, Mrs. M'Ferran, Carrickfergus.

Bowl of Roses, arranged for effect—Prize, piece of plate—1, Mrs. E. Godfrey Brown; 2, P. K. Ewing, Strandtown.

Basket of cut Roses—First prize, piece of plate, presented by Messrs. S. McGredy & Son—1, Mrs. R. J. Porter, Greenisland; 2, Mrs. H. P. Pinkerton, Hillsea, Belfast; 3, Mrs. W. J. Richardson.

Dinner table decoration of any flowers and foliage—Prize, piece of plate—1, H. E. Richardson; 2, Miss Dora Atkinson, Mellifont, Belfast; 3, Mrs. Edwin Hughes, Craigavad.

Seedling Rose (open)—Gold medal for at least three blooms of any new seedling Rose not yet in commerce—Awarded to S. McGredy & Son, Portadown, and Hugh Dickson, Ltd., Belmont.

Mr. W. Wells.

FROM the *Gardeners' Magazine* of July 10th we are glad to learn that this well-known and successful grower and raiser of Chrysanthemums is making satisfactory progress towards recovery after undergoing a severe operation. Taken ill on June 19th, he was operated on by Sir Arbutnot Lane on June 23rd, and it will be a source of great satisfaction to gardeners generally to know that there is every hope of his speedy return to health and strength.

Brompton Stock "Snow White."

THIS is an exceptionally fine type of Stock which deserves to be more widely known, and can be most highly recommended either for garden decoration or for cutting. One of its most desirable features is the habit of branching from the ground level in distinction to many strains which push up a single spike to a height of fifteen inches or more, giving only a few small side growths. The growths of Snow White are all more or less of equal strength, and in well-grown plants will have a spread of eighteen inches. For flowering in June and July seeds may be sown in late September or October in a cold frame. The young plants should not be coddled at any time. Pricked out in boxes when large enough and wintered quite cool, giving abundance of light and air at all times, they will grow slowly and make good sturdy plants for putting out at the first favourable opportunity in spring. Groups along the front of the herbaceous border make a nice display towards the end of June and in a bed planted thinly with pink Canterbury Bells and carpeted with Snow White Stock a very lovely effect is obtained. The Stocks should be planted eighteen inches apart. Our strain is obtained from the well-known firm of Sir James Mackey, Ltd., Dublin.

Hints to Novices.

By R. M. POLLOCK.

THE staking of the tall autumn flowering plants, if not already attended to, must be done at once. Such varieties as Michaelmas Daisies, Autumn Chrysanthemums, Dahlias, Sunflowers, &c., should all have good strong supports, and be securely tied to them. Something stronger than bast matting must be used, and a ball of medium strength tarred twine is just the thing. Bast or raffia is all right for the present, but it will not hold plants like Michaelmas Daisies when they are heavy with flower, and possibly wet too.

Guichard, Leontine Gervais, Lady Godiva (Dorothy Dennison), Ruby Queen, Jersey Beauty, Goldfinch and Blush; Dorothy Perkins and Crimson Rambler are not the only pebbles on the beach, nor are they the only Climbing Roses with a free and easy habit.

The long shoots, which on most of these Wichuraianas, are several feet long when the plants are in flower, should be tied in early in the season. In their present state they are soft and very brittle at the base, and often snap off in high winds. This type of Rose can also be easily rooted from cuttings, but it is hardly worth while when such splendid value can be had for 1s. from any of the Rose growers, and they can be guaranteed on their own roots. In light, dry



HABERLEA RHODOPENSIS

(See page 113).

The heavy large heads of the Sunflowers get very knocked about in the wind, and should be securely tied to their stakes. The different methods of staking have been mentioned more than once in these pages, but the use of small, short pea stakes—dead twigs as stakes—answer the purpose very well, and give just the right amount of support to many straggly growing plants, which must be staked to show off their flowers. Geum Mrs. Bradshaw is a case in point, and here the short pea stake just give the flower stems sufficient support.

It is in August and September we appreciate the late flowering Roses, those of the Dorothy Perkins type, but why is it that Dorothy Perkins, Crimson Rambler and Lady Gay are the only popular ones from this group, when there are many more, just as cheap, just as free, just as vigorous and just as charming? What about Alberic Barbier, Excelsa, Hiawatha, Jean

soils occasional waterings with weak liquid manure will be beneficial, but it must only be applied after a thorough soaking of plain water or after rain.

Hedges may be clipped any time now, and it is easier for the clipper if it is done early, as then the shoots have not got tough and hard, and are easier to clip, and the work will take much less time. There is considerable art in clipping hedges, and it is one of the garden operations which looks far easier than it really is, but it gives a garden just that touch of neatness which it so often wants in August, when the flowering plants have been battered by wind and rain.

Summer pruning of fruit trees when properly done is of advantage to the trees, and makes eyes at the base of shoots fill, which would otherwise remain dormant and never become good buds. It is impossible to state what exactly should be done, as each tree must be pruned

according to its growth, but it is safe to say that all side shoots should be stopped, and only the leaders stopped when the tree has attained the desired height. By stopping is meant merely taking out the top of the shoot, not more than four inches at the most. Harder pruning at this time of year will only lead to trouble, and will force the buds into immediate growth, which is not wanted. Wall fruit trees, such as peaches, plums and cherries may have all young shoots tied in where ever space allows, and where more wood is wanted for the formation of the tree, but care must be taken when handling these shoots, as they are soft and break very easily. A good plan is to tie them in by degrees, tying a little tighter each time. The old canes of raspberries and loganberries can be cut out completely as soon as the crop has been gathered, so as to give plenty of room and air to the new shoots on which next year's crop will be.

It is unfortunate that in so many cases the local or common names of plants are absolutely misleading. At this time of year it is especially noticeable, as people will persist in calling the "Mock Orange" *Philadelphus coronarius* "Syringa," the beautiful free flowering shrub now in full flower, with large white flowers and a very strong heavy perfume, and these same people hold firmly to their point because they say they have always known it as such, or because they have always called it Syringa. It is very hard to convince them that Syringa is the correct name for all our beautiful lilacs, the common one being *Syringa vulgaris*. These two plants, *Philadelphus* and *Syringa*, do not even belong to the same natural order or "family." The former belongs to the order *Saxifragaceae*, in which family we find our common "London Pride." The latter belongs to *Oleaceae*, the same family as the common privet of our hedges, and the olive which is so much grown in Southern Europe. The two plants have no resemblance to each other, nor are they even in flower at the same time, so it is very hard to understand how the error arose.

Another plant is that known as "Jerusalem Sage," a small evergreen shrub with strong wrinkled leaves and circular heads of yellow-hooded flowers. It is a native of South Europe, not of Palestine, and has nothing whatever to do with Jerusalem. Possibly it has a little more right to its name than the other two plants mentioned, because it does belong to the same family as the sage, but why complicate matters by bringing in the name of a town in a country of which it is not a native?

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath, Ballywalter Park, Co. Down.

HERBACEOUS BORDERS.—Later sown annuals used in mixed borders to fill up the gaps caused by the removal of early-flowering plants, such as Lupins, Poppies, Delphiniums, &c., are making a lot of growth, and it is necessary to look over the borders at frequent intervals to see that they do not encroach on any plant of small, weak growth. These may be extremely valuable, and will be much injured, if not killed outright, by being allowed to become smothered by grossly-growing annuals. Where

the border has an edging of turf all plants must be kept clear of the grass. Constant attention is necessary during stormy weather to see that all stakes and ties are secure. Much damage may result from a single night's storm if this is neglected. Cut off all decaying flower-spikes and stems at frequent intervals, and if the ground is not sufficiently dry to hoe, weeding must be done by hand in order to keep the border clean and attractive.

VIOLAS.—Remove the seed-pods from *Viola* daily, and in order to assist the plants to flower freely all through the summer, feed the roots occasionally with some mild stimulant. Keep the growths pegged to the soil where they are required to furnish the ground. Cuttings inserted in cold frames in a sandy soil will form roots in two or three weeks. After that date remove the lights so that the plants may become hardened thoroughly before winter arrives.

PROPAGATING BEDDING PLANTS.—The work of propagating summer bedding plants should be proceeded with as circumstances permit. The stocks of *Heliotrope*, *Iresine*, *Lobelia* and *Coleus* may be increased from cuttings inserted now either in pans or pots, preferably the latter. Cuttings of *Heliotrope* inserted now should not be soft in texture, as they will not root so readily as those inserted in the spring. In gardens where only a few plants of *Heliotrope* are required the best plan is to retain some of the old plants for stock purposes, and place them in heat early in the year to produce shoots for cuttings. Such cuttings will furnish good plants for bedding-out if kept growing actively. *Coleus*, &c., may be propagated from cuttings inserted in pans filled with light sandy soil. A shallow-heated pit furnished with a hotbed of moderate warmth on which to place the cutting pans is an ideal place for rooting the cuttings. Artificial heat will only be necessary during wet or cold weather.

PENTSTEMON.—The *Pentstemon* are at their full flowering beauty this month. If it is desired to perpetuate any of the choicer seedlings as well as named varieties, the cuttings may be inserted forthwith. They do very well dibbled into beds of sandy soil in cold frames, or in cutting boxes or small pots. A simple method is to fill a number of small pots with suitable soil, plunge the pots as closely as possible in a cold frame, and insert a single cutting in each pot. On no account should the shoots be allowed to flag, either before or after they are inserted, and for that reason the frames must be kept close, the cuttings sprayed regularly and shaded from strong sunshine. The cuttings of the hardier bedding varieties should be inserted in beds, but they must be treated in all other respects similar to those in pots.

Any variety selected for seed production should be marked to prevent the spike being cut off when the flowers have fallen.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitzgerald, Carrigoran, Co. Clare.

DURING this month many and varied operations amongst large and small fruits call for attention; both if the ordinary routine of high cultivation has been closely followed up, or if, as frequently happens, owing to pressure of other matters, the work in fruit grounds has become more or less in arrears. Should the latter condition of affairs exist, a determined attempt should be

made this month to put everything "ship shape" before it is too late for the various subjects to derive the benefit following on attention to the routine needs of trees, bushes, &c. (even though somewhat deferred), such as the thorough clearing of strawberry beds of weeds and surplus runners, pruning out gross and overcrowded growths from currant and gooseberry bushes, especially to well clean out the centres of these bushes to allow of sun and air having the free access so necessary to proper ripening of wood, with subsequent maturity of buds for another year's crop of fruit. Cut away old fruiting canes from raspberries, and where suckers are growing abundantly, thin these out freely, only leaving a sufficiency for carrying next year's crop, or any canes needed for making new plantations or making up vacancies or weak spots in old beds. It will be sufficient to leave five or six canes to each stool; this will allow for accidental breakages or mishaps of any kind. These canes should be loosely secured to wires or stakes to prevent them being broken out by high winds. Frequently there is not sufficient importance attached to the foregoing operations, and with one inevitable result—i.e., small and inferior quality fruit is produced, and the true cause is at times improperly located.

Summer pruning should now be generally proceeded with, taking wall trees first, as the shoots on such trees are more nearly completing their annual growth than trees in the open; cut away the breastwood or side shoots at five or six leaves from the base of shoot, leaving unpruned such shoots as are needed for extending branches or forming new branches in centres of unfinished trees; the latter shoots must be neatly nailed or tied in to form a properly balanced and well trained tree. Large, old trees should be pruned from top downwards, and lower half of tree left unpruned for a couple of days before being finished, thereby avoiding too severe and sudden a check to flow of sap, with a corresponding check to root action. At this pruning, over elongated or too dense spurs may be cut out or thinned on any trees that are not carrying fruits; overcrowding is much more readily detected now than at winter pruning; or these afore-named spurs may be dealt with after fruit is gathered, and while foliage is still on them. After wall trees, Espaliers, or trees trained on wires, take trees in the open of whatever shape they may be grown in, especially young and extending trees, pruning the shoots on these similar to wall trees; large old trees may be left for winter pruning unless they are producing great quantities of young growths; any such trees should be pruned, even if only to the extent of giving liberty for light and sun to colour up fruit and facilitate the ripening of fruit buds. Peaches, especially, need careful training and tying from commencement of growth of young shoots to ensure the complete ripening of wood so essential in producing plump, well-matured buds for next year's crop; avoid overcrowding of shoots, and do not let the trees suffer for want of abundant moisture at roots. Red spider is frequently very troublesome on peach trees after periods such as we have experienced this year, and if left unchecked quickly makes havoc amongst foliage with very undesirable result, though it is a pest not difficult of eradication; if undue dryness at roots has tended to induce an attack, make sure that the roots are properly moistened either through rainfall or artificial waterings of either clear or manure water,

afterwards giving a liberal mulch of rich manure, and drench the foliage with syringings of clear rain water, or with the addition of enough soot water to discolour the syringing water; continue the syringings in the evening after sun is off the trees until the spider is cleared. Do not add the soot water if fruits are approaching ripeness; the clear water may be used until the fruit is fully swelled if absolutely required to keep down the spider.

Where woolly aphid is troublesome on apple trees (this seems to have been quite an agreeable season, as it has flourished amazingly), this pest needs to be frequently attacked, if it is to be eradicated completely or kept from overrunning the trees. On small trees it can be destroyed by brushing over with methylated spirits, the spirits to be applied with a small paint brush, and to ensure the destruction of insects must be forcibly rubbed over the clusters of aphid; on large trees where this method is not applicable a remedy at all times readily to hand is paraffin oil, and this used at the rate of a wineglass of paraffin to one gallon of water, properly applied, quickly destroys this pest. Place in a bucket or tub as many gallons of water as may be needed, and measure in the oil; take a narrow strip of board and give the water a good churning round so that the oil is thoroughly mixed with the water; this can be applied with a garden syringe, &c., but however sprayed, the water must be kept continually stirred to prevent the oil collecting on top of water, otherwise the mixture would be harmful, and fail to destroy the aphid. Extra force should be used in applying, so that the woolly covering of aphid clusters may be displaced and allow of oil reaching the insects. That most troublesome fungoid, commonly styled "black spot," seems to be also very prevalent again amongst apples and pears; indeed I believe a dry season allows of more rapid spread of this pest, as in a wet or showery season many of the spores are washed off the foliage before they have time to establish themselves. It may be a useful reminder to here note that I am highly gratified with the result of spraying some large pear trees with Sulphate of Copper this season. Owing to the almost incessant wet and windy weather during the winter of 1913-14, these trees were not sprayed as it was intended, and during last summer a considerable proportion of the fruit was rendered valueless by "scab." Last February the trees were sprayed with Sulphate of Copper, 1 lb. of sulphate to 10 gallons of water, followed up in spring with Bordeaux mixture spraying (as advised in my Fruit Notes). The trees are now almost completely free of the fungus, and the fruit is thoroughly clean and pleasing to look at.

Do not delay looking up wasps' nests until you see the wasps devouring your fruit, but look up the nests and destroy them promptly. A ready means of destroying wasps' nests is in the use of Cyanide of Potassium. A small teaspoonful dropped just at mouth of entrance to nest in the dusk of evening is certain destruction to the nests. This poison must be carefully kept so that no accidents may arise from use of it (I find the crushed Cyanide most destructive).

Gas tar poured into the entrance or hole where the nest is located also readily destroys them. A quantity of the tar could be carried in an old watering can or similar vessel, and about a pint or more of the tar poured into hole just before dark.

Strawberry beds should be planted this month if at all possible. Assuming that the ground has been prepared as advised in "June Notes," so soon as the runners are well rooted choose a day when the earth is in such a condition of dryness that it will bear any amount of trampling without clogging or sticking to the feet, and trample the ground thoroughly to make firm and break down all lumps; after this rake the ground perfectly level and smooth (light land would be improved by rolling); trample the ground over a second time if there is any suspicion of the ground being spongy or soft; then draw very small drills across the plot both ways—*i.e.*, from east to west and south to north at 2½ feet apart each way for strong-growing varieties, or 2 feet apart for smaller growing varieties, planting the plants where lines cross, in this way readily ensuring the plants will be in even lines every way. Make the plants very firm when planting, leaving a slight depression round each plant to retain round the plant liberal allowances of water occasionally during a couple of weeks after planting in case very dry weather may prevail.

Even should land not be already in order, it may still be prepared without further delay, and planted in September; old beds after fruiting may also be dug up and, given reasonable time to pulverise and settle down, be planted in September. Strawberries, like many other crops, do not need to be put on fresh ground whenever new plantations are made; given fairly deep (deep by preference) moderately heavy land with good drainage, which suits strawberries best, they may be grown successfully on same ground for many years.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. Shanahan-Crawford, Esq., Lota Lodge, Glanmire, Cork.

DURING the present month many of the spring and early summer supplies must be sown. Next month will be too late for the North, although in the South many things succeed admirably sown then.

Every detail must be carefully carried out, and sowing before rain, if that can be gauged, will accelerate germination, whereas if the soil be very dry at seed-sowing the results will be disappointing.

CABBAGE.—The main spring supplies are now sown either in beds or lines in an open quarter; sow on first and third week of the month (medium rich soil suits them, and much depends on choosing proper varieties). Every seedsman has his own special sorts for autumn sowing. I recommend as non-bolters and excellent quality the varieties "April," "Flower of Spring," and "Ella's Early." If good selected stocks are procured very few will seed prematurely.

CAULIFLOWER.—The best and earliest cauliflowers are cut from plants sown now, say the last week of the month in the South and a week earlier in the North. A south border is a suitable place, and the plants may be pricked out in an open cold frame where protection can be given in wet or frosty weather.

CELERY.—Early plants may now be earthed-up gradually, taking great care to prevent earth entering the hearts of the plants. Encourage the growth of all celery by watering if the weather is dry, and never earth-up unless satisfied that there is plenty moisture at the roots.

CARROT.—See last month's notes.

BROCCOLI.—Brussels sprouts and other winter

greens, if not already planted in their quarters, let it be done at once; attend to earthing-up earlier plantings, and prevent caterpillars spreading over the crops; if chubbing is prevalent, dig out affected plants and burn root and stem.

ENDIVE.—Sow the last batch early, and plant out the first sowings on a well-drained border.

LETTUCE.—Sow for winter use. All-the-Year-Round, Black-seeded Bath and Winter White are good varieties for present sowing. Thin sowings on firm soil are most likely to stand the winter well. Remove bolted lettuce; poultry will readily eat up such stuff.

POTATOES.—Most of the early crop will now be lifted, and the ground may be prepared for spinach, turnips or cabbage. Unorthodox as it may seem to recommend planting potatoes at this season, the fact remains that it is not only possible to harvest another crop in early winter, but it is profitable as well. Old potatoes planted now will start active growth and reproduce thin rind by winter. The pressure of war should make every cultivator tax to the utmost his economic resources, and this is one.

SPINACH.—Sow once or twice more the prickly winter variety. Spinach beet also does well from a present sowing.

TURNIP.—Sow good breadths of such varieties as Orange Jelly, Chirk Castle, Black Stone, Snowball or Jersey Navet. They will prove useful, if small, next spring. Keep the hoe busy on growing batches.

TOMATOES.—See last month's notes.

SHALLOTS and potato onions now ripe should be lifted and hung up to dry thoroughly before storing.

ONIONS.—If ripe, lay all thick necks a week or so prior to lifting, and hang or lay out on a hot border to ripen, and dry thoroughly. In our moist climate here we invariably have to resort to drying under a glass coping or frame lights, then hanging in bunches in a peach case. Thorough drying adds greatly to their keeping qualities. In many districts autumn sowing will need to be undertaken now; let that be made in two sowings, one about the middle and another at the end of the month. Here we find the best results from a September sowing, as a big percentage of the August sown plants run to seed. I recommend for present sowing Ailsa Craig, Stirling Exhibition, and Lord Keeper, as well as the Tripoli varieties, generally looked on as the only sort for autumn sowing. The former varieties will be found to stand the winter quite as well as the Tripolis, and give more valuable keeping qualities. Although not a keen advocate of intercropping as a medium by which first-class results can be obtained, I would urge growers to sow autumn onions between newly-planted lines of strawberries. Merchants found it almost impossible to procure so-called Spanish onions this year, and the likelihood is that the difficulty will be greater next year. If for that reason only one should adopt, for the time being, that system. We have picked a grand crop of strawberries from a square on which the heaviest crop of onions I have seen here is growing between the rows of strawberries. Naturally the soil is somewhat impoverished by such a method, but the loss is easily made good to the strawberries by generous mulching in autumn when the onions are removed, and the plants run their three years' course apparently none the worse for sharing quarters in their early career.

HERBS.—Cut and save by drying any of the herbs desired for winter use.

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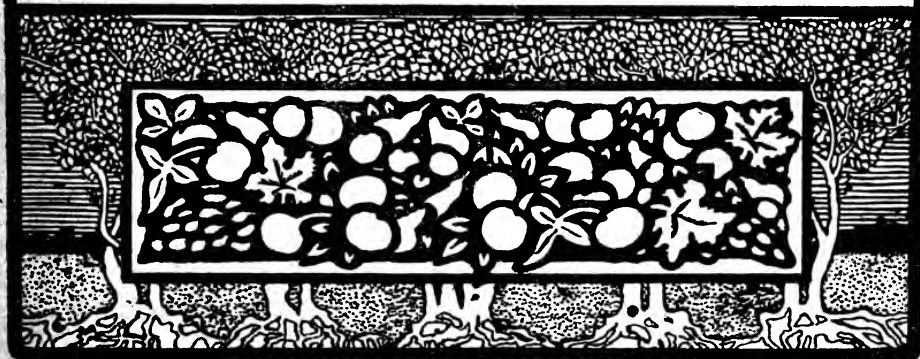
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Irish Gardening

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1915

ARBORICULTURE IN IRELAND

EDITOR—C. F. BALL

Daffodil Notes.

By G. L. WILSON, Co. Antrim.

By the time that these notes are in print the planting of Daffodils will be in full swing, and in the best interests of the bulbs ought not to be delayed on any account. Those of us who are devotees of the flower know that September 30th is the very latest date that any self-respecting Daffodil bulb should be out of bed, indeed we feel much happier if we can manage to get our children safely tucked away before August 30th. There is no doubt whatever that Daffodil bulbs, unlike some others, deteriorate considerably if kept out of the ground later than September. If, therefore, you have not already planted your Daffodils you should make arrangements for doing so as soon as ever you can, and now that you are thinking of your Daffodils why not add a few new ones to your collection? You have an unparalleled opportunity of doing so this season, for, as the catalogue of a very eminent firm which is before me as I write puts it, "the whole trade realises that in order to dispose of bulbs freely, the prices must this year be low," so look out for bargains, and at the same time help to support a very useful and healthy industry.

Having decided to have a few new Daffodils, the next question is what to buy. The varieties of modern Daffodils are practically innumerable, and, therefore, somewhat bewildering to most people, and it is sometimes the case that a variety that "takes one's eye" at a show may not be a satisfactory grower or a good garden plant. I should therefore mention some which, from my own experience, I have found to be possessed of outstanding merits.

Taking Trumpets to begin with, need I mention Madame de Graaff? Surely everyone who grows any Daffodils knows her, and grows her. No more lovely Daffodil exists, the flower is exquisite in form, and dainty and refined in colouring; it is classed as a white Trumpet, the perianth being quite white, and the trumpet only very faintly tinted with cool primrose, which becomes practically white as the flower

ages. You may have tried and failed to grow some of the old white Trumpets such as Cernuus and Mrs. Thompson, as they are extremely difficult to keep in health except in some spots where soil and situation are particularly suited to them, but you need not fear to try Madame, as she thrives as easily as Emperor; moreover, she makes an exquisite pot plant if grown slowly, coming much whiter indoors, and you can buy her this year for about 3s. per dozen.

Weardale Perfection is now fairly well known. It is a massive flower of noble proportions; in colour it is what is known as a "pale bicolor," the perianth is ivory white and the trumpet soft pale primrose. When first open the whole flower is very faintly suffused with a most distinct warm buff tone throughout. It is well worth growing a small stock from which one can lift three or four good bulbs for a pot each year, for if grown slowly in a cool greenhouse and brought into flower about the end of March, Weardale is a really magnificent thing, and grown thus generally quite excels its outdoor performance. The price is now about 20s. per dozen.

Although King Alfred is not always easy to grow, I should strongly advise everyone who cares for Daffodils at any rate to try him, for not only is he head and shoulder above all other yellow Trumpets in stature, but also in beauty. He is indeed a peerless flower of truly regal splendour, growing two feet high; he carries on a superb stem a noble and perfectly proportioned flower of marvellously pure and sparkling gold, having an ample and gracefully set perianth and magnificently serrated crown; the bloom also has exceptional substance and most beautiful texture, so that it lasts an extraordinarily long time either cut or on the plant. Indeed, I have not yet seen anything even among the finest and newest Trumpets that really excels King Alfred for sheer beauty. Having been bred from maximus, his constitution is somewhat uncertain, and there are places in the Midlands and north of England where he cannot live, but I fancy he could be persuaded to grow quite well anywhere in Ireland. I say that because I have succeeded in getting him to settle down quite happily with me, and my garden is in the

centre of County Antrim, in what I believe to be climatically about the most ungenial spot in all Ireland. My experience of his majesty is briefly as follows: The first bulb I had of him kept healthy and flowered well for the first two seasons, and then got sick, although it still lived and increased, but several seasons the flowers and growth were unsatisfactory and very poor, then the bulbs began to pick up again, and gradually became quite healthy, and all my stock I am happy to say is now thriving and increasing, and giving a wealth of glorious flowers each spring. Now, the moral of this story is, do not be disheartened if some precious new bulb goes sick with you. Keep it on, lift it and replant it, and nurse it a bit till it gets accustomed to your garden and acclimatised, and ten chances to one it will do quite well in the end. I have proved this from experience of several different cases. To return to King Alfred, he will grow more easily and better in most parts of Ireland than here, so I think you may safely try a few bulbs. I fancy he likes rather deeper planting than most others, and probably prefers a lightish soil. When he does thrive he grows with enormous vigour, increasing rapidly. The finest King Alfred I have ever seen growing were in the grounds of the Donard Nursery Co. at Newcastle, Co. Down. A big stock is grown there, and I assure you the flowers were a sight for the gods, and I know their bulbs are simply magnificent, for I have had some; their Madame de Graaff bulbs also are extraordinarily fine. King Alfred can be had for about 20s. per dozen.

If you want a really white Trumpet Daffodil, try Mrs. Robert Sydenham, she is the best. A good grower, though not tall, a most refined and lovely flower with flat overlapping perianth and long smooth trumpet slightly rolled back at the brim. The perianth and trumpet are equally white throughout, and very much whiter than Madame de Graaff. I believe the Lissadell firm at Sligo hold a particularly fine stock. Price, 6s. each.

To go on to other sections, Lady Margaret Boscawen, the grand giant bicolor Incomparable, is becoming fairly well known, and is a splendid flower of great size, with very fine broad, overlapping, clear white perianth, generally flat and of good quality, with bold clear yellow crown: it is a very strong grower and fine garden plant. Price, about 1s. 9d. each. Of the orange and red-cupped varieties, Lucifer is one of the most satisfactory; it has a graceful creamy white perianth, and long cup of glowing brilliant orange which does not fade in the sunlight quite so readily as most others, and the flowers last a most surprising time when cut. Torch is a most decorative flower, having a large,

loose, spreading, floppy yellow perianth and long cup flushed with bright orange scarlet, and it is a plant of huge vigour. In the little Firebrand we have the deepest of all the red crowns, its little cup being almost crimson while the starry perianth is pale primrose; it is most effective in a bunch, and comes remarkably good in pots; in the garden it grows easily, and is rapid of increase.

Albatross is a grandly vigorous garden plant and great increaser. It is a beautiful flower of large size, with white perianth and shallow citron crown, brightly edged with orange, being a free bloomer and long-stemmed; it is very useful for cutting. Price, about 1s. 9d. per dozen.

For the Daffodil lover the refined and cool-toned flowers of the Leedsii section have a special charm, and no garden should be without a few of them. If you cannot grow many, make sure that you have that superlatively fine garden plant, White Lady. White Lady attained her majority last spring, as she flowered first with Mr. Engleheart, the raiser, just twenty-one years ago. She grows with simply incredible vigour, increasing with such rapidity that large mother bulbs will become clumps the second year, blooming profusely. She can be relied upon to grow anywhere, but I think gives the finest results in rather heavy or stiff soil; my own soil is inclined that way, and I get a wealth of magnificent blooms with 24-inch stems, and great strong bulbs at lifting time. The flower measures 4 inches across when well grown, with fine overlapping ivory perianth and shallow crinkled soft primrose crown. This variety is a very late bloomer, lasting, as a rule, here until well into May, and is, therefore, most useful for extending the season and for late cutting. For such a grand variety the price is now absurdly low at 2s. per dozen.

Very different in diameter is "Waterwitch," a drooping snowy white flower with a most pleasing perfume. It is very free flowering and of unique and exquisite gracefulness when cut and arranged in a vase on a high shelf. "Fairy Queen" is almost if not quite as pure a white as Waterwitch, but is different in character, having a much stiffer stem and pose, and more regular "florists'" type of flower; the foliage is a beautiful cool blue green; though so delicate and refined in appearance both of these are free growers and bloomers, and both are low-priced varieties.

Before leaving the Leedsii section I must speak of the Giant Leedsii, which are a race of most beautiful hybrids bred chiefly from the old Leedsii "Minnie Hume" crossed with pollen of Madame de Graaff and other large Trumpets. Their long stems, graceful outlines, and elegant

pose, combined with their cool and refined colours, place them in the front rank for decorative purposes. The perianths are always white, and the large bold cups, which are often beautifully filled, may be almost white or varying delightful tones of cool lemon or soft cream, with an occasional warm buff tinge: a great many of them become entirely white after being out and kept indoors a few days. They are very strong growers and good increasers, and many of the best varieties have flowers as large as Sir Watkin. Unfortunately, being of comparatively recent introduction, the stocks are not yet very large, consequently they are still rather expensive. However, White Queen, which was about the first to appear at £25 per bulb, by the way, can now be had for 1s. 9d. each, but its stem is rather short. Messrs. Barr & Sons, of Covent Garden, offer an excellent variety called Mermaid, which they say is a tall plant, and a great improvement on White Queen, and, as far as I can remember, is moderate in price. I have not myself grown either of these varieties. Many of the best Giant Leedsis have been raised and introduced by Messrs. J. R. Pearson & Sons, of the Nurseries, Lowdham, near Nottingham, whose beautiful catalogue will well repay looking into. They make a very cheap offer of unnamed selected Giant Leedsis seedlings. I have grown some of these, and can only say with regard to them that for comparatively a small outlay I got hold of some charming plants of this beautiful race of hybrids.

The number of Pœticus varieties is now quite bewildering, and a crop of new ones appears annually; their differences are so slight that they can only be appreciated by those who make Daffodils a special study. Of course they are all great advances on the old Omatus and Pœtarum, so it is well to have at any rate one of these modern ones, and I should certainly say let that one be Horace, which is a really great flower in all respects. It is a faultlessly made bloom of fine size, with brilliant sparkling snow-white perianth composed of even and overlapping segments, and an eye of most beautiful rich red throughout. To get that lovely eye in perfection you must cut it when just opening, otherwise the sun speedily burns it: the same advice applies to all "poet" varieties with red in the cup. It has a splendid stem 22 inches tall, and grows with the utmost vigour and rapid increase. Some full-sized bulbs I planted had become clumps the second year, bearing as many as ten to thirteen flowers.

Of doubles, Argent is a charming loosely-built flower of much value for decorative purposes, while its stem is strong enough to keep it upright when other doubles have gone down

before wind and rain. Primrose Phoenix I think the most beautiful of the double Incomparabilis varieties, with its delightfully soft, rich primrose self-colour. It comes most amazingly fine indoors if grown very slowly and not forced. Its immense heads rivaling the finest double Begonias; of course they need careful supporting.

The foregoing are all comparatively moderate-priced varieties, most of which ought to be in everyone's garden; and now for the benefit of enthusiasts and exhibitors I should like to add a short list of some still newer and more expensive ones, which are of superlative merit, and will take a prominent place among the standard varieties of the future. Among the newest Trumpets, Vestal Virgin is a flower and plant of quite outstanding excellence; it is quite the best of the very pale bicolors, and is a large and perfectly proportioned flower, the pure white segments being very broad and of fine substance, remaining even and flat till the flower is dead, while the trumpet is somewhat of the Madame de Graaff type, more or less rolled at the brim, and in colour only very slightly deeper than Madame de Graaff. The plant grows nearly as tall and quite as strong as Emperor, and when cut young and developed indoors the flowers are practically quite white. When this variety becomes plentiful it will be immensely popular, and will take the place of Madame de Graaff, upon which it is a great advance. Considering its merits it is really exceptionally good value at the comparatively low figure for novelties of 42s. each. Messrs. J. R. Pearson & Sons of Nottingham hold the stock.

Herod is a new bicolor Trumpet which appeals strongly to me; it is best described as a much glorified Empress, having the majestic carriage of that grand old variety. It is a flower of great substance, having broad-pointed, creamy white segments standing flat and at right angles to the boldly-flanged bright golden trumpet; it is a late bloomer. Price, about 10s. each, from Messrs. Barr & Sons. A magnificent late yellow Trumpet is Cleopatra, essentially a show flower with most imposing perianth of great size and wonderfully overlapping; about 12s. 6d. each, to be had from most dealers.

Buttercup is a very beautiful and most distinct hybrid between Emperor and Olorus Rugulosus; it has much of the character of the latter, with its pure deep golden colour and rich perfume, but in size it nearly equals Emperor; perhaps I might best describe it as a much glorified and giant Jonquil! It is a fine tall plant, exceedingly strong, and increases very fast. This, beyond all doubt, is one of the varieties of the future, and a bulb at 35s. should be a good investment. It can be had from Mr.

A. M. Wilson, of Shovell, Bridgewater. From the same source can be got "The Fawn," which, in the opinion of some, is the finest giant Leedsii on the market, and an eminent grower once said to me that he considered it one of the best six Daffodils ever raised. It is a very tall plant with white flowers of waxy texture and immense substance. The petals are pointed and overlapping, and the bold crown straight, long, and much frilled; its proportions and pose are very graceful, while the length of its stem renders it most imposing as a cut flower. Other magnificent giant Leedsis, such as the Hon. Mrs. Franklin and Lowdham Beauty, can be found in Messrs. Pearson's list.

Bernardino is another flower of superlative excellence. Classed as an incomparabilis, to my mind it more nearly approaches giant Leedsii in style and form. The flower is large and very graceful, with creamy-white perianth and large frilled cup most beautifully flushed with clear glowing apricot orange. The plant has quite

exceptional vigour and strength of constitution, so that a bulb at 15s. or less is really cheap when you consider how quickly it multiplies.

I shall close my list with Marshlight, an incomparabilis of such striking character that it is bound to take a prominent place in the future. It has a white perianth and a cup of astonishingly vivid and brilliant orange scarlet throughout; it is a good plant with a tall stem, and will in time supersede Lucifer. A bunch of it is amazingly effective, and its brilliant colour makes it very telling on the exhibition stand. Price, 63s. each, from Mr. A. M. Wilson.

Now, make out your order and send it off at once, remembering that "he who makes a flower grow gets some good for himself, and he also gives good to every passer-by who sees its beauty."

Hoheria populnea var. Lanceolata.

This plant, which is figured herewith, is little known in gardens, but it will probably become more popular when better known, at least in those parts of Ireland suited to the cultivation of the tenderer shrubs. It has been in cultivation in the Royal Botanic Gardens at Glasnevin for some years, having been received as cuttings from Fota, where it was grown as *Plagianthus* sp.

During August a plant on a wall produced numerous flowers, and was identified as a variety of *Hoheria populnea*, a species which has long been known in Ireland. As the illustration shows, the variety differs considerably from the type in the longer, narrower leaves and in the much longer pedicels or flower stalks. At Glasnevin the type plant rarely flowers outside, so that the variety may, perhaps, prove a better plant in that respect.

J. W. B.



HOHERIA POPULNEA var. LANCEOLATA.

Rubus odoratus.

This is a shrub which should not be lost sight of by those who value late flowering subjects in the shrubbery or woodland. Commencing to flower early in August, it continues on into September, and is one of the showiest of the family, which is a large one, containing many very uninteresting species. *R. odoratus* is a strong grower, and to do well should be provided with good rich soil, and is admirably adapted for planting in half-shady places by the side of a woodland walk or similar position. The flowers are large and of a rose purple colour; the leaves, too, are large and handsome, and form a fine setting for the flowers. The plant hails from North America, and benefits by lifting and dividing at intervals of a few years as the growths show signs of exhaustion. B.

Ænotheras for the Rock Garden.

THE value of the dwarfier-trailing (Ænotheras lies in the fact that most of them bloom from mid-summer right into late autumn ; in fact some of the more spreading species are at their best then, since having made a great deal of spreading growth they of necessity carry many flowers.

The genus is a large one, containing many beautiful species, a large number of which come from North America, and a few from Chili and Mexico.

The common and beautiful name of "Evening Primrose" has been applied to the (Ænotheras generally, doubtless owing to the fact that several of the species open their flowers in the evening only, remaining closed throughout the day. This is no drawback to the enjoyment to be derived from these lovely flowers, since most people who possess a garden, or who have access to one love to linger in it during the evening twilight, and surely nothing could be more charming or enjoyable than to meet the large luminous blossoms of an "Evening Primrose" peering up from the edge of a border or dangling over a rock in the rock garden.

Most of the species may be considered hardy, and if some are occasionally lost, the reason is usually to be found in unsuitable soil. Heavy retentive soil is fatal, and few will survive the winter in such a medium. Porous sandy soil through which the roots and running stems can ramble freely will be found most satisfactory, and rarely fails to preserve the plants through the winter.

Ænothera acaulis, a Chilian species, is one of the best known, and is a handsome plant when given an open position with plenty of room to develop. It has also been called Æ. taraxacifolia, from the resemblance of the leaves to those of a Dandelion. The flowers are large and white,

opening during the day as well as being open in the evening.

Æ. brachycarpa comes from Mexico, and makes a pretty rockery subject, more tufted in habit than Æ. acaulis ; it bears narrower leaves and yellow flowers.

Æ. cæspitosa is one of the gems of the genus, bearing enormous white flowers fading to pink and opening beautifully in the evening. The long lance-shaped leaves are deeply toothed and rather hairy ; this species requires very sandy soil, and spreads freely by underground stems. A native of North-west America, and often called Æ. marginata.

Æ. missouriensis is another North American species of great value, and a really good plant, opening its flowers during the day as well as in the evening. The flowers are large and yellow, and the leaves are rather silky, due to the presence of whitish hairs. The prostrate stems are reddish, adding considerably to the beauty of the whole plant.

Æ. ovata is a pretty dwarf Californian species, bearing yellow flowers on very short stems surrounded by dark green leaves.

Æ. pumila is a pretty plant from North America also, growing about 6 to 9 inches high, branching considerably and pro-

ducing much smaller leaves than any of the foregoing, surmounted by bright yellow flowers.

Æ. serrulata is also a low growing branching species, bearing small narrow-toothed leaves and yellow flowers.

Æ. fruticosa and its varieties are among the best of dwarf border plants, and may be used with good effect on large rock gardens, while Æ. speciosa, which grows about 2 feet high, is a magnificent species for a sunny position in light soil, where the large pure white flowers are very effective ; the variety rosea is equally charming.



HOBERIA POPULNEA.

Dwarf Bedding Roses

By J. WATSON, Clontarf.

IN recent years so many really good varieties have been introduced for bedding, especially of the Dwarf Polyantha type, their is no doubt that when their grand qualities as bedding plants become better known we shall see them more generally used instead of the Geranium and Begonia, of which so many are tired. All the shades of colour found in the other Rose sections are not yet at our command, but for bedding definite colours are the most effective, and these we possess now in the Dwarf Polyanthus. A bed of Jessie or Orleans, Rodhatte, Erna Teschendorff, Mrs. W. H. Cutbush, Maman Turbat, or Phyllis, will be as brilliant from the end of June till well on in November as any arrangement of Geraniums or Begonias could be, and with half the trouble. No more lifting and storing of bedding plants over the winter, or spending valuable time "bedding out" when everything in the garden is calling for attention. The up-to-date gardener beds with Roses in November, and there the plants remain for years.

China or Monthly Roses are beautiful bedders, but in these there has been little or no advance since the introduction of the two lovely varieties, Laurette Messimy and Madame Eugene Resal; these with their salmon-copper and pink shadings make beautiful masses, and are well known. Leuchtfleur is, however, a China of recent introduction which cannot be overlooked. Unlike most Chinas its flowers are fully double, in shape resembling one of the expanded flowers of the Hybrid Tea General McArthur, but the colour is dazzling blood-red, very telling when lit up by the sun, and highly fragrant.

Coming to the dwarf Polyanthus, one is now confronted with a long list and a surprising range of colour. Not many years ago the variety Madame Norbert Levavasseur (miscalled Dwarf Crimson Rambler) was hailed with great joy, but now that we have several real crimson sorts without a suspicion of the magenta found in that variety, one realises forcibly the great advance made in a comparatively short time. Only six years ago Jessie showed its brilliant flowers at the Royal Horticultural Society's show in London; it is now grown by everyone who has discovered the value of dwarf Polyantha Roses. There are four reds, which may be planted wherever Roses can be grown, and which will please the most fastidious. They are Erna Teschendorff, of a full deep crimson

with no suggestion of blue; Jessie, bright cherry-red and marvellously free-flowering; Merveille des Rouges, with larger rich crimson flowers than either of the preceding, and perhaps the dwarfest of all. Rodhatte (Red Riding-hood) is the fourth, and deserves special notice, as it may be the forerunner of quite a new class a very pleasing prospect. We have counted up to three dozen flowers on one truss even on one-year-old plants; each flower stands boldly erect, and, with many trusses on each plant, the effect is most striking, especially as the flowers are quite different from all other varieties, with much larger petals of a shell shape. The colour is bright cherry-carmine, the foliage suggests a Hybrid Tea Rose, and the flowers are produced as freely and persistently as any other dwarf Polyantha, the plant being particularly neat.

In pink shades there is now an embarrassing number of good sorts to select from. Orleans comes easily first, this variety having in full measure all the attributes of a bedding Rose combined with charm of colour. It is described in catalogues as Geranium-red, which suggests a pleasing colour, but a suspicion of orange has the effect of livening it up, giving the flowers that special appeal which we find here and there in flower colours. Newer than Orleans is Ellen Poulsen. She has larger flowers, produced in fine big clusters, of a captivating shade of salmon-pink. This is a good doer, and being of a desirable colour, quite distinct from all others, will be very useful. Then we have Mrs. W. H. Cutbush, "rosy-pink, a grand grower, giving an abundance of flowers. Phyllis, a brighter pink, with small flowers; Mrs. Taft, a deeper shade than either of the foregoing; also Maman Turbat, shell pink, and the older Annchen Muller, which at its best is hard to beat, but is very subject to mildew, a trouble from which most of the newer kinds are free.

In the yellow and bronzy shades one is met with the difficulty that although there are many pretty sorts, none of them is as satisfactory in growth as one could wish. They do not continue to send up new growths from the base in extremes of weather, and as this is essential to keep up a succession of flower, they cannot be relied upon to the same extent as the other colours. Eugenie Lamesch and Leonie Lamesch are delightful colours, especially the latter, which is a fair doer. The dainty little Perle d'Or, with its miniature Hybrid Tea flowers, causes one to wish it grew better. Petit Constant, reddish-orange and variable, is very effective in a place where it is happy.

Of white varieties there are several, and with most of them there is no difficulty in obtaining

good growth and plenty of flowers, but up to the present we have no white which does not hold on to its decayed flowers. Yvonne Rabier, first shown at the International Show in 1912, is of the purest white, a good grower, with shining leaves of a pretty green. Marie Pavie is also good, but has a bluish centre. The old White Pet makes a grand show at its best, but is not continuous in flowering. This is a pity, as the flowers possess that delightful old world Rose perfume found in none of the new Roses of any section.

section of the Rose family, and it is fitting to acknowledge the debt our gardens owe to these men at present allied with us in the struggle for the freedom of Europe.

Dierama pulcherrima.

THIS beautiful native of the Cape of Good Hope is more frequently known as *Sparaxis*, but according to botanists the correct name is *Dierama*.



[Photo by]

(*ENOThERA MISSOURIENSIS.*
(See p. 133.)

[R. A. Malby.

As well as being strikingly effective when massed in beds of one colour, the dwarf Polyanthas Roses may be used with charming results when planted as a groundwork under tall weeping standards of *Wichuraiana* Roses. Several of the best *Wichuraianas* possess a counterpart in colour in the Dwarf Polyanthas; for example, Orleans is beautiful under a standard Dorothy Perkins, and Jessie or Erna Teschendorff under Excelsa. Pleasing contrasts between standards and dwarfs may also be effected by the use of distinct colours.

From the horticulturists of France come most of the improved varieties of the Dwarf Polyantha

Ireland seems particularly well suited to the growth of *D. pulcherrimum*, and numerous fine clumps are to be seen from time to time. A moist rich soil and exposure to sun and air seems all that is necessary for success. The plant belongs to the Iris family, and is easily increased from seeds, which are freely produced and germinate readily, making flowering plants in from two to three years. The leaves are long and narrow, tapering to a fine point, and the arching racemes produced above the foliage are extremely graceful and effective. The colours vary from reddish purple to rose and white, and look well either mixed or separately.

Tuberous-rooted Anemones.

THERE are few more beautiful plants than the various species and varieties of *Anemone*, and at least one or other of them will be found in flower from early spring till late Autumn.

The tuberous-rooted species are especially valuable in early spring, and may be planted during the autumn, the earlier the better. The so-called tubers of some kinds at least are really thickened underground stems, which grow and branch freely in moist porous soil in which leaf mould largely predominates; an example of such may be seen in the common Wood Anemone and its many beautiful varieties.

Very lovely effects may be obtained by planting the early flowering kinds in clumps and masses in half-shady places about the rock garden and grounds. An excellent plan where hardy ferns are grown is to plant freely the *Anemones* between them. They will flower early before the ferns are growing, making a beautiful display, and later when the *Anemone* leaves are dying off they will be hidden by the spreading fronds of the ferns. For this purpose the Wood *Anemone* and its varieties are eminently suitable, also the Appennina Windflower, *A. appennina*, and the Greek *Anemone* *A. blanda*. These, when naturalised in generous masses are capable of an indescribably beautiful effect, and never fail to charm.

The typical form of *A. appennina* is blue, and it is probably the best. There is, however, a white variety worthy of cultivation, and a somewhat rose-coloured one for those who like variety.

The Greek *Anemone*, *A. blanda*, is a trifle earlier than the former, and is by some botanists thought to be only a form of *A. appennina*. It is, however, for garden purposes distinct, and the two species may well be grown where a long succession of flower is desired. Some of the varieties of *A. blanda* are rather good, particularly *A. b. scythinica*, a form found in Kurdistan, which has white flowers, pale blue on the outside. There is also of this species a rose variety, a white and a double blue form.

Of the common Wood *Anemone*, *A. nemorosa*, there is quite a number of varieties of great beauty. The typical form usually found in the woods has white flowers, or occasionally flushed pink or rose. The type itself is well worth introducing to woods where it does not occur naturally, but for garden purposes it is superseded by the varieties. All are adapted for growing in half-shady places in the rock garden, among ferns, or by woodland walks and similar places.

One of the most charming varieties is *A. nemorosa* "Blue Bonnet," which has large fine blue flowers appearing later than the type. *A. n. Levingei*, said to be found in the west of

Ireland, has flowers of a pink shade, and is one of the loveliest flowers of spring. *A. n. cœrulea* has light blue blossoms, and the variety *purpurea* is deep blue or purple. *A. n. robinsoniana* never fails to charm everyone with its myriad flowers of pale blue, while *cornubiense* is similar but reddish in the bud stage; *rosa* is a good form, improving as the flowers expand, and giving a good bit of colour, while the inevitable double variety finds its own admirers. There are others, but the above represent the chief varieties in commerce.

A. palmata is another tuberous-rooted species from the Mediterranean region, and one that rejoices in more sun than the above-mentioned kinds. It is a true rock plant, bearing shining green leaves which do not rise much above the soil, and lovely golden-yellow flowers produced usually singly on the scape or flower stalk. There is a white variety quite worth cultivating. A good deep moist, but well drained, soil is necessary.

A. ranunculoides, often called Wood Ginger, is a bright little plant, admirably adapted for naturalising. It bears pretty much cut leaves and bright yellow flowers produced in great profusion. There is a pale variety known as *A. r. pallida*, and a larger flowered form is also in cultivation, and is desirable when it can be obtained.

A. coronaria, the Poppy *Anemone*, is the type of the renowned St. Bridgid *Anemone*, and is variable in colour, as its progeny show. Few plants are capable of more brilliant effects or more useful in the garden. By planting successional batches of tubers flowers may be had over a long period, and as they are splendidly adapted for cutting, few more useful plants can be grown. Rich moist soil is essential, and a mulch of well decayed manure is beneficial during a dry spell. One of the most brilliant flowers to be found in gardens is the single flowered variety, *A. c. Syriaica*, which is dazzling scarlet-velvet in colour.

A. hortensis is another popular species of S. European origin, and a good garden plant. The variety *fulgens*, known as the Pau *Anemone*, is a great favourite either for planting in beds or on the rockery. The flowers are brilliant scarlet in colour, producing a fine effect quite early in spring; *fulgens grandiflora* is claimed as an improvement, while *A. hortensis græca* has the same intense scarlet-velvet flowers seen in *A. coronaria Syriaica*.

Practically all of these *Anemones* can be purchased in early autumn at quite cheap rates, and should be planted freely where fine displays are wanted at little cost. Many of them can also be obtained in pots in spring at slightly higher rates, and will then soon come into flower.

WINDFLOWER.

The Arboretum.

Up to the end of June trees and shrubs here looked anything but happy, for in spite of bright sun, the drought, combined with a good deal of cold wind, rendered conditions anything but favourable for growth. The copious rains of July and early August, however, though too heavy and continuous for many herbaceous plants, "bedding" plants, &c., have had a most remarkably beneficial effect on trees and shrubs. Since the advent of the rains all classes of coniferous trees have made wonderful growth, and the leaders forming this year bid fair to excel anything produced for some years back. Many of the rarer pines, for instance, are now doing extremely well, and rarely has better growth been seen on such species as *P. monticola*, *P. sabiniana*, *P. Hartwegii*, and many others.

The same is true of the *Piceas* and *Abies*, *Tsugas*, *Cupressus*, *Junipers*, &c. Should a fine sunny autumn ensue, Conifers during the coming winter should be a source of much enjoyment.

Hardwood or deciduous trees are enjoying equal prosperity, and the growth on such normally quick-growing subjects as poplars is, in some cases, quite phenomenal. Some of the new Chinese poplars planted recently are making enormous growth and developing huge handsome leaves unlike any species hitherto in cultivation. This is true too of some of the new maples from China. Several which have been planted for a couple of years are now getting away nicely, and have responded well to the abundant supply of moisture, and are developing a beauty of leaf-stem and branch such as was hoped for from the descriptions of original trees growing in China.

Practically the same remarks apply to all the other genera of trees as oaks, ash, elms, limes, alders, birch, &c., all have made wonderful progress during the last two months, and only require a fine autumn to ripen and solidify the growth thus made before severe weather sets in. Shrubs as well as trees have benefited immensely from the rain. Early-flowering kinds had the benefit of the sunny weather and flowered grandly, and now have made fine growth wherewith to repeat the performance next spring. Autumn flowers, such as the *Ceanothuses*, *Buddleias*, some of the *Escallonias*, *Caryopteris*, *Mastacanthus*, *Spiræas* of the autumn-flowering set

made excellent growth, and some are flowering well now in mid-August, while others promise to be good later.

Much useful work can be done among trees and shrubs in the early autumn months. Young trees, which it has been found necessary to stake, should be looked over to see that the ties are not cutting into the bark, as in this way many a good leader has been lost. Also side branches may be slightly cut in to assist the leader to do its best and get up rapidly, but this pruning must be done judiciously, otherwise if the side branches are reduced too much the leader is apt to run away and make length without thickness, and then fails to carry itself erect, necessitating further staking. A tree which has been properly pruned from infancy should not require staking at all.

Among shrubs too a deal of useful and necessary work can still be done. If any of the early flowerers were not thinned out after flowering this may still be done, thus allowing the new growths to get all the sun and air possible to ripen the wood for next year's flowering. The autumn-flowering kinds will, of course, be dealt with in winter and early spring, as they flower on the current season's growth.

In all collections of trees and shrubs there are always a few plants which do not seem to grow satisfactorily. If they have been planted several years it is a good plan to lightly fork up the soil round them and apply a thorough soaking of weak liquid manure. This, though its effects are not immediately apparent in autumn when growth is finishing, often causes the plants to grow away strongly the next spring, as the roots absorb the food material, and it is then stored away in the buds and branches as food to start the next season with. Young plants which have been planted only recently, however, should not have manure water, as the soil about them will still be fresh and rich enough, and if made richer would probably become sour.

During autumn, before the leaves fall, plantations and shrubberies may be examined, and any alterations required noted. Where trees or shrubs have become too close some plants may be marked for removal, and also where too many of one sort are growing a number of them may be got rid of, their places being taken by some of the newer kinds, of which there is now a large selection at quite reasonable prices. B., Dublin.



ANEMONE APPENINA.

Royal Horticultural Society of Ireland Autumn Show.

ON the 24th of August the Society held its Autumn Show under glorious weather conditions. In addition to the flower show there were this year numerous other attractions, the receipts over and above working expenses being divided between the funds for the Dublin Fusilier War Prisoners and that for sending fruit and vegetables to the fleet. The exhibits were not so numerous as usual, but of high quality.

The trade exhibits of Messrs. Hugh Dickson, Messrs. Alex. Dickson, Messrs. Watson of Clontarf, and Messrs. Hogg & Robertson contributed enormously to the general effect, and found many admirers.

Messrs. Jones, Kilkenny, and others were also present with their usual fine displays.

AWARDS.

Plants in Pots.—Stove or Greenhouse Plants, perennial, twelve, six flowering and six foliage, distinct kinds—1st, Ernest Bewley, Rathgar, Pelargoniums, Zonal, six, each different, in bloom, in pots not exceeding nine inches (prizes presented by W. H. Odium)—1st, Ernest Bewley, Rathgar; 2nd, Mrs. Soden, Sandymount, Pelargoniums, scented-leaved, six plants, in not less than four distinct varieties, in pots not exceeding eight inches (prizes presented by Lady O'Neill, Shane's Castle, Antrim)—1st, R. J. C. Maunsell, Celbridge; 2nd, Sir F. Shaw, Terenure, Ferns, British, six, in six distinct varieties, in pots not exceeding eight inches—1st, Canon Kingsmill Moore, Dundrum; 2nd, Rev. H. Davy, Kimmage Lodge; 3rd, J. Meade, Bray.

Cut Blooms.—Roses.—Roses, stand of twenty-four blooms, not more than three of any one variety. A challenge cup, value £10, presented by the late Lord Ardilaun, the cup to be won three times before becoming the property of the winner—1st, J. F. Crozier, Stillorgan; 2nd, J. H. Welch, Londonderry. Roses, stand of twelve blooms, not more than three of any one variety—1st, Dr. O'Donel Browne, Naas; 2nd, R. J. C. Maunsell, Celbridge. Roses, Hybrid Teas, stand of twelve blooms, at least six varieties, and not more than two of any variety—1st, F. A. Miller, Monkstown; 2nd, Dr. O'Donel Browne, Naas; 3rd, T. F. Crozier, Stillorgan. Roses, Teas and Noisettes, stand of twelve blooms, six varieties, not more than two of any variety—1st, T. F. Crozier, Stillorgan; 2nd, Dr. O'Donel Browne, Naas; 3rd, J. H. Welch, Londonderry. Roses, Ramblers, six vases, in six varieties, five sprays of one variety only to a vase, must be named—1st, Raymond Stephenson, Booterstown; 2nd, Mrs. Butler, Priestown. Roses, Ramblers, three vases, in three varieties, five sprays of one variety only to a vase, must be named—1st, Rev. H. Davy, Kimmage Lodge; 2nd, R. J. C. Maunsell, Celbridge; 3rd, Dr. O'Donel Browne, Naas. Roses, basket of, competition for lady amateurs only, arranged for effect; any foliage may be used, blooms need not be grown by exhibitor (prizes presented by Messrs. Thos. McKenzie & Sons, Ltd., Dublin)—1st, F. H. Groskerry, Sandycove; 2nd, Raymond Stephenson, Booterstown; 3rd, Mrs. Butler, Priestown. Roses, stand of seventy-two blooms—1st, Messrs. Hugh Dickson, Royal Nurseries, Belfast. Roses, new, stand of twelve blooms, one variety only, not exhibited prior to 1914—1st prize, Messrs. Hugh Dickson,

Royal Nurseries, Belfast. Roses, table of, 8 feet by 1 feet, arranged for effect—1st, Messrs. Hugh Dickson, Ltd., Royal Nurseries, Belfast; special recommendation for decorative effect.

Dahlia, Begonia, &c.—Dahlia, Cactus, stand of twenty-four blooms, not less than twelve varieties (a challenge cup value £5 and first prize, presented by Lord Ardilaun)—1st, Wm. Ross; 2nd, R. Hamilton Stubber; 3rd, Lord Carew. Dahlia, Cactus, stand of twelve blooms, not less than six varieties—1st, R. J. C. Maunsell; 2nd, R. J. Harris. Dahlia, Cactus, six vases, three blooms in each vase—1st, Wm. Ross; 2nd, R. Hamilton Stubber; 3rd, Sir Frederick Shaw. Dahlia, Pompon, six vases, six varieties, five blooms in each vase—1st, R. J. C. Maunsell; 2nd, J. Meade; 3rd, R. Hamilton Stubber. Dahlia, Peony, flowered, six vases, six varieties, three blooms in each vase—2nd, Rev. H. Davy. Begonia, double tuberous, stand of twenty-four separate blooms, not less than twelve varieties—1st, Lord Carew; 2nd, R. Hamilton Stubber; 3rd, T. F. Crozier. Begonia, double tuberous, stand of twelve separate blooms, not less than six varieties—1st, Mrs. L. Toner; 2nd, R. J. C. Maunsell; 3rd, Mrs. Butler. Antirrhinum, nine bunches, in nine vases, one colour only to each vase—1st, Toler Aylward, Shankill Castle; 2nd, C. Wisdom Hely, Rathgar; 3rd, Mrs. Butler, Priestown House. Asters, China, any varieties, twelve vases, three blooms of one variety only to a vase—1st, Mrs. Butler, Priestown House; 2nd, Major Kelly, Domybrook. Collection of hardy cut flowers (annuals and biennials, including Sweet Williams and Antirrhinum, excluded), to be shown in vases on a space not to exceed 16 feet by 1 feet (prizes presented by Lord Ardilaun)—1st, Mrs. Keith, Brennanstown House; 2nd, Raymond Stephenson, Booterstown; 3rd, Major Kelly, Domybrook; commended, Rev. J. Griffin, Ballinacloe. Hardy cut flowers, twelve vases, twelve distinct varieties (shrubs, biennials, and annuals excluded)—1st, His Honour, Judge Bird, Churchtown House; 2nd, Rev. H. Davy, Kimmage Lodge. Gladioli, stand of eighteen named varieties, not more than two of any one variety (a challenge cup, value ten guineas, presented by F. V. Westby, Esq., D.L.)—1st, Right Hon. Lord Carew, Wexford; 2nd, Marquis of Ormonde, Kilkenny Castle; 3rd, R. T. Harris, Killiney. Gladioli, stand of twelve named varieties, not more than two of any one variety (cornus to have been purchased from an Irish firm, and source of supply stated on entry form; prizes presented by Jones, F.R.H.S., Forest Lodge Nurseries, Gowran, Kilkenny)—2nd, Mrs. Butler, Priestown House. Annuals, twelve vases, in twelve distinct varieties (prizes presented by Messrs. W. Drummond & Sons, Ltd., Dublin)—2nd, Miss F. O'Neill, Malahide. Pelargoniums, single, Zonal, in single trusses, stand of twelve, not less than six varieties—1st, Ernest Bewley; 2nd, His Honour Judge Bird. Pelargoniums, double or semi-double, Zonal, in single trusses, stand of twelve, not less than six varieties—1st, Ernest Bewley; 2nd, His Honour Judge Bird; 3rd, F. V. Westby, D.L. Carnations or Picotees, twelve vases, at least six varieties, each vase to contain five blooms of one variety only (the "Watson" challenge cup, value £5, won out by the late Andrew Armstrong, J.P., and re-presented by him)—1st, R. T. Harris; 2nd, T. F. Crozier; 3rd, Lord Carew. Carnations or Picotees, border kinds (Malmaison and perpetual excluded), twelve vases, at least six varieties, each vase to contain

three blooms of one variety only—1st, F. V. Westby, D.L.; 2nd, Rev. J. Griffin; 3rd, R. Hamilton Stubber.

Sweet Peas.—Champion Class—Sweet Peas, collection of eighteen bunches in eighteen distinct varieties—1st, E. Cowdie, Loughgall, Co. Donegal. Cup Class—Sweet Peas, nine bunches in nine distinct varieties (a challenge cup, value five guineas, presented by Sir John G. Nutting, Bart.)—1st, E. Cowdie; 2nd, Miss F. O'Neill; 3rd, Sir Stanley Cochrane; 4th, Hon. Mrs. White. Sweet Peas, twelve bunches in twelve distinct varieties—2nd, R. H. Stubber. Sweet Peas, six bunches in six distinct varieties—1st, Thomas Scott; 2nd, His Honour Judge Bird, K.C.; 3rd, A. G. Bradley. Bicolor Sweet Peas, one bunch

one variety only—1st, Miss F. O'Neill. Blue Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Mrs. Butler. Blush Sweet Peas, one bunch, one variety only—1st, E. Cowdie; 2nd, Miss F. O'Neill. Cream, Buff and Ivory Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Miss O'Neill. Cream-pink, Pale, Sweet Peas, one bunch, one variety only—1st, Edward Cowdie. Cream-pink, deep, Sweet Peas, one bunch, one variety only—1st, Mrs. Butler; 2nd, Miss F. O'Neill; 3rd, J. G. O'Brien. Crimson Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Mrs. Butler. Fancy Sweet Peas, one bunch, one variety only—1st, Hon. Mrs. White; 2nd, Miss F. O'Neill. Lavender Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Mrs. Butler. Maroon Sweet Peas, one bunch, one variety only—1st, Edward Cowdie. Mauve Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Mrs. Butler. Orange-pink Sweet Peas, one bunch, one variety only—1st, Edward Cowdie. Orange-scarlet Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Thomas Scott. Picotee-edged (cream ground) Sweet Peas, one bunch, one variety only—1st, Miss F. O'Neill. Picotee-edged (white ground) Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Miss F. O'Neill. Pink Sweet Peas, one bunch, one variety only—1st, Edward Cowdie; 2nd, Mrs. Butler. Rose Sweet Peas, one bunch, one variety only—1st, Dr. O'Donel Browne. Salmon Shades Sweet Peas, one bunch, one variety only—1st, T. Scott. Striped and Flaked (chocolate on grey ground) Sweet Peas, one bunch, one variety only—1st, Mrs. Butler. White Sweet Peas, one bunch, one variety only—1st,

Edward Cowdie; 2nd, Dr. O'Donel Browne; highly commended and reserved, Mrs. Butler.

Fruit.—Fruit, collection of twelve dishes, twelve distinct varieties, not less than eight kinds, and not more than two varieties of a kind, black and white grapes to be considered distinct kinds, two bunches of either to constitute a dish—1st, Ernest Bewley; 2nd, The Right Hon. Lord Carew. Grapes, white, stand of two bunches—1st, Lord Carew; 2nd, Sir M. Nathan; 3rd, Ernest Bewley; highly commended, Marquis of Ormonde. Grapes, black, stand of two bunches—1st, F. V. Westby, D.L.; 2nd, Lady Rathdonnell; 3rd, The Right Hon. Lord Carew. Grapes, black, any other variety, stand of two bunches, named—1st, F. V. Westby; 2nd,



DIERAMA PULCHERRIMA
In the Gardens at Harristown House.
(See p. 135.)

Sir S. Cochrane; 3rd, Lord Carew. Peaches, dish of six, named—1st, Ernest Bewley; 3rd, Lady Talbot de Malahide. Nectarines, dish of six, named—1st, E. Bewley; 2nd, Earl of Meath; 3rd, Colonel Claude Cane. Melon, green or white fleshed—1st, Miss Field; 2nd, C. Wisdom Hely; 3rd, Earl of Meath. Melon, scarlet fleshed—1st, R. Harris; 2nd, Major Kelly; 3rd, Sir Stanley Cochrane. Apples, collection of six dishes, distinct, grown solely in the open air, named, five apples to a dish, three early dessert varieties and three early culinary varieties (prizes presented by Sir F. W. Moore)—1st, Lady Annaly; 2nd, Earl of Drogheda; 3rd, Nathaniel Hone. Apples (dessert), Beauty of Bath, dish of five—1st, Lady Annaly; 2nd, Toler Aylward; 3rd, Dr. O'Donel Browne. Apples (dessert), Lady Sudley, dish of five—1st, Lord Carew; 2nd, Lady Annaly; 3rd, Earl of Drogheda. Apples (dessert), Irish Peach, dish of five—1st, Viscount De Vesce; 2nd, The Right Hon. The Earl of Drogheda; 3rd, The Right Hon. Lady Annaly. Apples (dessert), any other variety, ripe, dish of five, named—1st, E. Bewley; 2nd, Hamilton Stubber; 3rd, Earl of Drogheda. Apples (cooking), Lord Grosvenor, dish of five—1st, E. Bewley. Apples (cooking), Early Victoria, dish of five—1st, Ernest Bewley. Apples (cooking), Echinville Seedling, dish of five—1st, Lady Annaly; 2nd, F. V. Westby; 3rd, Major Kelly. Apples (cooking), any other variety, early, dish of five, named—1st, Ernest Bewley; 2nd, Miss E. Cunningham; 3rd, Nathaniel Hone. Pears (dessert), ripe, dish of five, named—1st, Lady Rathdonnell; 2nd, Lady Annaly; 3rd, C. Wisdom Hely. Plums red, dish of twelve, named—1st, The Lady Rathdonnell; 2nd, The Hon. Lady Annaly; 3rd, Miss Cunningham.

Plums, black or purple, dish of twelve, named—1st, Marquis of Ormonde; 2nd, J. G. O'Brien; 3rd, C. Wisdom Hely. Plums, any other colour, dish of twelve, named—1st, E. Bewley; 2nd, Lady Rathdonnell; 3rd, Viscount De Vescei, Abbeyfein. Gooseberries, red, dish of thirty—1st, Rev. H. Davy; 2nd, Sir M. Nathan; 3rd, Lady Rathdonnell, Tullow. Gooseberries, green, dish of thirty—1st, Rev. H. Davy, Kinnage Lodge; 2nd, Sir M. Nathan, Under Secretary's Lodge; 3rd, Major Kelly, Donnybrook. Currants, red, dish of thirty bunches—1st, Ernest Bewley, Rathgar; 2nd, Sir F. Shaw, Bart., Terenure; 3rd, Rev. H. Davy, Kinnage Lodge. Currants, white, dish of thirty bunches—1st, The Lady Rathdonnell, Lisnavagh; 2nd, Rev. H. Davy, Kinnage Lodge; 3rd, C. Wisdom Hely, Rathgar. Currants, black, dish of 1 lb.—1st, Sir M. Nathan, Under Secretary's Lodge; 2nd, J. C. Maunsell, Colbridge. Loganberries, dish of 1st, Sir F. Shaw, Bart., Bushy Park; 2nd, Sir M. Nathan, Under Secretary's Lodge; 3rd, Rev. H. Davy, Kinnage Lodge. Cherries, dish of—1st, Right Hon. Earl of Meath; 2nd, Lady Rathdonnell, Tullow; 3rd, Earl of Drogheda, Moore Abbey. Tomatoes, dish of six—1st, Sir M. Nathan, Under Secretary's Lodge; 2nd, F. A. Millar, Monkstown; 3rd, Sir F. Shaw, Terenure.

Vegetables.—Cucumbers, brace of, named—1st, Ernest Bewley; 2nd, Colonel Claude Cane; 3rd, The Marquis of Ormonde. Beans, French, thirty-six pods, named—1st, Viscount De Vescei; 2nd, Colonel Claude Cane. Beans, broad, eighteen pods, named—1st, Nathaniel Hone; 2nd, Mrs. Leet. Cauliflowers, three named—1st, The Right Hon. T. W. Russell; 2nd, The Rev. Father Nolan. Cabbage, three, named—1st, Hon. Mrs. White; 2nd, Viscount De Vescei. Carrots, six, named—1st, Mr. S. Soden; 2nd, Viscount De Vescei. Lettuce, six, named—1st, Sir M. Nathan; 2nd, Rev. T. V. Nolan, S.J. Onions, nine, named—1st, Nathaniel Hone; 2nd, Viscount De Vescei. Peas, fifty pods, named—1st prize, Mrs. Leet; 2nd, Joseph Walker. Potatoes, round dish of twelve, named—1st, Viscount De Vescei; 2nd, Nathaniel Hone. Potatoes, other than round, dish of twelve, named—1st, Colonel Claude Cane; 2nd, Viscount De Vescei. Parsley, one bunch—1st, Nathaniel Hone; 2nd, Major Kelly. Turnips, six, named—1st, Nathaniel Hone; 2nd, Sir Frederick Shaw. Vegetables, collection of twelve distinct kinds only (a silver cup, presented by Sir James W. Mackey, Ltd., Dublin)—1st, Viscount De Vescei; 2nd, Colonel Claude Cane; 3rd, The Right Hon. Lord Curlew. Vegetables, six distinct kinds only—1st, Nathaniel Hone; 2nd, Miss Field.

Trade Exhibits.—Charles Ramsay, highly commended, collection of Herb Phlox, choice varieties, and Gladioli. Alex. Dickson, Dublin, extensive show of Roses, garden and decorative varieties, silver medal. Mr. Jones, Kilkenny, collection of Gladioli, including the various strains; also including novelties of sterling worth, silver medal. Watson's, Clontarf Nurseries, one side of tent made up of alpine plants, herb plants, flowering shrubs, Roses, Dahlias, and Carnations, gold medal. Hogg & Robertson, Dublin, "Holland in Ireland," stand of Gladioli Montbretias, very neatly arranged, many novelties raised by the firm, some of which are of great promise, silver medal. Dish of Figs, brown Turkey, exhibited by the Earl of Meath, very highly commended—gardener, Mr. Childs. New Sweet Pea, exhibited by Rev. J. Griffin, highly commended. Messrs. Carter, stand of Seedling Antirrhinums, annuals, highly commended.

Rome Convention and Horticultural Industry

At a Conference held in Rome in 1911, representatives of this country signed a convention setting forth restrictions on the trade in plants that they were prepared to recommend their Governments to carry out. The restrictions, if agreed to, will very seriously affect the horticultural trade of this country. They have, however, not yet been carried out, nor has this country assented to them, but sooner or later the subject will come up again, and it behoves the horticultural industry in this country to be ready for that time.

If this country assents to this convention, how will it affect the trade? Firstly, all nurseries and establishments supplying plants, seeds, &c., will be registered, licensed and inspected. Secondly, all nurseries will have to notify at once the appearance of certain scheduled diseases. Thirdly, they will have to adopt standard methods of dealing with certain diseases, spraying, fumigating, tipping or the like. Fourthly, their methods of packing and transport will be inspected and controlled. Fifthly, they will have to obtain, for each consignment of living plants destined for sale or for export, a certificate from an inspector as to its freedom from certain diseases or as to the nursery itself being free from certain diseases.

This last will, perhaps, be the most troublesome, as it involves the inspection of each consignment by an inspector before it is packed and after it is packed. The consignment must be packed according to the instructions, and the certificate specifying its contents must go with it.

A further clause in the convention lays down that plants cannot be imported from any country that either does not adhere to the convention or that has no service of officials for giving certificates, so that all importation of any plant at all, say, from China or Tibet, would appear to be absolutely stopped.

There is no question but that this procedure is going to be troublesome. Is it worth it? If this country does not adhere to the convention, what will happen? Its export trade in plants with adhering countries will cease to a large extent, if not wholly. It will be unable to send any living plants into any of the twenty-five countries that have joined the convention. It will be able to send plants to the United States, but only by carrying out a similar procedure in order to satisfy their requirements. Whether to adhere or not is evidently a very difficult question, and a joint committee formed under the auspices of the Royal Horticultural Society have been engaged on this problem. Clearly there are many things to be taken into account. What diseases are there which we do not desire to be admitted into this country? Where do they come from and how? Have we suffered in the past from introduced diseases? Will the convention's restrictions keep diseases out or will they simply restrict trade and be of no use?

To answer these questions we must have information, and we are using this interval to get that information so that when the time arrives for discussion the trade can take up a definite position and back it with facts. We have collected information about the diseases and pests which have been carried from country to country in the past and what carried them. We have information about the restrictions on trade

at present in force. We have information about the diseases which do not exist in this country and which we do not want admitted; but we have no information as to the trade itself in this country, and this is a necessary part of the enquiry.

Particularly we require this: What is the position of the industry as regards imports and exports respectively? What are these, where do they go to, where do they come from? Are the imports of new wild plants from, say, China, more important than the import of cultivated new varieties from Europe? If a clause in the convention concerns, let us say, the importation of Japanese Maples and deciduous nursery stock from Japan, are we affected or not?

There are countless points of this sort which can only be answered by knowledge of what the imports and exports are, what kinds of plants, of what value and amount, where from and where to, and whether the imported plants are from the forest or jungle or from foreign nurseries.

In the hope of getting this information the Royal Horticultural Society has addressed a letter to every firm dealing in live plants. Attached are forms so prepared that each firm may give, with the least trouble, the information that the committee wants, and the committee very strongly urges all members of the trade to give the information asked for. Sooner or later a decision will have to be taken.

The Board of Agriculture has intimated that it will not adhere to the convention if it be against the interests of the trade, and it is extremely important that the trade should have the necessary information on which to judge whether to recommend adhesion to the convention, whether to stand aside, or whether to ask the Government to seek to modify it.

It is impossible in a single article to make clear what the effect of the convention will be, but I propose in the next to explain the regulations already adopted in France in anticipation of this convention being adopted. Whether this country adheres or not, the effect will be far-reaching, and we hope the trade will give the committee the help it needs by filling up the forms and returning them when completed to the Secretary, Royal Horticultural Society. The information will be treated as strictly confidential, and the only use made of it will be to compile tables of the total imports and exports of living plants, with the countries of origin or destination.

H. M. LEPROY.

Hints to Novices.

By R. M. POLLOCK.

THE old canes of Raspberries may be cut out as soon as possible now so as to leave plenty of air and light for the new stock. The same remark applies to Loganberries. There is nothing better for covering a bare wall in a short space of time than the Loganberry. Yards of growth are made each season, which the following summer are covered with strong-flavoured deep wine-coloured fruits. Unfortunately the fruits are very tart, and require a large amount of sugar, and sugar in war times is, to say the least of it, expensive. As soon as the Rambler Roses go out of flower they too can have the old shoots removed and all the new strong growth tied securely in its place, and so save time in the autumn, when gardeners are much more busy and the days are shorter.

Before these notes appear the Royal Horti-

cultural Society of Ireland will have held its usual Autumn show, which we hope will have been a success. This show is held to a large extent as an attraction to the country visitors who visit the Horse Show during the last week in August. This year the Royal Dublin Society holds no Horse Show, and rightly so. But the Horticultural Society of Ireland scheduled, advertised, and carried out their autumn show. Surely this cannot be a good move on the part of the leading Horticultural Society of Ireland! According to the advertisements in the daily papers a fête is to be combined with the flower show, and the proceeds over and above the expenses of working the show are to be devoted to the Royal Dublin Fusiliers War Prisoners' Fund and the Irish Branch of the Vegetable Products Committee for supplying fruit and vegetables to the North Sea Fleet. These are two excellent War Funds for which money is urgently needed, but could this not have been obtained in some other way than by holding a flower show, which entails considerable expense, not only on the Society but on the employer from whose garden the produce is shown? According to the Post Card advertisement sent to all members of the Horticultural Society, the fête embraces, as well as the usual entertainments, an auction of fruit and flowers. This is apparently held out as an attraction for the country people and the local visitors to the show. We all know what such plants as Dahlias, Roses, Begonias, Pelargoniums, &c., are like on show-boards. Solitary flowers, with no foliage, only a short stem, cut over twelve hours, and more than half of that time spent in a hot stuffy tent. This is what the public are asked to pay to take away! Permission to show or not lies with the employer. The gardener has very little say in the matter. If the employers had combined and refused to allow any exhibiting to take place from their respective establishments the show would not have taken place. A gardener who can grow flowers, fruit and vegetables up to exhibition standard will grow all his stuff well, and what goes to his employers' table will be very little below the standard of that which figured on the show board. Therefore the employer is at no loss in forbidding his gardener to show during war times. Everyone will feel the war pinch sooner or later, and the gardener, if he is in the habit of being successful, will miss his prize money.

The flowers, fruit and vegetables grown in gardens now can all be disposed of in some way, and there need be no waste. Would a bunch of fresh Roses or Sweet Pea be appreciated in a home where sorrow has already laid its hand—where there can now be no hero's return? Would the gooseberries, currants, loganberries, cherries, &c., which have been carefully watched until show date, would they not be appreciated by the wounded and sick soldiers in the local hospitals? As to the vegetables, there is no reason why vegetables should at any time be wasted, and certainly not now. Over £100, according to the schedule of the Autumn Show of the Royal Horticultural Society of Ireland, is offered in prize-money. Even half this amount might have been handed over to the two funds mentioned, and the Society would have stood clear of all reproach, or a fête under the auspices of the Royal Horticultural Society in aid of these two funds might have been held, but to offer prize money where it is not necessary and to carry through a show "as usual" does not appear right.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath, Ballywalter Park, Co. Down.

BORDER CARNATIONS.—The shoots of Border Carnations which were layered last month should now be well rooted and ready for removal from the parent plants. They may either be potted up or planted in the permanent positions they will occupy next season. The former method is to be recommended, especially where the soil is of a wet, cold nature. Pots 2½ to 3 inches in diameter are the most suitable, and the compost should consist of good loam, with a little leaf-mould and sprinkling of sand or finely-sifted old mortar rubble. Cut the newly-rooted plants with a sharp knife, and lift them with a handfork, taking care not to damage the roots more than can be helped. Pot them rather firmly in clean, well-drained pots. Place the pots close together in a cold frame on a bottom of finely-sifted coal ashes. Give the plants a good watering from a fine rose can. Keep the plants close for a time, and spray them lightly in favourable weather. When they have quite recovered from the shift, air must be admitted and the lights eventually removed in good weather. The plants should be examined occasionally, carefully removing any decayed foliage, and rake over the base of finely-sifted coal ashes to keep the frame sweet. Where it is intended to plant them out this season the ground should be dug well and a good dressing of rotten manure applied, also a dressing of old mortar rubble well worked into the soil. Choose good weather for the work, and make the soil firm before planting. Put the plants out in lines, distance about 11 to 16 inches, allowing 18 inches between the rows. As a preventative of slugs, place some coal ashes round the plants, and dust with soot in showery weather.

GENERAL WORK.—Collect seeds of all hardy plants that are required as soon as they are ripe, remembering that even on the same plants the seeds seldom ripen at the same time. Seeds collected before they are ripe are of little value. It is better to gather them at intervals of two or three days, choosing fine weather for the work. The seeds should be cleaned, properly labelled, and stored in a cool, dry place. Violet plants intended for winter-flowering in cold frames that have formed strong crowns should be lifted with good balls of earth attached to their roots, and planted about a foot apart each way, with the foliage as near the glass as possible. Soil from old melon and cucumber frames, mixed with road grit or old mortar rubble, is very suitable for Violets. Damping gives the most trouble amongst Violets in winter, so that the advantage of growing them in porous soil is obvious. Water the plants thoroughly, and keep the frames close and shaded during the day for the first week or so after planting. Afterwards admit plenty of air, and later remove the lights altogether until the weather sets in bad.

Look well after the winter bedding plants, such as Wallflowers, Silenes, Forget-me-Nots, Polyanthus, &c., by keeping them clean and not allowing them to get crowded. As the Climbing Roses pass out of flower, most of the old growths which have bloomed should be cut out.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitzgerald, Carrigoran, Co. Clare.

It is often remarked of our rainfall that it is "a feast or a famine." Well, this summer at any rate we have had an experience of both, but *vice versa*, as up to about the end of June the poor apples were almost limp for want of rain, now they are almost flooded off the trees with a superabundance of rain and lack of sun, and their once rosy cheeks are assuming quite a melancholy hue. Here we recorded rain on 29 days during July, with a total rainfall of 6.61 inches, and, unfortunately, August bids fair for a very near approach to the record of July. As I believe this most, or similar, undesirable condition has been very general, I am afraid routine work has been much impeded, and all that is possible must be done to work off arrears of all kinds. The summer pruning of fruit trees this season will no doubt prove of special advantage in aiding to more completely ripen and plump up fruit buds and colour the crops of fruit. All late-hanging varieties, if not already pruned, may still derive considerable advantage from having the main branches and centres of trees cleared of young growths, cutting them back to five or six leaves from base of shoots, leaving the extending shoots on trained and all other trees to complete their annual growth and be shortened at the winter pruning; this applies similarly to pears, and plums may also be advantageously thinned and exuberant growth reduced. Where peach trees are cleared of fruits, the old fruiting branches should be cut out completely, so that the young shoots for carrying next year's crop may derive all possible benefit from exposure to sun and light; continue to keep the young shoots properly trained or secured until growth is quite finished. In case red spider may have attacked the trees they should be copiously syringed on every fine day until cleared of the spider; a little soot-water added is both beneficial to the foliage, and aids in more quickly dislodging the spider; very bad attacks can be quickly cleared by a syringing with "Spidicide." This is sold by most seedsmen with proper instructions for use.

Large trees of early varieties of apples, pears and plums, from which the fruit has been gathered may be looked over and have overcrowded or misplaced branches and overgrown spurs sawed out. During this month it is advisable to take a note of such operations as lifting, root pruning, &c., to be carried out next month, or later on in the season; or make a tour of the grounds, &c., with a few hang-on labels, writing on the label whether tree should be lifted, root pruned, &c.; attach these to the tree, and they serve as a useful guide when the time comes to perform the work; also note varieties, or trees which it is deemed advisable to head back, and graft with more up-to-date varieties; any trees to be destroyed and replaced with new trees should be dug out as soon as cleared of fruit and the site got in readiness for planting new trees. The general storing of fruit is now quickly approaching, and fruit rooms or various storage quarters should be thoroughly cleaned out; whitewash walls or ceilings where they are of plaster; well wash over all shelves and woodwork with hot soapy water with a little washing soda thrown in (except painted woodwork from the soda), and thoroughly ventilate to remove all traces of mustiness or disorder; a most important matter also is to see that mice or

rats cannot gain access to any room where fruit is to be stored; these pests are very destructive if they get any footing in fruit rooms.

Where the planting of new trees is contemplated no more delay should be allowed in making out lists of varieties, and the orders placed with nurserymen. If at all possible a visit should be made to the nursery to personally select the trees required; by this means good robust trees, clean and free from any insect or fungoid diseases, may be ensured; in any case early orders should be given, for as a general rule orders are executed in rotation as received; for this reason early placed orders means early delivery of trees, thus giving the opportunity for early planting, which is universally conceded "the best." As the future welfare and usefulness of fruit trees is influenced to a very great extent by proper planting, and preparation of sites for planting, due consideration must be displayed for the requirements of fruit trees, and if not already in good order the ground should be got in readiness at once. Owing to the greatly increased attention devoted to fruit culture in Ireland during the past ten or twelve years the needs of fruit have come to be much more highly appreciated than was formerly the case, though now there is much divergence of opinion as to the best or most suitable land; the condition or richness of the land at time of planting the larger fruits; though personally I do not advocate the addition of large quantities of farmyard manure to land just previous to planting young trees, whether orchard trees, garden trees in quantity, or for odd trees, such as additional trees, or replacing exhausted and undesirable varieties. I strongly advise that all young trees, from maidens to what are termed fruiting trees several years older, should be planted in ground that has been brought into first-class condition through previous cropping and manuring. In the formation of orchards, land cleared of potatoes is generally in a very suitable condition for planting; this should be well harrowed and cleared of all weeds. Land cleared of a corn crop and in very good heart is also a suitable medium, but should previous to planting be grubbed and harrowed thoroughly, the stubble and weeds gathered into heaps and burned, or be carried away; afterwards plough the land as deeply as possible, or if ploughed and subsoiled so much the better. Land for new plantations in enclosed gardens should be deeply dug or trenched, and if necessary dig in a suitable addition of well-rotted manure, also, if available, mortar rubble; the ashes of fire heaps where wood, rubbish, &c., has been burned are valuable additions, and specially so on heavy soils. Broadly speaking, satisfactory and profitable results can only be ensured by planting good healthy trees on the best of land—*i.e.*, deep (or fairly deep) rich, well-drained land. Heavy land with a retentive subsoil should be drained previous to planting (or be avoided altogether), as planting on such land without draining almost inevitably results in cankered trees and virulent attacks of black spot on apples and pears. If deep rich friable land is not available, or even such other land as promises satisfactory results is not available, better defer planting to another season, and in the intervening time get the land into first-class condition. In selecting sites for orchards, shelter or a break against high winds is absolutely indispensable, and if none exists, such as high ground, plantations or belts of trees, hedges or trees must be planted to protect the trees and fruit from prevailing high winds and

gales. A double row of beech makes a compact sturdy break wind, or hedge, and can be kept at desired height by clipping annually.

Almost every grower of large fruits has his favourite varieties, with a consequent wide variation of opinions on a vast number of varieties. There are also many good varieties of local origin useful in their respective localities. The apples in the list I am writing do not constitute a very extensive selection, but they are with little exception well tried varieties and popular, free cropping, with vigorous constitution, and with proper treatment, right storing, &c., will give a succession of fruit from July to the following May. A small number of the varieties may not meet with universal approval, but I am quite satisfied that with the little extra attention to their special requirements, particular value will well compensate for any extra trouble in growing them. Those that I have mostly in mind are Ribston Pippin, Wellington, and King of the Pippins; the two former, given a warm, well-drained situation, and carefully sprayed to combat any appearance of scab or canker, rank very highly—Ribston Pippin as a dessert apple and Wellington as a late cooker. King of the Pippins, I am aware, has by some been condemned, excluded from lists, and by some cut back and top-grafted with other varieties owing to its scabby propensities; this again may be overcome by careful spraying, and being a vigorous grower, producing regularly heavy crops of showy fruit and satisfactory quality, constitute this a variety well suited for market or home consumption.

I have not included in this list new varieties for the reason principally that very few of them are qualified to supersede older varieties; also some years must elapse in proving their growing and cropping capabilities for general adoption. The apple Norfolk Beauty—a comparatively new one—well deserves to be more generally known than appears to be the case, especially for home consumption; it is a large apple, free cropper, of clean and vigorous constitution, a most admirable cooker, and having one recommendation (quite an economical one)—*i.e.*, it cooks quite well with half the sugar required with other apples. Rev. W. Wilks I think will perhaps eventually supersede Peasgood's Nonsuch as an exhibition apple, being much the same shape as Peasgood's, of an attractive yellow colour, free cropper, and of enormous size—for instance, a young tree in a Devonshire nursery produced an apple weighing 34½ oz. We have this variety amongst new ones on trial here, and judging by its behaviour it will prove an acquisition as a cooker for home consumption and exhibition, but too soft and awkward for market purposes; it is also seasonable at a time when there are many of the best varieties filling the markets. The dessert apple Langley Pippin ripens about the same time as Beauty of Bath, and is, I think, preferable to that variety for home use, being more juicy and of superior flavour.

DESSERT APPLES.—Gladstone, Irish Peach, Langley Pippin, Beauty of Bath, Lady Sudeley, Worcester Pearmain, James Grieve, Beus Red, Wealthy, St. Edmund's Russett, King of the Pippins, Charles Ross, Cox's Orange Pippin, Allington Pippin, Rival, Washington, Ribston Pippin, Blenheim Orange, Gascoyne's Scarlet, Adam's Pearmain, Barnack Beauty.

COOKING APPLES.—Early Victoria, Grenadier, Lord Grosvenor, Cox's Pomona, Emperor Alexander, Golden Spire, Warner's King, Rev. W.

Wilks, Peasgood's Nonsuch, Stirling Castle, Bramley's Seedling, Belle de Fontoise, Lord Derby, Mere de Menage, Royal Jubilee, Norfolk Beauty, Baron Wolsley, Bismarck, Hambling's Seedling, Annie Elizabeth, Lane's Prince Albert, Newton Wonder, Wellington.

A few of the best pears in order of ripening: Doymene d'Ete, Jargonelle, Beaucou, Souvenir du Congrès, Clapp's Favourite, Williams' Bon Christian, Marguerite Marillat, Beurré d'Amoudis, St. Luke, Conference, Louise Bonne de Jersey, Marie Louise, Magnate, Pilmaston Duchess, Durondeau, Emile d'Heyst, Beurré Hardy, Doymene de Conice, Glow Moreau, Beurré Diel, Bergamotte Esperen, Easter Beurré, Beurre Rance, Duchess de Bordeaux.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. SHARMAN-Crawford, Esq., Lota Lodge, Glanmire, Cork.

WORK in this department may be in arrears after the wet weather experienced in July and the early half of August. Allow no weeds to seed, and clear away all plants that are passing to the useless stage.

CABBAGES.—Plant up any space laid aside for them, and prick out young seedlings sown last month; if the border can be spared let the plants for early spring use be planted permanently at one foot apart. A greater distance is unnecessary for cabbage plants in winter, growth being slow and the shelter given by close planting is considerable.

CALIFLOWERS.—Sow a pinch in a frame or sheltered border to stand the winter; hard, firm soil will produce a sturdier growth than open rich soil.

Winter greens of all sorts will require a good earthing where necessary, and for succession late sown batches may still be planted.

CELERY.—The wet weather has caused these plants to grow remarkably well, and early batches can now be earthed. A period of six weeks after earthing will elapse before blanching is complete. Where disease is making its appearance, pick off and burn affected leaves, and spray with potato-spraying mixture.

LETTUCE.—If much in demand, sow the hardy sorts on a south border, ground recently growing French beans will suit, and requires digging over only; give no manure. Batches sown last month may be pricked out on a similar border.

POTATOES.—A percentage of the early and second earlies will be found diseased; these should be carefully picked during the lifting and fed to pigs; greened and small tubers should be set aside for seed, and larger tubers with slightly greened ends should be used for the table, the green part being cut off.

PARSLEY.—Cut down plants now seeding, and encourage the young plants required for winter and spring use; should the summer sowing have failed a winter supply may be had by at once cutting down a batch of spring sown plants, these will throw up a fresh set of leaves, and with care will furnish a winter supply.

SPINACH may yet be sown in the south, as also may turnips, while onions will prove more successful in the south from a September sowing.

Continue to preserve every vegetable possible to be used during the coming winter, next month may be too late, as most of the summer vegetables will have gone.

Correspondence.

IN the June issue of IRISH GARDENING, the Editor published extracts from a letter from an officer then with the troops in the Dardanelles. In this letter is mentioned a dwarf "holly," and that this "holly" appeared to have no flowers. Since then Mr. Ball, who until war broke out was editor of IRISH GARDENING, has gone to the East with the 7th Royal Dublin Fusiliers, and he mentions that the place is covered with *Quercus coccifera*, Kermes oak, a shrub from 10 to 12 feet high, an evergreen of sturdy, dense, neat habit, with leaves that are stiff, spiny, and shining and smooth on both surfaces. This is probably what the writer of the original letter saw, but not being a botanist as well as a soldier he did not recognise it. The name Kermes is associated with the tree through an insect, *Coccus ilicis*, which infests the tree and covers it with a woolly substance like woolly aphids on apple trees. These insects are largely collected by the natives, and they furnish a crimson dye, which is much used in the south of France, Spain, Morocco and Turkey, chiefly for dyeing woollens and leather. Even since the introduction of the cochineal insect it is still extensively used in these countries. The word Kermes is derived from the Arabic word for "worm" and is the original of the French "cramoisi" and the English word "crimson."

R. M. P.

Catalogues.

EDWARD WEBB & SONS, LTD., Wordsley, Stourbridge, have kindly sent us a copy of their new Autumn Bulb Catalogue, which is replete with a very fine selection of bulbs, tubers and corms, embracing most of the finest and showiest varieties in each section. Daffodils, Tulips, Hyacinths, &c., are conveniently arranged according to section or colour, and a selection is thus made easy. Lilies, Gladioli, Ranunculus, &c., for autumn and spring planting are offered in great variety, while the firm's special and well known strains of Gloxinias, Begonias, Cyclamens, &c., offer abundant choice. Hardy flowering plants, climbers, Clematis, and vegetable seeds for autumn sowing are also listed in select variety.

MESSRS. SUTTON & SONS, Reading, have favoured us with an advance copy of their new season's Bulb Catalogue, a copy of which will be posted to all their customers and, we presume, to anyone who applies for it. Many beautiful illustrations adorn the pages, which are replete with all that is best in the way of popular bulbs. The collections of Daffodils, Tulips, Hyacinths, &c., have been made up with much care, only the best sorts being included.

THE old-established firm of Little & Ballantyne, Carlisle, have issued their autumn catalogue of Bulbs, Roses and Fruit Trees, and, needless to say, the same high standard of excellence which has maintained the firm's reputation for the last one hundred years is still in evidence. Excellent selections of Tulips, Daffodils, Hyacinths, Anemones, Scillas and Snowdrops, &c., are offered at reasonable rates, and some very beautiful illustrations excite the envy and interest of the prospective purchaser. Roses, new and old, in all sections, are to be found, and fruit trees are offered in the best varieties, and many other items of interest to the gardening public will be found included.

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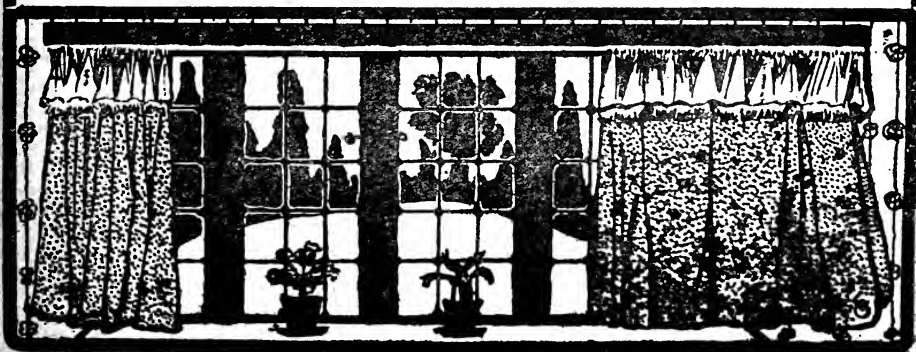
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Irish Gardening

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OCTOBER
1915

ARBORICULTURE IN IRELAND

EDITOR—C. F. BALL.

Tulips for the Rock Garden.

WHILE many people are acquainted with Tulips for beds and borders, there may be some who are less familiar with the beautiful wild species, many of which flower early in the year and are eminently suitable for planting in sunny nooks in the rock garden. Tulips generally are sun lovers, and this is particularly true of the wild types, the majority of which come from the sunny warm countries of Asia Minor and rejoice in the best position we can give them in our comparatively cool climate. In the rock garden in early spring many pretty pictures are possible by planting little colonies of these wild Tulips. A position at the base of a large stone, facing south and sheltered from the north and

east, will provide a comfortable home, and a green groundwork of some creeping, low-growing alpine will enhance the beauty of the Tulips and prevent them from becoming disfigured by heavy rains should they occur during the period of bloom. Some of the stronger growing kinds will come up through mossy Saxifrages and such like quite well, but the smaller growers like a lighter covering, and may be planted through such things as *Veronica Allionii*, *Arenaria Bertoloni*, *Thymus serpyllum* and many other

plants which remain low and do not form too thick and dense cushions. When planting through a groundwork it is probably better not to plant too deeply, as the bulbs like to feel the influence of the sun, and indeed in their native countries are accustomed to being thoroughly baked, a condition which no doubt conduces to free flowering. The size of the bulbs helps to

determine the depth to plant—the smallest bulbs two or three inches below the surface and the largest four or five inches. When dibbling in the bulbs the holes should be made sufficiently deep to permit of a quantity of sand being placed in the bottom, on which the base of the bulb should rest firmly. This provides a clean, sweet



TULIPA FOSTERIANA.

medium for the young roots to push into and helps to preserve the base of the bulb from decay in case of a superabundance of moisture. During hard weather, after planting, a sharp look out must be kept for signs of mice attacking the bulbs. These little predators are very fond of eating both Tulip bulbs and *Crocus* corms when other food is hard to find, and if not early trapped or poisoned will soon cause grievous loss and disappointment. An additional charm of many of these Tulip species is that, given a

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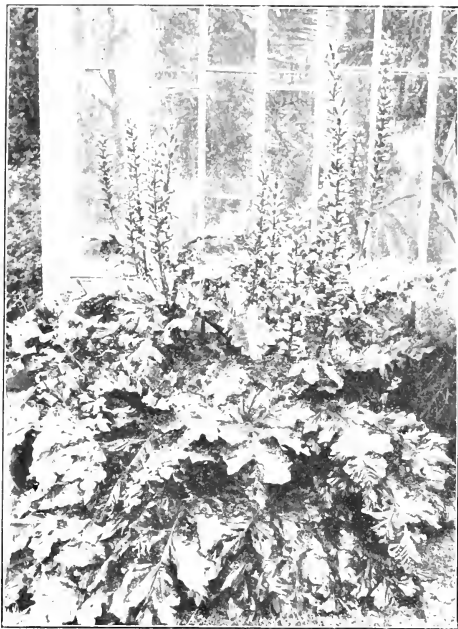
suitable sunny position, they may be left in the ground for several years before they show signs of requiring to be taken up.

T. Batalini is a pretty little sulphur yellow species, with nicely shaped flowers, while *T. clusiana*, often called the Lady Tulip, has white flowers, striped carmine, and grows about eight or nine inches high. *T. concinna* is a neat little red flowered species said to come from Armenia, and a gem is *T. dasystemon*, with white flowers, yellow at the base, on stalks only about three inches high; this was figured in the May issue of IRISH GARDENING last year. *T. Eichleri* is a gorgeous species, with large brilliant crimson flowers, flowering in April, when also *T. Fosteriana* opens its giant scarlet vermilion blooms, and is one of the most striking flowers in the garden at that time. *T. Greigii* has long been admired by votaries of the genus, its brown mottled leaves and orange red flowers affording great pleasure to all. This species is slow of increase and is best left down for some years or as long as flowering satisfactorily. *T. Hageri* is a taller grower, reaching a foot or more, but finds admirers of its brick-red flowers which, given a suitable setting, are quite attractive. In *T. Kaufmanniana* we have one of the best kinds for our present purpose. It flowers often very early in March, and is usually the first Tulip of the season. This is sometimes called the Water Lily Tulip, and produces extremely pretty flowers, creamy white, with a pink or carmine flush on the outside of the segments. There is also a golden yellow form, which is very beautiful, and also a very lovely variety known as *T. K. coccinea*. *T. Kolpakowskyana* is a desirable sort with scarlet or vermilion flowers, while in *T. linifolia* we have one of the most delightful of the smaller kinds with brilliant scarlet flowers. *T. micheliana* has spotted leaves

like *T. Greigii* and deep red flowers, while the little *T. montana* with bright red flowers not more than six inches high, is a gem for the rockery. *T. persica* is a later flowerer, and the rich bronzy-yellow flowers have the additional charm of being scented. *T. pulchella* is attractive in its rosy mauve blooms, and the pink flowers of *T. saxatilis* are always appreciated. One of the rarest and faintest is *T. stellata*, from the Himalayas, which has beautiful little flowers, yellow within and rose or red on the outside.

There are other species which might be recommended, but the above give some idea of the wealth of beauty among the wild Tulips. Most of the Irish nurserymen who specialise in bulbs can supply these at, in most cases, quite reasonable prices, considering that from six to twelve bulbs are sufficient for a group.

— J. W. B., Glasnevin.



ACANTHUS MOLLIS LATIFOLIUS.

Acanthus

(The Bear's Breach)

THE various species of *Acanthus* are very handsome perennials, requiring not very close attention when once planted and given a good start. They are mostly evergreens—that is to say, all the leaves do not disappear during winter as with many herbaceous plants. The

foliage of most of the species is strikingly handsome, often of ample proportions and dark shiny-green; in some the leaves are conspicuously spiny, while in one or two they are quite narrow or lanceolate and furnished with hairs.

There is a considerable number of species, many of them natives of tropical countries, but a number come from S. Europe, and are generally amenable to cultivation in Britain and Ireland. There is no doubt that a certain amount of shelter is beneficial, and a sunny position produces the finest specimens. The *Acanthuses*

are plants for special positions rather than for inclusion in the herbaceous border. Some particular point where a bold mass of foliage and flower is wanted is just the place where one of the larger growing kinds may be used with fine effect. A sunny open bay in the front of a shrubbery, an isolated bed on the lawn with shelter from cold winds, a bold bed by the side of a walk, or a clump in a sunny angle of the dwellinghouse will always be a source of joy and satisfaction. There are, too, great possibilities in the wild garden where plants of noble proportions may often be used with great advantage to themselves and the garden they adorn. Of the hardy species the following are the more important:—

A. Caroli-Alexandri, a native of Greece, reaching about 2 feet high when in flower. The leaves are moderately large and spiny, surmounted by the spikes of pink or rose-coloured flowers. This species is rather similar to *A. spinosus*, and spreads very rapidly. Care should be taken to plant it where it will not interfere with choicer things, as every bit of underground stem will grow.

A. longifolius is a native of Dalmatia and a very handsome plant. The flowers are purplish rose-coloured, borne in spikes 3 feet or more high, and the large leaves, some 2 to 3 feet long are extremely handsome.

A. mollis is a very handsome Italian species with long, broad leaves of handsome outline and spikes of white and rose flowers.

A. mollis latifolius is similar to the last-named, but larger in all its parts, producing enormous leaves and handsome flower spikes some 3 or 4 feet high. It is perhaps the finest form grown for a bold decorative effect.

A. niger, a Portuguese species, is distinct among other species with less ample leaves than in some of the above-mentioned, yet handsome in out-

line. The flowers are purple and white on spike about 3 feet high when fully developed.

A. spinosus alluded to above, forms rosettes of deeply cut leaves of a very fine, shiny green colour, the divisions furnished with spines. The flowers are light purple, the sepals also being spiny.

A. spinosus spinosissimus is similar, but the leaves are much more densely spiny.

Acanthus hirsutus is one of the narrow-leaved species, the leaves being furnished with hairs, which give them a slightly grey appearance.

A. Perringi has still narrower and greyer leaves, and grows only about 15 inches high when in flower; the flowers are of a very pretty pink shade. This pretty species is quite suitable for the rock garden.

The *Acanthus* is credited with being the plant which furnished the design in much of the ornamentation which enters into ancient Grecian architecture, but authorities differ as to the species—some claiming the leaves of *A. mollis* and others those of *A. spinosus*.

B.



Photo by]

GALANTHUS ELWESII,

[S. Ross.

Snowdrops.

EVEN in these late autumn days the mere mention of Snowdrops conjures up a vision of spring, the wind still cold, but with the sun gaining strength daily. Snowdrops are popular with everyone, and therefore no apology is needed for reminding readers that early planting is advisable, as the bulbs are very impatient of being long out of their natural covering—the soil. Snowdrops are essentially subjects for planting in natural masses where they can remain undisturbed for many years. Only thus will they flourish and reveal their true beauty, bringing hope and pleasure to human beings every spring with unfailing regularity.

A moist, cool soil is necessary, and not infrequently the finest colonies are found under

deciduous trees which are leafless when the Snowdrops are in flower but which later put forth their leaves and provide grateful shade for the maturing foliage of the Snowdrop. Planting in grass, too, is often successful, and strange to say the double form of the common Snowdrop establishes itself more readily than the single, at least in some places, although it might not be true to say that this is always the case. In large gardens and parks fine effects are possible by planting in generous breadths under trees and by the sides of woodland walks, but even in quite small suburban gardens a few clumps may be successfully grown in any cool corner of the garden.

The Botanical name of the Snowdrop is *Galanthus* and the common species is *Galanthus nivalis*, but there are quite a number of species and varieties, many of them large and handsome, though perhaps not exceeding in charm the common one. Of *G. nivalis* there is, as stated above, a double variety and also, much rarer, an October-flowering form, known as *G. nivalis octobrensis*. This latter, however, is more likely to appeal to the botanist and enthusiastic collector than to the ordinary individual to whom the Snowdrop is a harbinger of spring.

Some of the larger kinds are notable for the large size of the bulbs, almost rivalling in that respect some of the Daffodils. One of the finest is *G. Elwesii*, now happily becoming quite cheap. This is an Asia Minor species with long, broad glaucous leaves and very large beautiful flowers. A variety known as *G. E. unguiculatus* is if anything stronger, and also very handsome. *G. Fosteri*, likewise from Asia Minor, has broad leaves and beautiful flowers borne on tall stems. *G. Icaria* is distinct and beautiful, with light green leaves and pretty flowers, the inner segments tipped with green. *G. Imperatii* is one of the older species and one of the best of the large growers, and quite reasonable in price. *G. latifolius*, a Caucasian species, is at once noticeable by reason of the very broad leaves, though the flowers are not particularly large. *G. plicatus* is occasionally met with, and is so named from the plaited form in which the leaves are produced. A form of this known as *G. p. Newry Giant* is very fine, and is said to be probably the largest Snowdrop in cultivation. *G. robustus* is still another of the giant series remarkable for the broad handsome foliage.

The majority of these Snowdrops can be purchased at very reasonable rates, and a clump or so of each planted about the rock garden or the front of the herbaceous border would be an annual source of pleasure for many years. They should be planted not less than six inches deep.

Notes.

Gentiana asclepiadea.

THERE seems to be at least three forms of this species in addition to the white variety. At the Royal Botanic Gardens, Glasnevin, a comparatively dwarf form flowers early in August. It does not grow much over 18 inches high, and the flowers are relatively small. A second form flowers in September, and is much taller and stronger, with larger flowers, and is altogether a more showy and desirable plant. The third form is known as Perry's Variety, which grows as strong as the last named, reaching well over 2 feet, but bearing distinct flowers, which are dark purplish-blue on the outside and light blue within. Perry's Variety is a distinctly good plant, and should be grown by all those who value late-flowering subjects, especially as the colour is very welcome among autumn flowers.

G. asclepiadea in all its forms seems to flourish best in a deep, cool, moist soil, and can be used in the herbaceous border, the rock garden, and the bog garden. The white variety is the most troublesome to cultivate, and is rarely seen in good condition. A deeply cultivated loamy soil might suit it best, as it is not altogether happy in peat.

Propagation is best effected by seeds, which generally set freely. They may be sown when ripe and placed in a cold frame, where they will germinate as a rule the following spring. The seeds should be covered lightly and be carefully watered until growing and fit to prick out.

Stachys grandiflora.

THIS is one of the most distinct, beautiful and useful plants in the herbaceous border during June and early July. The flowers, which are large and of a beautiful soft violet colour, are produced in whorls extending well above the foliage. The leaves, too, are handsome, rather ovate in shape, wrinkled, and with crenate margins.

Introduced from Siberia over a hundred years ago, it is even yet not too common in gardens, though perfectly hardy and flourishing in any ordinary garden soil. The colour is very desirable early in the year, blending well with many other herbaceous plants blooming at the same time. Propagation is easy by seeds, division of the old plants in autumn or spring or by cuttings of the young shoots when a few inches long.

The Hardy Yuccas.

THE Yuccas belong to the great family of Liliaceae, and are among the most striking and handsome members of the order. There is a large number of species, but only half a dozen or so with their varieties can claim to be considered hardy. The species most commonly cultivated in the open are natives of the southern United States, and are thus somewhat unique in their ability to withstand the rigours of our colder winters, yet it is a fact that they seldom suffer to any great extent from the hardest frost experienced in most parts of Ireland, and also in many parts of Great Britain.

Considering, therefore, this fact in conjunction with the beauty and stateliness of leaf and flower found in the various species, we are justified in giving some attention to the hardy kinds more especially.

In choosing a position to plant Yuccas, it is obvious, considering their native habitat in the warm southern States, that abundance of sunshine should be a first consideration, also shelter from rough winds is beneficial in preserving the beauty and form of the leaves, and if this shelter can be effected by a belt or bed of evergreens, then the handsome flower panicles will have a very much enhanced effect and will show up to greater advantage. A good, deep well-drained soil is necessary if the full beauty of the leaves and flowers is to be obtained. Some of the species ultimately form a

considerable stem surmounted by the leaves, and may reach a total height of six feet or more; others produce their leaves always from the ground level, and increase rapidly by offsets or side growths. An exceedingly handsome and striking group might be formed by planting the taller growers at six or eight feet apart and underplanting them with the dwarf kinds. During a good season when all were flowering

freely the effect would be very fine, and even when not in flower the handsome foliage is effective in itself.

Yucca filamentosa is one of the dwarf species, a free grower and reliable flowerer. The rigid rather erect leaves grow from 2 to 2½ feet high, and are about 2 inches wide at the broadest part. The specific name is derived from the hair-like threads which curl back from the margins of the leaves. *Yucca flaccida* was formerly considered a variety of *Y. filamentosa*, but is now usually reckoned as a species. It is certainly similar in habit and growth to the former, but differs in the leaves being recurved at the points, while the flower panicle



YUCCA FILAMENTOSA, WITH CORDYLINAE AUSTRALIS IN THE BACKGROUND.

is shorter. Like *Y. filamentosa*, this is a useful species for massing, and when happy increases freely. There are several varieties of which *Y. flaccida orchoides* is the only one known to the writer. It is a stiffer plant than the type, and is described as having an unbranched inflorescence, but I have not seen it in flower.

Yucca glauca is another low-growing species producing a large number of leaves, usually much narrower than in the above-mentioned

species and of a glaucous colour, with white margins. The flower raceme reaches a height of 3 or 4 feet, but is not so regularly produced as in the other species.

Yucca gloriosa is an old species not so common in gardens as it once was. It is one of the taller growers, forming in time a stout stem of 6 feet or so, surmounted by a crown of stiff spine-tipped leaves about 2 feet in length when the plant is vigorous. The inflorescence is very handsome, composed of drooping white flowers borne in a panicle some 3 or 4 feet high. The variety known as *Y. Ellacombei* has glaucous leaves and the petals of the flowers tinged with red on the outer surface. There are also variegated forms.

Yucca recurvifolia is perhaps the most commonly grown species among those that make distinct stems, and is readily recognised by the long recurving leaves which give to this species a rather more graceful appearance than *Y. gloriosa*. It is very handsome when in flower, bearing a large panicle of creamy white flowers which look extremely well in late summer and autumn.

The propagation of *Yuccas* may be done by seeds when obtainable, the dwarf kinds by division of the offsets, and root cuttings made of the thick fleshy roots cut into pieces about 3 inches long and laid in a box of sandy soil in heat soon vegetate, and may be potted up separately.

J. W. B.

Crocus Imperati albidus.

THIS, as our illustration shows, is a very beautiful flower, and makes a truly lovely display in early spring. The flowers are white, and open charmingly under the influence of the sun. There are many of the wild Crocuses which flower long before the first of the garden varieties, and as many of them are quite cheap they are deserving of attention. Of those which flower so early as to merit the name of winter-flowerers we have *C. alexandri*, white, marked with purple; *C. Ancyrensis*, rich orange yellow; *C. caspius*, white; *C. chrysanthus*, yellow; *C. Fleischeri*, white, with dark lines; *C. graveolens*, yellow; *C. Sieberi*, lilac blue; and many others. Of early spring kinds there are *C. aureus*, golden yellow; *C. biflorus*, white, with dark lines; *C. etruscus*, lilac and buff; *C. Susianus*, yellow, &c. There is also an autumn-flowering set, but as they must be planted by August at the latest, they may be left for future consideration. The winter and spring flowerers may be planted now in border, rock garden, or short grass, and will well repay the trifling outlay necessary to acquire a stock.

Tropæolum speciosum.

THE FLAME FLOWER.

THIS is one of the most brilliant of autumn flowering hardy plants growing with remarkable vigour in some districts, while in others it proves almost impossible to establish. The main essential seems to be a cool climate and soil, as in many parts of the north of Scotland the Flame Flower is such a remarkable feature of many gardens as to excite the wonder and admiration of visitors from warmer countries.

In districts naturally suited to its growth any kind of cool, moist soil will grow the Flame Flower to perfection; in fact it is difficult to restrain it within reasonable bounds, but elsewhere considerable effort is necessary to establish a healthy colony. Obviously, if in warmer districts with a light hot soil it is desired to grow *Tropæolum speciosum*, means must be adopted to imitate as nearly as possible the conditions obtaining where it does succeed. This can best be done by choosing a shaded site where the soil is not likely to dry out and by preparing a moisture-retaining compost. In some places where it has failed often, success has at last been found by planting among *Rhododendrons*, where the peaty soil is cool and moist. This, however, is not altogether satisfactory if the *Rhododendrons* are good ones, as the *Tropæolum* will smother them in autumn with its rampant growths to their detriment. It is better to prepare a deep border at the base of a north wall, making the compost chiefly peat, with at least a third of decayed cow-manure. A few lengths of wide-meshed wire netting nailed to the wall will provide support for the growths, and if the plant is happy the wall will be a sheet of scarlet in autumn.

Hybrid Eremuri.

IN addition to the species and varieties of *Eremuri* mentioned in the August number, there are several hybrids equalling, if not surpassing, the species in beauty and statelyness. Among the more important hybrids are—*E. Warei*, in shades of pink and buff, very handsome, producing stately spikes, flowering freely.

E. Shelford, producing very lovely spikes of coppery yellow flowers in July, and *E. Sir Michael*, an exceptionally vigorous tall grower with tall spikes of charming buff yellow flowers.

E. him. rob. is a hybrid between the two old species *E. himalaicus* and *E. robustus*.

E. robustus tardiflorus flowers some weeks later than the type, and thus prolongs the season.

Several other species, such as *E. aurantiacus*, *E. spectabilis* and *E. turkestanicus* are cultivated in Botanic Gardens, but are less decorative than those enumerated above.

“Business as Usual”

TWELVE months ago food economists were pessimistically preaching the public into a state bordering on panic; saner and wiser folk were promulgating the policy “business as usual.” Now, twelve months later, the same conflicting opinions seem leading or driving us into a cloudy chaos, which not only gets us no “forrader,” but obscures the issue which it is essential to keep clearly in view.

Unfortunately, “business as usual” into which, of course, one reads business more or less under altered conditions, but always on broad business lines with all their interdependent far-reaching ramifications, seems being lost sight of, and in no phase of work more than that of our own, gardening. No one wants to belittle any praiseworthy efforts to supplement our food supplies,

but in order to do so is it not sheer folly and utter foolishness to count on any material increase by sacrificing the purest of human pleasures to the prosaically practical and doubtfully profitable? But what of the expense involved in ornamental gardening? we hear some or other short-sighted but would-be economists asking. We may answer that hypothetical but still very relevant question with what of the skilled professional gardener, a large percentage of the “eligibles” of which class have laid aside the blue apron and donned the khaki, ever and anon adding to the long list on the roll of honour—those who are laying down their lives for King and country, and most of whom we hope to welcome back to “work as usual”? We do not think, however, this is a consideration likely to count, or even to come into the calculation of selfish and sordid interests, nor, indeed, can we narrow it down to this.

Broader, higher, and nobler views, and a deeper and more firmly-rooted thesis than those dominated by class interests must prevail from which stronger and healthier growth may emanate *pro bono publico*. There can be no class finality within the confines of our Empire's economic life. Surely it is a short-sighted policy which bids us economise in one or other direction and arrests that circulation of money which travels through the main arteries of trade to be

subdivided into the infinitesimal veins of healthy commercial life. Surely, too, it is here our powers that be, some of them at least, are setting the country some mean, miserable examples while, forsooth, flaunting the text “business as usual.”

It is a text with high potential aptly and admirably adapted at the moment to pretty well all phases of industrial life when false ideas of economy, which mean stoppage in some direction and entailing more or less suffering to many others is daily preached in the lay press which everyone reads, and which the gardening press, which everyone does not read, is doing its best to counteract. But the public are gulled, like to be gulled, it is said. As an instance of pernicious preaching we have but to turn to “golden soil” and within our own area of observation, Dublin, to recount the formation of two “French gardens” which proved dismal

failures. One, indeed, is tempted to travel even beyond our own province proper, gardening, in but even superficially meditating on such matters of moment where however we must pull up with the question of the threatened paralysis of the Bulb industry. The importance of this thriving industry, which in a few short years has reached such gigantic dimensions both in England and Ireland, should not be under-



CROCUS IMPERATI ALBIDUS.

rated, and we believe the present outlook of this branch of business, now the season is again with us, is dismal in the extreme.

Pretty well the only reminder we have of the bulb season now with us is from the phlegmatic Hollander, whose catalogues are coming to our islands in shoals. He evidently is out for business as usual. It is, of course, a well-known fact that the head of many a big garden has the order “no bulbs this year,” but it is perhaps harder to realise that public bodies are pursuing the same policy of paralysing the bulb trade. One instance is that of—well, a fine city with its magnificent public parks and gardens not a hundred miles from Edinburgh where the fiat has gone forth “No bulbs to be purchased.”

All honour to that Councillor at Harrogate, where the attempt was made to follow the same starving lines, who so stoutly opposed it and gained his point in “the effect of having no

flowers in the public parks might easily be a great evil."

As suggested, the ramifications of trade are too great for the writer, or any one else, to narrow the thing down to one or other phase, admirable as such may be, but a relevant comment from our own press, which is taking up these matters in a spirit worthy of the cause may be quoted, viz., "This is a time and situation when the spirits of the people require to be maintained, and if possible increased in buoyancy, and the sight of a well-spread flower bed conduces greatly to this desirable end." Exactly; as my Lord Bacon said centuries ago: "Flowers are a refreshment to the spirit of man," and Ruskin told us more recently: "Colour was given to us for our comfort." Indeed, it seems hard to realise business (our business) as usual without flowers, including those that bloom in the spring.

Surely, it is high time that our leaders who promulgate their ideas in the public press so prettily should seriously consider what the effects of their short-sighted policy would be in the injury inflicted on trade, on the professional gardener, and on the public, and weigh that against the gain that might accrue in increasing the food supplies in the petty way indicated. Cannot they look farther afield and see the countless acres of good land starved for the want of the human hand, capable of yielding crops of the highest food quality without interfering with our gardens and disorganising the labour, both muscular and mental, and all for—what? If they would only devote half the energy and ink utilised for such a useless, and worse than useless, purpose to preaching the doctrine of potato spraying, the field culture of onions for which we have to rely largely on imports, parsnips, and other staple vegetables of relatively high food value, it would be better for them and for us. And—but enough, for —'s sake let us have business as usual in all the comprehensive sense of which it is capable. Those who would have us do away with our flowers are no friends to the country at large in the opinion of —

K., Dublin.

The Arboretum.

Work in this department will soon become important, as with the advent of October planting of evergreens must be proceeded with. It is true that many kinds may be planted at any time during the winter when the weather is open, but there is little doubt that early planting is beneficial to all. Hollies, for instance, are very often recommended to be planted in September, and in many parts of Britain this is necessary. The comparatively mild, open nature of the late months of the year in Ireland, together with a greater humidity of atmosphere, make it possible to carry out the planting of many things up to a later date. Specimen Conifers transplant with great success during October, and no time should be lost in getting this work in hand. If the present spell of fine dry weather continues the soil may be too dry in some districts, and it will be advisable to defer transplanting until rain has come. The same remarks apply to young stock in the home nursery. Seedlings which have made good growth must be transplanted regularly, and if this is done in October, while the soil is still warm,

they will quickly form new roots and get established before severe weather sets in. In all cases, whether it be plants going out to their permanent positions or small plants in the nursery merely being transplanted to induce a fibrous root system, an endeavour should be made to retain as much soil about the roots as possible. This undoubtedly minimises the risks of failure and assists the plants to settle down in their new quarters at once.

Among trees other than Conifers, evergreen Oaks are notoriously bad transplanters, and should be got into permanent positions when quite small. There is some difference of opinion as to whether early autumn or late spring is the better time to move evergreen Oaks, and possibly either season is suitable when the work is competently done. If the weather is suitable in October, good results usually follow, but if not done then it is better deferred till late May or early June, when the roots are again active.

Among evergreen shrubs there are many very handsome plants valuable for their winter effect as well as for giving shelter where a tree would be unsuitable. The bush Ivies, which are really adult forms of the climbing Ivies, are not so freely planted as they might be. Some have large handsome leaves not excelled by any other evergreens, while the silver and golden variegated sorts are unrivalled for producing a cheerful effect in winter.

Other evergreens deserving of attention are the Osmanthus, of which there are several species, notably *O. aquifolium* and its varieties *ilicifolius* and *l. purpureus* and *variegatus*; *O. delavayi*, with small dark green leaves and beautiful white flowers in spring. The *Phillyreas* are useful evergreens, the best being *P. decora*, *P. latifolia*, and *P. media*. Shrubby *Veronicas* provide great variety from the handsome *V. traverii*, which grows into a large bush, to the smaller rock garden kinds, of which there is quite a number of species.

Saponaria ocymoides.

DURING the latter part of May and the first half of June this was one of the showiest plants on the rockery. For those who want big masses of colour no more desirable plant can be found in its season.

There are now in cultivation forms much superior to the type in depth of colour and size of flower. Perhaps the finest form is that known as *S. ocy. grandiflora*, which literally smothered itself in deep rose-pink flowers and makes a wonderful show.

There is, of course, a white variety which can be used effectively in contrast with other rock plants; the flowers are not, however, pure white, but usually incline to pink.

In the variety *S. ocy. versicolor* we get a combination of white and pink flowers open together, the effect being rather pleasing.

This Soapwort is a very free grower, and, though not coarse, should be given a position where it can be spread freely without encroaching on plants of more restricted habit. Propagation is easily carried out by cuttings of the young growths when the flowers are over, while seeds being freely formed offer another ready means, though varieties, of course, will not come true.

Nursery Inspection in France.

The Journal of the National Horticultural Society of France for June, 1915, contains a summary of the regulations made for the inspection of plants in relation to the Rome Convention of 1914. It is worth noting that the French Government has organised a service to commence to carry out a part of this inspection, clearly expecting to adhere to the convention, and anticipating that the convention will be adopted pretty much as it stands. It is therefore of particular interest to see in what direction it is considered necessary to proceed under this convention, the formal beginning of what, presumably, would be done here if this country adhered to the convention.

The staff appointed in France includes a Chief Inspector and an assistant chief inspector, both of them men of wide reputation in Europe. There are a number of inspectors, who inspect establishments engaged in plant export, and give certificates; there are assistant inspectors and "controleurs." The last are resident during the export season, so that they can be continually present at exporting establishments and constantly supervise the packing.

The inspectors and assistant inspectors have also to be constantly recording what pests and diseases occur in their districts, and are expected to be well informed as to the condition of the crops as regards disease, so that the occurrence of dangerous diseases may be immediately known.

Fees are payable by the licensed nurserymen and dealers to cover the expense of this service of inspection.

DUTIES OF EXPORTING FIRMS.

In order to get a licence, the firm applies annually, paying a fee; the form of application for nurserymen states that the applicant is already well acquainted with the regulations in force between France and the countries the applicant will deal with; that the applicant will conform to the regulations that may be laid down; that he will give every facility to officials; that he agrees not to include in consignments from his establishment plants derived from other establishments without having previously given ample notice (*these other establishments also to be licensed*); that he will attach to each consignment a copy of the invoice, with values, and a declaration that the whole consignment is from licensed and inspected cultivation.

A similar application is to be made by exporters of agricultural produce.

The licensed firm can then apply for inspection of the total stock intended for export. This inspection must take place within eight days of the application, and the firm then gets a certificate of inspection for that stock. Certificates of freedom from disease are given on the above inspection, if required, but no certificate will be given without a copy of the usual exporting documents. If it be desired to include in a consignment any plants other than those that have already been inspected, then inspection of these must also be obtained. Each consignment can be inspected separately if preferred, and if it be possible. The exporter has to number each consignment, attaching this number to all documents.

The following are the measures to be taken in regard to nurseries and consignments:—

(1) Nurserymen have to take all precautions

against pests and diseases, and to follow the advice and the formulae laid down by the phyto-pathological service.

(2) During the winter, the nests of the brown-tail moth, the egg-masses of Gipsy and Lackey moths must be destroyed on fruit trees and on adjoining hedges. From the first of September all new nests of caterpillars are to be destroyed on stock destined for export in the following autumn or winter.

(3) Before lifting fruit-tree stock, the nurseryman will strip all leaves and remove all nests, egg-masses, &c.

(4) Workmen who sort the plants, either in the nursery or in the building, should be well acquainted with the egg-masses, caterpillar nests, &c., and make certain that none are left on. If sorting is done in a building, this must be a well-lighted one.

(5) When stock of fruit or fruit trees, Roses and other plants are brought in tied bundles to the despatching building, if the plants measure more than 5 millimetres at the crown, they are not to be packed in cases until they have been untied and examined. For plants measuring from 1 to 5 millimetres, the workman doing the packing separates the twigs to the point where they are tied, and makes certain that no caterpillar nests are present. This final examination is to be carried out by a special workman or by the workman who finally places the plants in the case.

The above regulations are not very alarming, and if interpreted fairly liberally need not cause much inconvenience.

The regulation about inspection of all stock to remove egg-masses and nests is designed to comply with the requirements of the United States, who do not propose to adhere to the convention, and have their own restrictions on imports; but until the countries that adhere publish their list of scheduled diseases, no one can tell what the carrying out of the above inspection will mean.

Meanwhile the French nurseryman is getting used to being licensed, to having his stock inspected, to being obliged to get a certificate before exporting, and the inspection and certificate now relate only to a few pests or diseases. As each country adheres the nurseries will have to be inspected for the diseases also listed by these, and the kernel of the matter lies in the list of diseases each country will schedule.

Nurserymen in this country will note that in these regulations new stock can be obtained only from other licensed nurseries—*i.e.*, if a particular nursery desires to obtain stock other than that it has grown, it can do so only from other licensed nurseries, and must give notice if this stock is to be included in any consignment.

The regulations dealing with the question of exporting nurseries, and the decree authorising them, is dated February 15, 1915.—*H. M. Lejroy.*

Notice.

TRIAL OF ANNUAL SUNFLOWERS AT WISLEY.

THE trial of annual Sunflowers at Wisley will be continued in 1916, and senders of seed to the present trial are invited to send in their stocks again (20 seeds of each variety) by 20th February, 1916, addressed the Director, R.H.S. Gardens, Wisley, Ripley, Surrey. A separate Form of Entry (to be obtained from the Director) must accompany each variety sent.

Extracts from Letters of Mr. C. F. Ball.

MR. C. F. BALL, writing from the Dardanelles to Sir Frederick Moore, says: ". Never welcomed the sight of *Juncus acutus* so much as that day, for a stretch of some acres gave us a rest and some shelter from rifle and machine-gun fire. A dense scrub covers all this part, consisting mostly of *Quercus coccifera* I believe, *Poterium spinosum*, also *Anthyllis Hermannia*. The *Poterium* is interesting at this time of the year; it has each leaflet rolled up, and it was some time before I recognised what it was. The land is parched and dry, but there are good wells and springs. Our last move has been to trenches in a sandy and cultivated part, where we have been for a week. Some of the fields seemed to have been ploughed in the spring, but nothing sown. Managed to find a few ripe figs to-day which were a treat. Here there are several good sized trees of various kinds, such as willow, Lombardy and white poplars, olive, *Pyrus* *Ulmus*, and an oak of which I am not sure, and enclose a leaf, also seed of a *Hypericum*. I sent seeds by Lacey some time ago; he was fit and well. Flowers are over now. *Cistus* on some of the mountains must have been a glorious sight; I sent seeds of two species to you.

"At first, before the base was established, we lived on bully beef and biscuits, but are getting better fare now, and bread came as a special treat this week, with a bit of fresh meat to-day. Of course everyone must have had some narrow shaves, for even on the boats landing us we were received by shrapnel, and had some wounded. I've had my share, and coming here I was rolled over by a piece almost spent. Luckily I was carrying a sand-bag, which the shell hit, and I only got a slight bruise. The worst of it is in a front trench one gets very little sleep at night with guard now and again, trench digging and fatigues. Last night I was on a covering party towards the enemy's trench during an attack, and we had a warm time. There's continual snoring going on all the time: one of our men was hit just now in the leg while out gathering sticks for a fire. We have to do our own cooking and make tea in this trench. We are regaled with the interesting sight of the naval guns sending shells on the mountains held by the enemy, but their guns are cleverly concealed and the country is very difficult in front. Aeroplanes often pass over, and we saw a light between a Taube and one of ours, but no result. Seven weeks after leaving England we got our first post, but now it is coming more regularly. Yesterday I received IRISH GARDENING among some other papers sent by my wife, and it is a very interesting number."

"Aug. 24th.—If, like birds, we required a certain amount of grit for digestion we might be more comfortable, for, helped by a breeze, the sand seems to pervade everywhere—food, eyes, mouth. Glad to say I am fit and well. A touch of rheumatism in my knee has been my worst trouble. I think the cold nights must bring it on, for the days are scorching hot as a rule."

"Aug. 27th.—The ground we were on at first was very hilly and wild and rocky, but here, near our trench, is much flatter, with some cultivated fields, although no crop seems to have been sown this year. There are remains of a few Turkish houses like stone sheds, and I managed to get a

ripe fig the other day from a tree. Taste are also melon plants growing, but the melons have gone. The land is parched and dry, but fortunately there is a good well near to us. All the flowers are over now except a shrub called *Vitex*, which looks like *Buddleia*. Perhaps you would like to hear what life in a trench is like. The sides of the trench are undercut in places like little caves, in these we sleep at intervals, but we are too crowded to have one each. At night we are on guard for three separate hours; sometimes have a turn at trench digging and carrying food, both day and night, and are awakened at 1.30 or 5 a.m.; besides sometimes there are false alarms, so usually one's rest is broken, so we make it up in the day if not on fatigues. On first arriving our food consisted of biscuit and bully beef, but it has gradually improved, and we now get jam, bacon, rice, potatoes, tea, sugar and condensed milk, and to our great joy this morning half a loaf of bread was served out to each man. The nights are very cold, but the days extremely hot and sunny. This is the sixth day we have had in this trench, but it is not too bad at all."

"Aug. 29th. This Sunday morning has been rather tiring. With some others I volunteered to go to fetch parcel post, thinking it was at the usual place, whereas we had to go to the beach about four miles off. It is not the distance, but the heavy going on the loose sand bordering the sea and a long salt lake. This lake is interesting, as in some places there is a crust of salt almost an inch thick along the edge. The Turks seem to be fond of it, for soon after landing, when I was hungry, I ransacked some Turks' equipment, and found each had a little bag of it. I thought I had a find, as it seemed to me like daked rice until I tasted it. When going for the parcels I had a dip in the sea, and was very glad to get it, for it was the first wash I had for a week! I came across a pretty lot of Maidenhair Fern this morning growing near a spring. A tiny *Love* in a Mist also grows wild here. Olives, Brooms, Sea Lavender, Sea Holly, and many other interesting plants. A knowledge of plants and botany always makes a walk interesting, and conveys much useful information. Plants have their tastes as well as we have. By the plants growing on land we can usually tell whether it is chalky or sandy, or if it is salt marsh at any time of the year and partly covered by sea; also, to a certain extent, the altitude of the land, and so on."

Answer to Correspondent.

TRAINING A VICTORIA PLUM

ALL varieties of plums such as are trained by nurserymen for sale will grow and fruit freely if trained horizontally, and especially so *Victoria* plum.

Plums do not adapt themselves so readily to horizontal training as other fruits, and consequently are more frequently fan-trained, and for this reason horizontal trained plums are not readily procured, though some nurserymen do train them horizontally.

Victoria plum could quite readily be trained fan-shaped against an espalier, and would fruit equally well in that shape. A few pieces of stakes could be tied to the wires for training the young shoots of plum to, and removed as plum branches matured and got strong.

ALFRED BARKER.

Royal Horticultural Society's Autumn Show, Dublin, August 24th, 1915.

In September issue we were only able to furnish a list of prize winners. A few notes on the larger exhibits by nurserymen will therefore be of interest.

It has been a poor season for Roses, yet the blooms staged by the well-known firms from the North were wonderfully good. Messrs. Alexander Dickson & Sons, Ltd., put up a large non-competitive exhibit of blooms in boxes, backed by tall stands. The variety George Dickson was pre-eminent, a fine big crimson rose for the exhibitor. This group was awarded a silver medal. In the competitive classes open to the trade, Messrs. Hugh Dickson, Ltd., Belfast, had the field to themselves, and were awarded three first prizes. Their table of Roses arranged for effect was specially commended for decorative result, and was put up as Messrs. Hugh Dickson well know how to do. The new crimson H. D. M. Barton was good, also Madame Edouard Herriot (Daily Mail Rose), but probably the most attractive variety was the firm's new H. T. Prince Charming, a very charming Rose indeed for decorative purposes, whether in the garden or cut.

The largest nursery exhibit was that of Messrs. Watson & Sons, Clontarf Nurseries, Dublin. They staged one of their highly interesting collections of hardy flowers and alpinas, occupying one side of a tent. *Thalictrum dipterocarpum* was fine, the graceful flower-stems ascending to the low roof of the tent; it is a lovely thing for cutting, and will find its way to every garden. Newer plants included *Poterium obtusatum*, with wavy plumes of deep pink, and *Lychnis hybrida*, which boasts, perhaps, the most glaring colour to be seen in a herbaceous border. *Lythrum alatum* and *L. Rose Queen* were in good form, also a bold mass of the double-flowered *Gypsophila*, which deserves to be more generally grown, as the doubling of the minute flowers intensifies the whiteness without in any way depreciating the charm of the plant. *Stokesia cyanea præcox* was nice, and Spark's variety of *Aconitum*, a very telling purple. The indispensable *Aster Thomsoni* was well shown, and the pink *Erigeron hybridus roseus* was in bloom in pots. A good collection of Messrs. Watson's well-known border Carnations found a place in the stand, and these included their new yellow "Soufflé," which is remarkably smooth and symmetrical in outline, does not burst, and is of vigorous growth. *Pæony*-flowered *Cactus* and *Collerette Dahlias* in many varieties gave brilliance to the stand, and much attention was attracted by the set of dwarf *Polyantha* Roses, which are so effective for bedding. Amongst these, *Jessie*, *Orleans*, *Erna Teschen-dorff*, *Mrs. W. H. Cutbush*, *Mme. Jules Gouchant*, and *Rodhatte* were very fine. They were backed with H. T. Roses in numerous varieties. Flowering shrubs were represented by pretty things, such as *Perovskia atriplicifolia* with lavender-blue flowers; *Coriaria terminalis*, showing the curious racemes of fleshy yellow fruit; *Salvia Greggii*, with flower and calyx crimson-purple; *Buddleia variabilis magnifica* was rich in colour; the heavily flowered feathery stems of *Tamarix hispida aestivalis* were very charming, and the reddish flowers of *Hydrangea Mariæi* *lilacina* found many admirers.

One end of Messrs. Watson's stand was allotted to Alpines and rock plants, an extensive collection for so late a date, but we can only enumerate a few. *Solidago Buckleyi* is a charming little Golden Rod, 9 inches high, which someone not inaptly called "Yellow Mignonette"; *Camp-anulas* included *W. H. Paine*, *Warley*, and *Profusion*. The first named can be flowered at almost any time of the year, and is a fine conservatory as well as rock-garden plant. The fiery scarlet of *Verbena chamædris* was striking, and also the yellow flowers of *Asteriscus maritimus*. *Crassula sarcocaulis* was a mass of flower, and is a charming plant for autumn bloom in the rock garden. The neat little *Hypericum cuneatum* and the always welcome *Viola bosniaca* were good, and there were many dwarf shrubs and Conifers suitable for the rock garden, the heathers being well flowered. Messrs. Watson were awarded a gold medal for the stand, which was closely inspected by a crowd of interested visitors, for hardy flowers and alpinas occupy the foremost place in the mind of the gardening public now.

The only other gold medal exhibit was that of Mr. S. A. Jones, Kilkenny, who put up a splendid collection of Gladioli in named varieties. Messrs. Hogg & Robertson also staged a good collection of these flowers in another tent, including many promising novelties raised by the firm, and received a silver medal. The nursery exhibits were completed by Messrs. Charles Ramsay & Son, Royal Nurseries, Ballsbridge, who were highly commended for a collection of named herbaceous *Philoxes*.

A SPECIAL meeting of the Council was held at the Society's Offices, 5 Molesworth Street, Dublin, on the 24th ult. Present:—Messrs. J. Wylie-Henderson, E. H. Walpole, J. J. McDonough, Geo. Watson, D. L. Ramsay, J.P.; Robt. Anderson, and James Robertson, J.P., with Mr. E. D'Offier presiding. Regrets at inability to attend were received from Sir Frederick W. Moore, Lady Abreda Bourke, Dr. R. T. Harris, T. Masterson and W. F. Gunn, J.P.

The meeting was convened to receive the Finance Committee's report, with statement of accounts of the Autumn Show and Fête held in Lord Iveagh's grounds, August 24th. The various items having been allocated to their separate accounts respectively it was noted that expenses, including the prize list, showed a balance to loss of £66 4s. 9d. over receipts on the Show account, and that the Fête accounts showed a gain of £125 19s. 8d. over expenses, which sum it was resolved be equally divided between the Royal Dublin Fusiliers' Prisoners' of War Fund and the Irish Branch of the Vegetable Products Committee for supplying fruit and vegetables to the Fleet, cheques being forwarded to the Hon. Treasurers of each Fund. Arrangements were made for duly acknowledging the valuable work of the Fête Committee in making it a success, and the Council wish to express their gratitude to the many, they may not be able to personally thank, who generously gave their exhibits or sent in gifts for the auction, which realised a substantial sum for the project. At a previous meeting of the Council it was resolved that after due consideration, and with much regret, that under present exceptional circumstances the winter show, provisionally fixed for October, would have to be abandoned.

Correspondence.

STR., I was much surprised to read the hysterical outburst under the title "Hints to Novices" in your September issue. Who are the novices?

Your contributor considers, evidently, that he is qualified to sit in judgment on the actions of the Council of the Royal Horticultural Society of Ireland about which, presumably, he knows nothing. Did he give any consideration to the members of the R.H.S.I.? If their subscriptions were paid on the understanding that the Society provided flower shows in return, are the council morally bound to provide shows?

Your correspondent knows little of the part gardeners play in the question of showing or not showing, the role of the employer being, as a rule, that he may not touch his own fruit or flowers for weeks before a show. "We cannot have any roses just now, Jones wants them for the show" is often heard when going round a garden when the gardener is keen on exhibiting.

The comparison drawn with the abandonment of the Royal Dublin Society's Horse Show is not accurate. With Ballsbridge show yard in the occupation of the military authorities since last April with horses and mules from North and South America and Canada, how could a show be held, and what owner of a valuable animal would risk his horse in a yard where so many "foreigners" have been?

"If I may give a hint to your contributor, it is—Continue to tell us how to cultivate our cabbages, loganberries, and raspberries, and drastically prune your own tendencies to rash and uncalled for criticism." Yours, &c.,

MEMBER R.H.S.I.

DEAR STR.,—I am at a loss to understand how the diatribe called "Hints to Novices," in the September number, in any way refers to its title. Evidently the writer is a novice in such matters, or he would not have written such twaddle. It would be well if he would confine his attention to matters about which he does know something. I have read with pleasure and profit his advice about gardening matters, but if this gardening advice is not more accurate than the statements made in this article, I fear I will have to discount it in future. It is difficult to conceive the object of this venomous attack on a Society which has done so much to encourage gardening and horticulture in Ireland. In England, where the pinch and stress of war is far more keenly felt than in this country, there has been no complaint about the Royal Horticultural Society holding its usual fortnightly meetings. The Chelsea and Holland House Shows were not abandoned; on the contrary, they were most successful.

A reference is made to the Royal Dublin Society not holding its Annual Horse Show which is misleading, as many of the other remarks in the so-called "Hints to Novices" are. Why cannot the writer be honest enough to state the reason? The Royal Dublin Society have no grounds available in which to hold a show, nor would a sufficient number of horses be forthcoming to make a successful show. Speaking as one who attended and enjoyed the show in Lord Iveagh's grounds, I trust that the Council of the R.H.S.I. will disregard these spiteful and unnecessary criticisms. If your contributor had seen the eagerness which the

public displayed at the auction after the show to possess the plants and flowers of which he speaks so contemptuously, he need not have pified them so much. They thought more of the good cause in which their money was spent, and evidently they possessed more "charity" than your contributor, who would have deprived two excellent war funds of much needed support.

A PLEASED EXHIBITOR.

Horticultural Relief for Serbia.

IN accordance with the recommendation of Mr. Henman, the society's special commissioner to Serbia, the Council of the Royal Horticultural Society decided at its last meeting to send out to Serbia seeds to the value of £500. The order for the seeds was placed with Messrs. Hurst & Son, and thanks to the personal interest which Mr. Edward Sherwood has taken in the scheme for relief, the total of seeds to be sent, as will be seen from the following list, is a very considerable one. The seeds are to be sent out by a boat belonging to the Johnstone Line on August 8th, and are consigned to the President of the Co-operative Union in Serbia. This gentleman has given strict undertaking to see that the ship is met by a trustworthy agent at Salonika, and to use the resources of the Co-operative Union for the impartial and thorough distribution among the small Serbian farmers. It is largely owing to the energetic action of Mr. Arthur Sutton, the Secretary of the R.H.S., and other members of the sub-committee appointed to deal with the immediate needs of Serbia, that the task of discovering exactly what the needs were and of contributing towards their satisfaction has been discharged so promptly. When it is remembered that the needs of other of our allies, for example, Belgium, are even greater, there is good hope that the appeal of the R.H.S. for contributions to the Allies' War Relief Fund will continue to meet with an increasing measure of support. Subscriptions, large or small, to this fund may be sent to the Treasurer, R.H.S., Vincent Square, S.W.

LIST OF SEEDS SENT TO SERBIA.

20 cwts. Mangel, Long Red; 10 cwts. Mangel, Yellow Intermediate; 10 cwts. Mangel, Yellow Globe; 10 bush. Pea, Bountiful; 10 bush. Pea, Pilot; 10 bush. Pea, Essex Star; 10 bush. Pea, Fillbasket; 10 bush. Pea, Senator; 10 bush. Pea, Alderman; 10 bush. Pea, Ne Plus Ultra; 60 lbs. Broccoli, Purple Sprouting; 25 lbs. Broccoli, Self Protecting; 15 lbs. Broccoli, Late Queen; 50 lbs. Brussels Sprouts, Covent Garden; 25 lbs. Cabbage, Offenham; 25 lbs. Cabbage, Rainham; 25 lbs. Cabbage, Leeds Market; 25 lbs. Cabbage, Enfield Market; 50 lbs. Cabbage, Small Drumhead; 50 lbs. Cabbage, Large Drumhead; 25 lbs. Cauliflower, Walcheren; 25 lbs. Cauliflower, Antum Giant; 50 lbs. Carrot, Nantes; 50 lbs. Carrot, St. Valery; 50 lbs. Kohl Rabi, Fine Top, Green; 2 cwts. Spinach, Longstanding Prickly; 2 cwts. Onion, White Spanish; 1 cwt. Onion, Flat White Tripoli; 1 cwt. Leek, Flag; 2 cwts. Kale, Thousand-headed; 1 cwt. Beet, Turnip-rooted; 2 cwts. Turnip, Green Globe; 1 cwt. Turnip, Easterton Hybrid; $\frac{1}{2}$ cwt. Onion, Giant Rocca; 13 qrs. Wheat; 6 qrs. Barley; 10 qrs. Oats; 6 cwts. Red Clover; 4 cwts. Lucerne; 5 cwts. Ryegrass, Italian; 6 cwts. Winter Tares; 1 cwt. Spinach Beet; 6 cwts. Perennial Ryegrass.

Reviews.

The Handy Book on Pruning,
Grafting and Budding.*

THE younger generations of professional gardeners and amateurs keen on fruit growing require no introduction to Mr. James Udale, as his practical little handbook has been a veritable stand-by to scores who desired to know the why and the wherefore of pruning, grafting and budding, and who by reading laid the foundation on which they built their practical experience.

The third edition now issued maintains the high standard of practical common sense which characterised former issues, and will be found by the present generation of young fruit growers as useful and helpful as its predecessors were to gardeners who are now practising what they learned by study and practice combined.

A feature of the work is the large number of excellent illustrations, mostly from photographs, which aptly demonstrate the author's directions and explanations. The pruning of all the chief fruits grown in British and Irish gardens is ably dealt with, including apples, pears, plums, cherries, and bush fruits generally. All the various kinds of pruning are discussed and explained, such as summer pruning, pinching, disbudding, &c., and useful chapters are included on pruning Roses and flowering shrubs, the latter being but imperfectly understood by a great many gardeners still. Grafting and budding are lucidly explained and freely illustrated, so that even the novice after reading may try his hand with every hope of success.

At the end a list of stocks for various trees and shrubs is quoted from M. Charles Ballet's book, but we strongly disapprove of the advice to graft Cotoneaster and Medlar on Seedling White Hawthorn. Anyone who has had experience of a large collection of shrubs knows full well the wretched result of grafting Cotoneaster on Thorn, and there is no need for it, as cuttings strike freely and seeds are usually produced in abundance.

Fungoid Diseases of Farm and
Garden Crops.†

THIS should prove a useful work for the practical farmer and gardener who wishes to know something of the life history of the chief diseases to which cultivated plants are subject. It is not a large volume, but much information, simply and lucidly set forth, is contained within the covers, and the illustrations of many Fungi and their methods of reproduction are good, and supplement the text admirably.

The work is divided into six chapters, the first and longest containing general information :

* Published by W. & H. Smith Ltd., The Journal Press, Evesham, Is. 6d. nett.

† Published by Longmans, Green & Co., 18 Paternoster Row, London. Price 2s. nett.

thereafter five chapters are devoted to diseases of various classes of plants, as cereals, leguminous plants, potatoes, crucifers, mangels, &c., while a useful appendix deals with diseases of farm animals. An excellent index concludes this little volume, which we have found most readable, most informing, and which, we believe, will prove valuable to all those whose business it is to grow plants either in the garden or on the farm.

Irish Eclogues.*

THIS little book of verse breathes the atmosphere of the countryside and life on a farm. The author has caught the spirit of rural life, and evidently prefers the country to the city. Cleverly he depicts much of the routine work on a farm, and while not ignoring the hard labour often entailed, yet expresses finely the joy of work for its own sake. Much of the joy and humour of country life is laid before us, while the beauty which the author sees everywhere, in sunshine and storm, on mountain, meadow, and lake, is brought home in the poems he has given us.

The author has added a footnote in Irish with an English translation, the object of which appears to be to impress readers with the advance made in Ireland in the use of the Irish language. We doubt if there is much real advance, and recent events do not make us hopeful that the ancient language of Ireland will ever return to its former place in the life of the nation.



Oenothera Nuttallii.

THIS charming little species, which was not mentioned in the notes on "Oenotheras for the Rock Garden" in last month's IRISH GARDENING, is one of the best, and was to be seen on the rockery at Glasnevin, where it flowered for a long time during the summer. It is a dwarf grower, flourishing in a loose sandy soil, and spreading by underground runners. The flowers are yellow, scarcely exceeding the leaves, which are narrow and about 6 inches long, in no way coarse as in some species.

Most catalogues describe *O. Nuttallii* as having pink or white flowers, but obviously there is some confusion regarding the true species.

A friend who is in an excellent position to get first hand information writes:—"Gray's type specimens apparently have yellow flowers, and in his original description he puts two species—this and *breviflora*—in a section, and says flowers pale yellow or white. Leveillé in his monograph of *Oenothera* says: '*O. Nuttallii*, yellow, passing to red. Howell in the Flora of N. W. America says: 'Usually white.'"

It appears therefore that there is more than one plant known as *O. Nuttallii*, but as the type specimens of Torr and Gray, who are the authorities for the name, are yellow, this plant must be accepted as the true one.

J. B.

* By E. E. Lysaght. Published by Maunsell & Co., Ltd., 96 Middle Abbey St., Dublin. Price 3s. nett.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath,
Ballywalter Park, Co. Down.

TENDER BEDDING PLANTS.—It will be necessary within the next few weeks to remove the tender plants indoors. Those plants which will be used for bedding purposes next year must be treated with every care, but many of the soft-wooded plants are of no further use, and may be put on the rubbish heap. Standard plants of *Fuchsias*, *Pelargoniums*, &c., that were plunged in their pots should have the roots trimmed off from the pots, the pots washed and the plants pruned to the hard wood. They should then be placed close together in a cool house, given occasional syringings when the weather is fine, and shaded from bright sunshine to assist the plants to recover from the severe check. Those which were knocked out of the pots before planting should be carefully lifted and put into pots of the smallest size possible. Plants of tuberous-rooted *Begonias* should be laid out thinly in a cool, dry place where there is plenty of light until they are properly dried off, when they may be stored away in boxes of sand. *Lobelia cardinalis* and its varieties should be cut down and the plants boxed up and placed in a cool frame.

FLOWERING SHRUBS.—The transplanting and thinning of flowering shrubs should receive attention as soon as the soil is in a suitable state. If planting is completed early in the year, the removal is hardly felt by the shrub, and its after-growth is very slightly affected. It is necessary in shrubberies to provide more room from time to time, so as not to cause overcrowding amongst the choice varieties and to avoid injury to well-shaped shrubs.

AUTUMN TINTS.—A selection of foliage plants for autumn effect should not be forgotten. The following is a few of the better known varieties:—*Acer virginianum*, *A. purpureum*, *A. saccharinum*, and *A. platanoides*. Amongst Japanese Maples are *Acer palmatum* and *A. atropurpureum*. The *Snowy Mespilus* is valuable for its autumn foliage: *Liquidambar styraciflua*, *Euonymus europæus*, *E. alatus*, *Berberis vulgaris*, *B. atropurpurea*, *B. Thunbergii*, *Rhus Cotinus*, *R. glabra*, *R. laciniata*, *R. typhina*, *R. coccinea*, *R. elegans*, and *R. sanguinea* are effective all summer and till late autumn.

ROSE GARDENS.—Alterations of beds or the planting of newer and better varieties should be put in hand at once. Fresh soil will be required and a heavy dressing of well decayed farmyard manure.

The preparation of the beds for the reception of the spring bedding must shortly be undertaken. The ground must be well cleaned of rubbish, dug thoroughly, and receive a liberal dressing of well-decayed manure. Endeavour to get the work done when the weather is fine, as it can then be carried out more quickly and cleanly. Such plants as *Wallflowers*, *Myosotis*, *Arabis*, *Polyanthus*, &c., should be lifted with a small hand-fork and carefully transferred to the beds. Where

Tulips and other bulbs are employed with the plants already named, they should be planted at once by means of a dipper.

GENERAL REMARKS.—*Violas* are making plenty of cuttings, and if thought necessary a further supply may be rooted. Fallen leaves must be swept up continuously; it is much easier to remove them when freshly fallen, and the constant brushing of the lawns stimulates the growth of the grass.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitz-Gerald, Carrigoran, Co. Clare.

BEFORE these notes are in circulation a considerable part of the crop of early apples and pears will have been gathered and disposed of, but during this month the more important and late-keeping varieties will need careful treatment in gathering and storing. These latter varieties should be left on the trees until they arrive at the proper condition, but so soon as they come to this stage have them promptly gathered, as violent winds or a gale may arise at almost any time, and these make sad havoc amongst fruits that may be left too long on the trees. Where large quantities are to be dealt with at the same time it is a good plan to place in any convenient boxes, &c., as gathered. These may be stored away temporarily in any dry, airy house or building, and stored away in permanent quarters as opportunity offers, so that sufficient time may be devoted to sorting and proper storage. Apples and pears are behaving in a very erratic manner this year, with many people many ripening unusually early, and many dropping prematurely from the trees. They will also crowd or push each other off in numbers where a heavy crop has been left unthinned; but in this or any other season each variety must be given time to mature properly before commencing to gather, as unless properly ripe at time of gathering most varieties commence to shrivel before their proper season for use arrives, thus considerably reducing their value; in dessert apples the flavour is also much depreciated. The proper condition of ripeness in apples and pears is most certainly indicated by the readiness with which the fruit parts from the spur; a few fruits should be tested before gathering. Take the apple or pear in the hand, giving it a lift upwards or sideways; if the stalk parts readily at the junction with the spur, then no time should be lost in gathering such varieties. When dealing with large old trees carrying heavy crops, all the fruits do not arrive at maturity at the same time, and if circumstances permit the largest and best fruits should be first gathered, leaving the smaller fruits and those in centres of trees for a week or so longer; these fruits will be much improved if thus treated. Where a specially erected and fitted up fruit room is not provided, apples and pears may be stored away in suitable out-buildings, &c. (cellars are also good stores for fruit) in fruit trays, boxes, or on shelves put up for the purpose. The principal requirements of storage are that the fruit should not be exposed to fluctuations of temperature, too much dryness, or damp. Light should also be excluded, though it is most advisable that there should

be a circulation of both light and air through any room or building where fruit is stored in quantity for a week or ten days; both should afterwards be excluded. Fruit that is to be kept for any length of time should not be stored on hay or straw, as this frequently creates mould amongst the fruit, and imparts a disagreeable taste. Shelves of smooth-plated boards or laths form the best storage medium. Either laths or boards should not be closely-jointed; a space of from $\frac{1}{4}$ to $\frac{1}{2}$ inch between allows of a desirable circulation of air through fruit that may be stored two or three (or more) layers deep. Soft apples and choice dessert should not be more than two or three layers deep; small apples and such as thick-skinned hard late-keepers may be safely stored several layers deep. Care must be taken in all cases not to bruise the fruit, and all must be quite dry when permanently stored. Large choice pears should be stored at most one or two layers deep, small varieties and late-keepers may be placed two or three layers deep.

It frequently happens that young, robust trees grow away freely, producing a great quantity of gross shoots with large soft foliage, and to all appearance are very healthy, but they bear fruit very scantily or not at all. This undesirable condition may be caused by the trees having been planted in loose, too rich soil, through too severe pruning, or the roots may have penetrated to an unsuitable sub-soil, clayey or cold and badly drained. New or a few years' planted young trees may also attain a similarly undesirable condition. This excessive growth and unfruitfulness should be corrected by either root pruning or by lifting the trees and replanting them under suitable conditions. Trees up to a dozen or more years' old should be lifted and replanted from the end of this month and onwards, as soon after the foliage has nearly or quite fallen from the trees. Where the trees are beyond this age it is advisable to resort to root pruning, which may be commenced towards the end of the month, or as soon as the foliage assumes the appearance of completed growth and changing colour. So that the trees may not receive too severe a check, it is advisable that one half round the tree should be dealt with this season, and the other half next season. Commence by opening a trench 18 inches to 2 feet wide and 2 feet or more from the stem of the tree, and in the course of digging trench cut away at both sides of trench any thick fibreless roots that may be met with. Smaller and fibry roots must be cut at the outer side of the trench and turned over towards the tree, preserving them from any damage. As the digging proceeds, gradually undermine the tree, so that in case of there being a taproot, or any gross roots growing straight down, they may be cut away. When the roots are quite undermined, the trench must be filled in. If the earth thrown out is in satisfactory condition—*i.e.*, fairly rich and friable—it may be filled in without any further addition. As filling proceeds, lay in the roots that have been preserved, spreading them out evenly, and give them an upward tendency, so that when trodden down they may lay horizontally in the ground, rather than be working downwards. If the earth is poor and exhausted, add some well-decayed farmyard manure, or a compost of new loam, leaf-mould, and a sprink-

ling of bone meal, or good horticultural manure. In heavy, retentive soils the addition of mortar rubble or the ashes of fire heaps is very beneficial. As the roots are laid in the trench they should be shortened a few inches, all being cut clean with a sharp knife or pruning scissors; broken roots must be cut away where broken. As far as possible root pruning should only be carried out when the soil is in dry, or fairly dry condition. I may also add that if the sub-soil in the bottom of trench is very hard and poor, it should be forked over and a little manure dug in, or if wet and badly drained, dig in some broken bricks or stones to lighten and afford drainage for the soil.

This method of root pruning applies equally to all the larger fruits, including peaches (and may also apply to peaches growing under glass). With trained trees growing against walls, in whatever form of training they may be grown, a half circle should be marked out by measuring 3 feet or so to right and left from stem of tree and the same distance vertically out from stem of tree (or from stem of tree out from wall), and it is generally most advisable to root prune along the half of half circle this season and remainder next season.

If wall trees are lifted and replanted, the trees should be set aside while a hole amply large enough for replanting is cleared out; also dig to a sufficient depth, say 2½ feet deep. Before replanting shorten any gross fibreless roots and taproots, and cut clean all damaged ends of roots. Due regard must be paid to condition of soil as replanting goes on (similar to previously advised). Trample the earth very firmly as planting proceeds. As the replanting is completed the trees should only be temporarily fastened to the wall, the branches may be looped two or three together and loosely tied to wall, a loose tie or two also afforded to stem of tree. Left thus for two or three weeks the tree can drop with the body of earth which will sink more or less in the course of that time. When replanting or root pruning stone fruits, be more sparing with farmyard manure and more liberal with lime rubble, as stone fruits need more lime than apples and pears. If mortar rubble is not available add a little air-slaked lime.

It is no unusual thing to see or hear of large old fruit trees, specially apples and pears, growing a great quantity of gross soft shoots, with a crop of small badly coloured fruits, and frequently very scabby also. This condition generally arises through the roots having penetrated deep down into soil quite unfit to produce respectable fruit. I strongly advise root pruning as a means for regenerating such trees, unless they are old, comparatively worthless varieties such should be grubbed up and replaced with new trees of profitable varieties. I have on different occasions seen such large old trees completely transformed by root pruning and subsequent liberal treatment at the roots, and bearing heavy crops of fine well-coloured fruit. It is very advisable to get root pruning finished early in the season as possible, as the trees recover much more readily early in the season, and commence making new roots before winters sets in. Wherever "Winter Moths" have attacked apples this season, grease banding to capture the moths should be resorted to. These pests

(like all others) inevitably increase at an alarming rate when once they get a footing, and if not destroyed they in turn quickly destroy great quantities of fruit. The female moths climb the trees during this and next month for the purpose of depositing their eggs, but wherever the trees are banded these moths will be trapped and destroyed. Most nursery and seeds-men supply prepared banding materials for the purpose, and home-made bands are readily affixed. Strips of grease-proof paper 6 inches wide must be tied round the tree stem about 2½ feet above ground (or more); make the ties quite tight at upper and lower sides of papers, then smear the papers thickly with earl grease. The bands must be examined occasionally, and a little fresh grease added to prevent it hardening too much to catch the moth.

The Vegetable Garden.

By A. PEARSON Gardener to A. F. Sharran-Crawford, Esq., Lota Lodge, Glanmire, Cork.

THE pressure of the growing season is now past, and from now onwards weeds and vegetable rubbish will have to be dealt with. When the weather is suitable remove all weeds, &c., to the rubbish heap, or trenches, if such work is in progress.

CABBAGE.—Continue the planting of all spare ground as advised in September notes.

CELERY.—Continue to earth-up during dry weather only, and take care not to over-earth, for once the heart is covered growth will cease. Make sure of the soil at the roots being thoroughly moist previous to earthing.

CELERIAC.—Where grown, part of the crop may be lifted and stored in sand, removing all but the central leaves; the roots left growing can be secured against frost by earthing over.

POTATOES.—Store by pitting or housing all main crop varieties, and select for seed purposes as the work proceeds.

RUCIAR.—For early forcing, well-prepared roots may be lifted and exposed to the air behind a north wall. The exposure will act as an artificial resting season, and the natural law of reproduction will bring about a quick and premature growth when introduced to the forcing pit.

ROOTS.—Beet, carrots, salsify and turnips may be lifted and stored in sand, either in the root-house or in pits outdoors where protection from frost can be given. Parsnips and scorzonera can be left in the soil they were grown in, and lifted as required.

SEAKALE.—As soon as the leaves show signs of ripening, some of the roots may be lifted for early forcing, but as the results will be out of all proportion to the labour involved in growing I would advise deferring extensive forcing till later, unless, of course, it be from retarded roots, and they can be had at any time, but then that is a luxury which few care to indulge in at present. Judging from questions addressed to the Editor, the cultivation of this valuable esculent is not quite understood by many readers, but given a good sound soil, well enriched and trenched on a sunny exposure, its cultivation is simple. It loves generous treatment, and once established will continue to yield good heads for years. The roots may be planted from now till next March. The side roots "things" provide

the best means of creating new beds. These can be cut off square at the upper end and diagonally at the lower, then tied in bundles and placed in sand, ashes, or soil until the time chosen for planting into the beds, or roots of one or more year's growth may be planted to produce good heads the first year. There are many methods of planting. Some prefer ten-foot beds with broad alleys on either side, and by this system forcing can be carried out on the ground; such a bed will give room for three rows with the roots eighteen inches apart, but as ground is usually limited, rows placed thirty inches apart with roots every two feet, will give a great yield of prime heads. In planting, place the crown of plant about two inches below the surface; pare off any very prominent conical crowns, as these invariably yield flowers which, of course, are detrimental to the production of good heads, and should never be permitted. When growth has begun, disbud to a single crown to each root, and encourage by surface cultivation strong growth. In dry seasons water with liquid manure in large quantities. Mulch in mid-summer with well-fied farmyard manure, and if seaweed can be had, give a liberal mulching of that acceptable weed in preference to any other; agricultural salt is a valuable agent, and one or two light dressings through the summer will give considerable help to the formation of strong crowns.

Forcing on the growing square is easily carried out by placing pots over the crown and covering the space between the rows with horse manure and leaves or other fermenting material, taking care always to prevent light reaching the crown, otherwise the sample loses its blanched appearance. Failing the use of heating stuffs fine coal ashes, sand, soil, or peat moss will do for covering the crowns directly. When growth recommences the second year disbud to, say, two growths per root, these will produce the crop of the following year. In old beds complaints are often made that the crowns get high and horned. That is usually due to the failure of proper disbudding in the early years, and the best cure is to lift and remake the plantation; indeed, the keen grower will be dissatisfied with anything but comparatively young beds, although by digging in heavy dressing of farmyard manure each spring and attending to the ordinary details, seakale beds may be kept going strong for an indefinite period, but it must be understood that good results cannot be obtained without a thorough preparation of the soil.



Juniperus pachyphloea Elegantissimus.

THIS is the silvery-leaved juvenile form of *J. pachyphloea*, and is extremely well suited for small gardens not capable of accommodating the larger Conifers. In its native habitat on the dry mountain sides of S. W. United States it is said to reach a height of fifty to sixty feet. Under cultivation here, however, it has not as yet shown much promise of such growth, but, nevertheless, healthy young plants soon make nice little specimens which look extremely well about the grounds, especially in winter. The silvery effect is most noticeable when the plants are placed so that they have a background of evergreens, which as a rule are too plentiful in most gardens in Dublin.

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Irish Gardening

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EDITOR—J. W. BESANT

Obituary.

IN the October number of IRISH GARDENING interesting extracts from letters written by Mr. C. F. Ball were published, and it seems tragic to learn that at the moment of publication Mr. Ball was dead. The news of his death will come as a shock to readers of IRISH GARDENING and to the gardening fraternity in general, both in Ireland and in Great Britain, and will evoke feelings of sincere and genuine regret at the loss of a friend and feelings of sympathy for his bereaved relatives. From news recently received it appears that poor Ball had been in the thick of the fighting, and that his detachment was sent to a rest camp for a short respite. In the rest camp he was struck by a fragment of a shell on 13th September, and so seriously wounded that he gradually sank and passed away the same day. He went to rest covered with glory and honour, and followed by loving regrets of all who had the honour of knowing him, by the regrets of "all," as he had no enemies. Letters from soldiers in the same detachment received since his death give instances of braveries and self-sacrifice unostentatiously performed, and of which no hint is given in his own letters to friends and relatives. These letters reflect the feelings of esteem and affection entertained towards him by his comrades.

Charles Frederick Ball was born on 13th October, 1879, at Loughborough, in Leicestershire. He was the third son of Mr. and Mrs. Alfred Ball of that city. Ball commenced his gardening career at Messrs. Barron & Sons' Nursery at Elvaston, Derby, where he remained for three and a half years. From Elvaston he went to Messrs. Barrs Nursery at Long Ditton, working there for one year. He entered Kew in July, 1900, and was promoted to be subforeman in the herbaceous and alpine department in 1902. He worked with his brother at market gardening for a year, but, as this branch of gardening was not to his taste, he returned to Kew. In December, 1906, he received an appointment at Glasnevin, and in June, 1907, having passed the necessary qualifying examination, he was appointed Assistant to the Keeper, a position which he filled with credit and success until he obeyed the call of duty in September of last year, and joined the 7th Battalion of the Royal Dublin Fusiliers, the "Pals" or football corps. With such a sound practical training and animated, as he was, by a keen love of plants, Ball quickly rose to a prominent position in the horticultural world. He was widely known to British gardeners, and regarded as a sound authority on many branches of horticulture, his



MR. C. F. BALL.
Late Editor of IRISH GARDENING.

He was widely known to British gardeners, and regarded as a sound authority on many branches of horticulture, his

opinion and advice being constantly sought and freely given. In fact, this extensive correspondence largely added to his labours, and most of it was done during what ought to have been his hours for rest and recreation. Ball was of a studious and retiring disposition, and his inclinations led him to the experimental side of gardening and to the study of plants and plant life in the conditions of nature rather than to practical and bustling gardening.

On several occasions he went to Switzerland to collect and to study plant life. He visited Bulgaria and collected many interesting and rare plants, and brought back valuable information as to the conditions under which plants grew in that country. He also spent a considerable period collecting plants and seeds in the maritime Alps, both on the French and on the Italian sides. Ball was keenly interested in hybridisation, and conducted several interesting experiments with much success. Some of the results of these experiments are now well known, and some plants have been called after him. There are now

at Glasnevin still unflowered crosses made by him of *Berberis*, *Mahonia*, *Calceolaria*, *Ribes*, *Campanula*, *Escallonia*, &c., which are full of promise.

On the retirement of Mr. Houston from the position of Editor of *IRISH GARDENING* Ball was appointed in his place, and it is unnecessary to point out the success he achieved in that position. It was patent to every reader, and the high reputation in which this Irish periodical is now held is largely due to his skill and enthusiasm.

Ball had a wide circle of friends in this country, and by them his quiet, gentle manner, his open-

handed generosity, his willingness to help and to guide, were keenly appreciated. Many letters have been received at Glasnevin expressing regret at his loss. From these the following quotations may be given:

"His was such a quiet, retiring, and yet deep and powerful nature that it is a great loss to the world he should pass away so young."

"He is the first of my fighting friends to be killed. I had a real liking for him, his soft voice, kind brown eyes, chuckling laugh, and fine nature all appealed to me."

"It was a particularly fine thing for a man of his peaceful habits to join, and only those who knew him well will ever thoroughly appreciate how much he gave up and what a wrench it was to him to throw up the work he loved so well."

"His keenness was infectious, and his loss to horticulture in Ireland, and especially to *IRISH GARDENING*, will be deeply felt."

In conclusion, it may be truly said, few men have lived a better life or died a nobler death.

F. W. M.



MICHAELMAS DAISIES BADLY ARRANGED.

Kniphofia Nelsoni.

THIS is one of the smaller growing Torch Lilies, and one that is far too little grown in gardens. For the average herbaceous border it has claims beyond the stronger varieties, which are mostly forms of *K. aloides*.

K. Nelsoni produces narrow, almost grass-like, leaves which do not interfere unduly with neighbouring plants unlike the tall kinds which require a great deal of space and sometimes fail to flower. *K. Nelsoni*, on the other hand, rarely fails to flower profusely, and a score or more of elegant spikes may be produced from a comparatively small plant. The flowers are aptly described as flame-coloured, and are produced in September. In addition to their value in the garden the flower spikes are useful for cutting.

Michaelmas Daisies as Cut Flowers.

MICHAELMAS DAISY is the familiar name by which the perennial Asters and Starworts are known, although it is somewhat of an anachronism in these days, when many of the

are taken from a large collection it does not follow that one not mentioned must necessarily be excluded.

I take Aster Amellus and its named varieties first. It is the earliest recorded Aster, and they deserve pride of place both for their charm of colour and quality.

Aster amellus, A. amellus majus, A. amellus



ARTISTIC ARRANGEMENT OF MICHAELMAS DAISIES.

species and varieties flower as early as July, and some of the hybrids, during a mild season, continue in bloom into the middle of November.

Their value as cut flowers for house decoration is not sufficiently recognised, but while some varieties will last fresh for days in water, others, which look fair and beautiful in the garden, will hardly remain fresh for an hour in water without curling up in a dejected manner distressing to the decorator.

The following list of those that keep fresh longest may be of interest. Although the names

bessarabicus, purple; A. amellus Keston, dark purple; A. amellus Riverslea, very fine dark purple; A. amellus Preziosa, dark amethyst colour; A. amellus Beaute Parfait, A. amellus Fleuve Bleu, large flowers, blue, late flowering; A. amellus Madame Gauguin, pink.

Of the tall varieties, A. Beauty of Colwall, A. Advance, A. Piccolii, A. Silver Queen, A. Keston Blue, with their long, graceful branching sprays, are the best coloured blue-flowered Asters for cut work; A. Mrs. H. J. Jones, A. Don, A. Meg James, are soft pate-coloured mauves.

Of the pinks, *A. Micky Adams* and *A. Kathleen Luke* are reliable, it being a peculiarity of pink Asters not to last well in water.

Of the light feathery kinds, the old *A. Coombe Fishacre*, reminiscent of that good gardener the Rev. Archer Hinde, who did much for the Aster family, has never been surpassed. Its pale blue flowers, with pink stamens, growing in masses, make it distinct and uncommon, both in the border and when cut.

A. the Hon. Edith Gibbs is a graceful variety with pale blue flowers very suitable for small glasses and dinner table decoration.

Among the white varieties, *A. Allie*, standing about 5 feet high, very free flowering, with a clean yellow "eye," and the smaller flowered "*Clio*," are the best for cutting.

A list of those that are *not* good includes *A. hyssopifolius*, *A. Nancy Ballard*, mauve; *A. Jupiter*, pale mauve; *A. Grace Mary Lewis*, semi-double, dark blue; *A. Lil Fardell*, bright pink; *A. Rycroft Pink*, very bright pink; *A. Rycroft Purple*, bright purple; *A. Freedom*, small, white; *A. Sensation*, small, white; *A. Delight*, which is one of the most graceful of all the whites.

It is disappointing that the Rycroft varieties do not stay open in water as their colours are so distinct and uncommon.

Asters, like most flowers, look best when arranged in vases by themselves. Sprays of coloured foliage, however, may be introduced with advantage, such as *Spiraea prunifolia*, *Spiraea Schinabecki*, *Berberis Thunbergii*, *Ribes aurum*, *Viburnum opulus*, *V. prunifolium*, *Lonicera Morrowi*, *Prunus Pissardi*, *Geranium ibericum*, *Geranium angulatum*, *G. Pratense*, *G. arvenum*, *Vitis purpurea*.

Where a bold decoration is required for large rooms and halls, branches of Medlar, Parrotia, beech, horse-chestnut with their golden tints, the dark-coloured leaves of Peonies and purple hazels make a fine background, which throws up the blues and purples of Asters. The bark of hard-wooded foliage should be well scraped and the stems split before putting them into water.

Cut flowers are often treated with cruelty and indifference. One sees vases half full of water, the poor flowers, with their stems, like Tantalus, just out of drinking reach, the vases choked with leaves, and altogether what might have been a pleasure to the eye for days becomes a collection of unhappy, jaded looking flowers, withering for want of a little attention. Flowers keep fresh longer, I find, in glass vases than silver or other opaque vessels. If their stems are split up two or three inches, or the outer

skin peeled off, the extra time taken in doing so is well repaid by the difference it makes in the appearance and duration of the flowers. They do not thrive in an atmosphere of heat and gas. If the vases are filled to the brim and left in a cool hall or passage at night their contents will look fresh and crisp the next morning; a little warm water added to them has a very reviving effect. When renewing the water a small piece cut off the end of the stems opens the clogged mouths of the vessels through which the water is absorbed. When cutting flowers it is well to remember that they will last longer if cut before the anthers dehisce their pollen. Once they are fertilized their business is to set their seed as quickly as possible, regardless of the fact that we wish to enjoy their bright colours and not their seed pods.

There are nearly 200 species of Asters. They occur in great abundance in North America, where three-fourths of them are indigenous. They are distributed sparingly over Europe, Asia and South America.

There is only one British species, *Aster Tripolium*, the seaside Aster.

The Italian Starwort, *Aster amellus*, was introduced to Great Britain as early as 1596. *Aster Linosyris*, better known as "Goldylocks," is the only yellow-flowered species. It is a native of Europe.

The following is a list of some of the species from which the large number of garden varieties and hybrids have been derived:—*A. acris*, S. Europe; *A. Alpinus*, Alps of Europe; *A. amelloides*, Poland; *A. Ibericus*, Iberia; *A. Tartaricus*, Siberia; *A. diffusus*, N. America, and its variety *A. diffusus horizontalis*, from which the race of small feathery whites have sprung; *A. carolinus*, Carolina; *A. nova anglie*, N. America, and its good varieties, *A. precox*, *A. rosea*, *A. rubra*; *A. Novi Belgii*, another N. American parent of "*Purity*," "*Harper Crewe*," "*Daisy Hill*," and *levigatus*; *A. cordifolius*, N. America, plume-like masses of delicately tinted flowers; *A. incanus*, California; *A. Trinervis*, Himalayas, distinct, with its leaves marked with three veins instead of the usual one; *A. serotinus*, N. America.

Of later years there have been species introduced from Western China, of which *A. Vilmorini* is the most distinct.

Mention must be made of the July flowering *Aster Thompsoni*, which is followed by the densely-flowered *A. Acris* in August, which gives the first hint of approaching autumn to the herbaceous border. W. P. M.

Propagation of Alpines from Cuttings.

By W. D. BESANT.

THE cultivation of alpines has of recent years taken such a hold of the community at large that even in the smallest garden one finds a few alpines grown in some shape or form, even if they are only used among stones to form rugged edges to paths, &c., therefore a few notes on their propagation from cuttings may be helpful, as some at least have a habit of suddenly "going off," as even the common *Alyssum saxatile* will do at times; so that if the small grower, or even those who grow alpines extensively, could themselves keep a reserve of young plants coming along a good deal of disappointment would be averted, and the actual propagating of one's own plants increases the interest in the plants tenfold, at least so it appeals to me, and it is always comforting to either amateur or professional gardener when a plant dies to be able to say: "Oh! I have a nice stock of young stuff to take its place."

In the majority of cases alpines can be propagated from stem cuttings, or at least young growths thrown up from the base taken at the proper season, but in some few cases resort must be made to root cuttings or leaves of which more anon. The art—if art it be—of making an ordinary cutting is so well known that to go into any minute details would be waste of time and space, but avoid as far as possible taking lanky, sappy tips for cuttings; the shorter jointed a cutting is, provided it is not hard and woody, the better plant it is likely to produce. Strip the lower leaves from the cutting, leaving three or four pairs of leaves at the tip; cut the stem clean and square through the base of a joint, and the cutting is ready for insertion.

Where one has a propagating house proper at command the procedure is more or less simple; but I mean to deal chiefly with methods which would be most suitable for the small or suburban grower. If one is interested enough to contemplate propagation there is almost certain to be somewhere in the garden a cold frame, large or small, which can be used for the purpose. The first thing to do is to find the most suitable place to set the frame, select a nice open position facing either south or west, place the frame, and see that it rests level on the ground; at the same time make sure that the position for the frame is not low-lying where water will collect in wet weather and render the bottom of the frame sour and wet; if there is any danger of that put some drainage, such as small stones, clinkers, or broken pots in the bottom; on the other hand,

lightly forking the ground in the bottom of the frame and clearing out any weeds will be sufficient. When this has been done place in the frame at least 6 inches of clean sand and tread it firm; make the surface perfectly level, and give the sand a watering with a fine-rosed can; the frame will then be ready for cuttings. Have lights and mats for shading handy so that they can be placed on the frame when a batch of cuttings have been inserted; of course mats will only be required on bright days. If sand is not procurable in sufficient quantity to give the proper depth, a mixture of sand soil and leaf soil may be made, but always have the whole considerably on the sandy side; place this mixture in the frame as advised for the clean sand, but do not water this after levelling as that would cause the surface to be sticky. I prefer the clean sand as a rooting medium; I find cuttings of all sorts root more readily in it and do not damp off so readily. There is, of course, one disadvantage, probably more especially to the amateur who has not a superabundance of time at his disposal; immediately the cuttings have formed sufficient roots in the sand they must be removed and either planted out in specially prepared beds or potted off into small pots. There is practically no plant nourishment in sand, so that if the cuttings are left any length of time after rooting they will gradually decline and will never make such good healthy plants as if treated as advised, whereas if sandy soil has been used in the frame the young plants will continue to grow, and may be left there till required for planting later in their permanent positions.

When a frame has been filled with cuttings the lights will be put on and the frame kept quite close for about a week; if the cuttings are well watered in they will require no more for some days. The frames must be shaded during sunny weather, as already mentioned. When the cuttings "pick up" and appear as if they were beginning to grow, admit a little air for an hour or two in the middle of the day, gradually increasing the amount until when the cuttings are well rooted the lights can be pulled off altogether; the sturdier and hardier an alpine can be grown the better.

Some people instead of using a frame for cuttings, place them under bell glasses; this is probably the quicker means of propagating, but it is not practicable for everyone, as the bell glasses are expensive, and after all they produce no better results than a frame; however, if any one wishes to experiment let them get a few glass jam pots and insert about six cuttings in sand under each pot and try the result, I have seen quantities of alpines propagated in that way.

A method which is gaining some favour is

what is sometimes called the French frame: it is simply the sand frame already mentioned kept close and exposed to the full sunshine with no shading whatever. The cuttings, of course, must be very frequently sprayed over with a fine rose watering pot, the atmosphere in the frame must be kept continually moist. I think, however, that plants propagated in this way are inclined to be more weakly than those produced by the usual methods.

Root cuttings are inserted in shallow pots or pans filled with sand. Cut away from old plants some of the thick fleshy roots, cut them into pieces about 1 inch or $1\frac{1}{2}$ inches long, and push them in an upright position into the sand with the upper end just under the surface. In a few cases, such as the Pulmonarias, Anemones, &c., the roots are better laid flat in the sand and just covered. When filled the pans must be watered and stood in a cold frame and accorded then the same treatment as advised for the ordinary cutting frame: when the root cuttings have formed a crown and pushed a few leaves above the surface they should be removed and either potted or boxed off in gritty soil with plenty of leaf mould added.

Such things as Sedums will grow freely from leaves pressed into sand, as also will Ramondias if the leaf-veins be cut through with a sharp knife and the leaf laid flat on sand and pegged down, crowns will form at the cuts, and eventually young plants will be produced.

To go through a complete list of alpinæ, giving their proper season and full details of propagation, would occupy too much space, but hints on a few families generally grown may be useful.

ALPUBRIETIAS.—After flowering cut the plants hard back, they will then produce young growths which will make excellent cuttings in the later

summer and autumn, rooting more readily than older harder growths.

SAXIFRAGAS.—The encrusted and oppositifolia types should be propagated just after flowering. Select young shoots of oppositifolia while they are soft: single rosettes may be detached from encrusted varieties and inserted as cuttings, or the plant may be torn to pieces with roots attached and potted straight away if large enough, and if not, inserted in the cutting frame.

Mossy varieties root very readily almost at any season, but it is often convenient to leave them till the autumn, as earlier they would take up space in the frame which could be put to better use.

VIOLAS.—Autumn cuttings of young shoots produced from the centres of the plants.

CAMPANULAS.—Take cuttings of the young soft growths as they appear in early summer.

DIANTHUS.—The best cuttings can usually be obtained during the latter part of the summer.

LITHOSPERMUM.—Take the young soft growths early, a percentage may damp off, but on the whole better results are obtained than by taking cuttings of old wood.

In a word, the secret of successful propagation is to be always on the alert, examining our plants so as to obtain the young growths just at the proper stage, and if we do so we find that from early summer till autumn there will be something just right for taking.

Morisia hypogæa, *Wahlenbergia gracilis*, *Anchusa myosotidiflora*, &c., do well from root cuttings inserted as already mentioned; this may be done after the plants have passed out of flower.

It is a good plan, when all other means of propagation fail, to try root cuttings, as quite a surprising lot of plants will be found to increase in this way.



EUCRYPHIA CORDIFOLIA AT MOUNT USHER.

Eucryphia cordifolia.

MR. E. H. WALPOLE, in sending a photo of *Eucryphia cordifolia*, says:—The shrub is about six or seven years old. It is planted on sloping ground facing about south-west, and is well protected from the north and east. It is now about seven feet high. It never flowered till last year, when about three blossoms made their appearance.

This year it has flowered profusely. While not as showy as *E. pinnatifolia*, it is a very fine shrub, and has the advantage of being ever-green. The flowers are smaller, but I think neater, and of a purer white; at any rate, they are very effective against the glossy dark green foliage, and, as the flowers begin to show about the same time as the flowers of *E. pinnatifolia* begin to fall, it is a very welcome addition to the autumn flowering shrubs.

Eucryphia pinnatifolia.

MR. G. N. SMITH writes:—I am sending you a photo of a group of "*Lilium auratum platyphyllum*" growing in the Public Park at Warrenpoint. There are several groups of this Lily planted there some half a dozen years or so ago, when the park was laid out, and, beyond receiving an annual heavy mulch of road scrapings, they have received nothing else, but the health and vigour is most remarkable, and when in

bloom are worth making a long journey to see. Last year they produced ten seed pods, and it is notorious, inasmuch as no record can be found of *Lilium auratum* having produced seeds in this kingdom before.

At the present time (September) the various varieties of *Lilium speciosum* (*lanceifolium*) are very fine in the same place.

I also send you a photo of *Eucryphia pinnatifolia* growing in the rock garden at Narrow Water: it is a very fine specimen, 10 feet high, and was, in the month of August last, one of the sights in a garden overflowing with good things.



EUCRYPHIA PINNATIFOLIA AT NARROW WATER.

Magnolia salicifolia.

THIS comes to us from Mount Usher bearing fruits. It is a distinct species with narrow leaves, rather lance-shaped and distinct in appearance from all other *Magnolias*. Mr. Walpole considers it the most graceful of the genus. The flowers are pure white, some 3 inches across, and resembling those of *M. Kobus*.

Like the latter it is a native of Japan, where many beautiful shrubs come from, and grows on Mount Hakkoda at from 2,000 to 3,000 feet. *M. salicifolia* is comparatively new, having been introduced only in 1906, and judging from its rapid progress in this country, will soon make a handsome tree. It is, of course, deciduous, and flowers in early spring before the leaves are produced.

Herbaceous Plants.

For a good many years now herbaceous plants have enjoyed considerable favour among gardeners, and it is probable that their popularity will be much increased during the next few years. The expense and labour entailed in raising large quantities of bedding plants annually will lead many owners of gardens to consider whether a less expensive and yet equally satisfactory system of maintaining a display is not possible. It may not be possible all at once to do away with formal beds and flower gardens, but a gradual adoption of herbaceous plants and other hardy-flowering subjects will undoubtedly eventually reduce the number of tender plants where the expense of providing heat is found to be too great.

Herbaceous plants, when properly managed, are capable of an effect equal to any tender plants, and can be maintained in beauty and vigour indefinitely. By herbaceous plants we usually mean hardy perennials, but there are, of course, many hardy annuals and biennials which can be raised perfectly well without heat, and which can be used to supplement the perennials with the best possible effect.

Herbaceous plants are usually cultivated in borders, but may equally well be grown in beds, and many combinations are possible whereby the display may be kept up.

In whatever way the plants are to be arranged the first consideration is the condition of the soil. Thorough preparation is absolutely essential, and the ground should be trenched at least two feet deep, and more if time and labour permit. If the staple soil of the garden is heavy, stable manure will be best, placing a good layer in the bottom of the trench and another under the top spit. If manure is scarce, leaves and all other garden refuse may be placed in the bottom, reserving the manure for the top. If the soil be light and poor, cow manure will be more suitable, and the addition of road scrapings, burnt soil from the garden bonfire, old potting soil, and any other good soil obtainable worked in on top will be a great advantage. It cannot be too strongly emphasised that to maintain the plants in vigour over a number of years the soil must be made rich. Some of the finest herbaceous plants are gross feeders, making a large mass of roots, and consequently require much food. If the border or bed be made really good at first the work of keeping it in that condition will be much easier in subsequent years.

There is a difference of opinion as to when is the best time to plant herbaceous plants. As a general rule autumn planting is best, in the writer's opinion. If a plant of Aster, Rudbeckia

or any other fibrous-rooted herbaceous plant be lifted and examined now many small new white roots will be noticed. These are growing and attaching themselves to the soil, even while the stems are dying down, and, if left till spring before being lifted and replanted, obviously many of these roots must be destroyed, and the plant has to repair this loss before satisfactory growth can be made: therefore, the earlier in autumn the plants can be got into position the better a start they will make in spring, as they are already partly established. There are, of course, always exceptional circumstances.

In districts where the natural soil is very heavy and the position low-lying, the soil rapidly becomes cold in autumn, and young roots do not flourish in such conditions, and, in fact, may be killed altogether, resulting in many blanks in spring. In such cases the ground should be prepared in autumn and planted in spring.

Then, again, among the plants themselves there are exceptions. Some soft fleshy-rooted plants like *Kniphofia* (*Tritoma*) *Asphodelus*, *Gaillardias* and such like root badly if planted in autumn; on the other hand, subjects like *Paeonies* should be planted in September if possible. It is clear, therefore, that all herbaceous plants should not be planted at the same time, though the majority may be planted in autumn immediately the shoots have died down.

In planning out a border space must be left for such things as are better planted in spring, and places for *Paeonies* may be filled temporarily with annual *Larkspurs*, *Lavateras*, &c. Whenever the planting may be done it is best to use small plants; by this is meant small pieces, consisting of a few crowns only, as in the case of *Michaelmas Daisies*. If a clump of, say, six or eight inches across be examined it will probably be found to consist of a mass of small crowns or young shoots. Planted thus it will result in a mass of weak growths, which will produce indifferent flowers and have no effect worth talking about; and the same applies to other plants of similar habit. In all cases, then, be satisfied with healthy small pieces or vigorous young plants.

In arranging the plants the aim is to have a continuous display over as long a period as possible, therefore a due proportion of spring, summer and autumn flowering plants must be included; also the planting must be done so that not too many subjects of one season are found close together. Early spring kinds should be planted so that they will be followed and partly screened by summer and autumn kinds.

Elaborate colour schemes are seldom satis-

factory in the ordinary garden, since to be effective a large number of plants must be flowering at one and the same time, and will consequently be out of flower at the same time ; whereas if plants of the several seasons are judiciously mixed and the colours harmoniously blended, a very beautiful effect is possible from spring till autumn.

In setting out the plants overcrowding must be avoided, and the distance apart can be regulated by the height to which the different subjects will ultimately grow. The tallest kinds, which will reach five or six feet, or more, should be planted 15 to 18 inches apart, the medium growers a foot, and the dwarfest sorts six to nine inches. Much depends, of course, on the habit of the plants and the time they are to remain down. Some subjects, such as Michaelmas Daisies, excepting the *Amellus* section, benefit by annual division, though this is not absolutely essential. The amateur or employer who cannot afford unlimited labour will find it impossible to lift a large number of plants annually, and will only do those that are getting really poor. Much may be done by thinning the young shoots when they are a few inches high, an operation too often neglected. It does not take long to run over a few clumps every week as they advance and pull out the weak and overcrowded shoots, leaving only half a dozen or so of the best. Those left will be more vigorous, and will flower more satisfactorily than if a whole mass of weak growths is allowed to develop. There is another advantage in having strong sturdy growths—they require less staking. It is a serious matter to stake a large herbaceous border, and the less we have of it the better. When ordinary stakes and twine are used some skill is required to prevent a stiff, unnatural appearance. The natural habit of the plant should be preserved, as far as possible, by inserting the stakes close to the roots and giving them an outward tendency, concealing the stakes as much as possible. For a great many plants of spreading habit ordinary pea stakes are the best. They may be of different heights to suit the plants, and a few judiciously arranged round the various groups afford all the support necessary, and are soon hidden among the spreading shoots.

The management of herbaceous plants subsequent to planting will therefore consist of dividing such as are seen to be deteriorating, and by rigorously thinning out those that are forming dense masses of shoots. The soil in which they are growing must also be kept rich by applications of rotten manure forked in between the clumps either in autumn or spring. The small grower, especially in suburban gardens, may have difficulty in obtaining a load of farmyard

manure, but he may do much by applying a dressing of basic slag in autumn, lightly pointing it in at the rate of about three ounces to the square yard, while superphosphate applied in the same way in early spring, allowing two or three ounces per square yard, is effective on soils containing lime. These, as well as quick-acting nitrogenous manures, can usually be obtained in small quantities from seedsmen and nurserymen.

It would be very difficult to mention all the herbaceous plants available nowadays, but it may be helpful to the beginner if a brief list be given of dwarf, medium and tall kinds.

The front of the border may be made gay in early spring with such low-growing subjects as *White Arabis*, *Aubrietias*, *Yellow Alyssum*, *Polyanthuses*, *Myosotis*, &c., which can be lifted and replaced with annuals later if desired.

A few good dwarf herbaceous plants would be *Campanula carpatia* *Isobel*, *C. glomerata*, dark blue ; *Geranium grandiflorum*, blue ; *Geum Mrs. Bradshaw*, deep red ; *Heuchera Flambeau*, pink ; dwarf *Irises*, blue and yellow ; *Linum perenne*, blue ; *Meconopsis cambrica plena*, orange ; *Enothera fruticosa*, yellow ; *Polemonium cœruleum*, blue ; *Thalictrum minus adiantifolium*, for its foliage, and *Veronica spuria*, blue.

Medium height.—*Achillia Perry's White* ; *Aquilegias*, long-spurred hybrids of various colours ; *Aster acris*, light blue ; *Campanula persicifolia* varieties, blue and white ; *Delphinium Mrs. J. S. Brunton*, sky blue ; *Gypsophila paniculata plena*, white ; *Helenium autumnale pumilum*, yellow ; *Iris florentina*, white, tinted lavender ; *Kniphofia corallina*, coral red ; *Lupinus polyphyllus*, various colours ; *Lychnis chalcædonica*, bright red ; *Pyrethrum Queen Mary*, pink.

Tall growers.—*Anchusa Dropmore* variety, blue ; *Campanula lactiflora*, pale blue ; *Chrysanthemum uliginosum*, white, late flowering ; *Helianthus rigidus* *Miss Mellish*, rich yellow ; *Helenium autumnale rubrum*, coppery red ; *Kniphofia Lord Roberts*, scarlet ; *Rudbeckia Golden Glow*, yellow ; *Solidago Shortii*, yellow ; *Galega officinalis*, blue and white ; *Delphinium*, *King of Delphiniums*, gentian blue, and *Capri*, sky blue ; *Aster Lil Fardel*, pink ; and *Aster Colwal Gem*, double, pale blue.

Useful sorts for cutting are.—*Scabiosa caucasica*, *Achillea Perry's White*, *Gypsophila paniculata plena*, *Campanula persicifolia* and its numerous varieties, *Pyrethrums*, single and double ; *Chrysanthemum maximum* *Mrs. C. L. Bell*, *Heucheras* in variety, *Aster amellus roseus* and *Riverslea*, *Pæonia albiflora* varieties, *Doronicum plantaginum*, *Gaillardias*, and *Helianthus rigidus*.

Smaller Campanulas for the Rock Garden.

By MURRAY HORNIBROOK.

CAMPANULAS are not only among the most beautiful but also among the most indispensable of rock plants. The majority of them flower at a time when most of the earlier alpinæ are "going off," and our gardens would look dowdy and bare without the drifts of blue, purple and white Campanulas to brighten them. Fortunately most of them are easy to grow, succeeding in ordinary garden soil. Some require attention to their requirements as to soil or situation, and a few are gardeners' problems that rejoice the hearts of those who succeed in growing them well.

With few exceptions the Campanulas suitable for growing in rock gardens are dwarf or close growing; the majority of the taller Campanulas are too coarse and floppy to grow near smaller plants, and as most of them do equally well in the border, there is no use overcrowding the rocky with them, and it is therefore to the smaller Campanulas that I will confine my attention in these notes.

The requirements of very many of them are easily satisfied. Given a well-drained soil in an open situation in sun or shade they will soon make themselves at home, and require no attention beyond occasional division. As a general rule, those making taproots require an especially well-drained, stony soil, and enjoy rock chinks or cracks in a wall. These also grow well in moraine, provided that their roots are not parched in summer. I find that most Campanulas have a hankering after rich soil, but the taprooted species, after making fine growth in it during the summer, are liable to rot off in winter; they seem to object to the wet winter soil clinging round their roots, and rot away at the collar. In a rock crevice or wall they escape this excess of surface moisture, but as the number of such positions is, naturally, limited in one's garden, I have, to a very large extent, overcome my difficulties by planting these Campanulas in beds or pockets of ordinary well-drained loam with a topdressing—2 or more inches in depth—of *pure sand* or, in some cases, of limestone chips. By these means the Campanulas are able to enjoy the strong soil without endangering their "collars" in winter. As to the composition of the soil, I have very little to say. Campanulas are often described as "lime-haters" or "lime-lovers." My experience is that the majority of them are quite indifferent to the absence or presence of lime. *C. excisa* seems to perish even more readily in lime, and therefore cannot be termed a "lime-lover." All other Campanulas with me, at least, tolerate it.

Our own native Hairbell—*C. rotundifolia*—has naturally the first claim upon our consideration. Its requirements are few—an open situation and a soil not too heavy. Given these, it will romp around, sow itself freely, and in time become almost a weed, for everywhere around the parent plant will appear seedlings bearing bells of varied tints of blue. No other Campanula, I think, varies to such an extent as *C. rotundifolia*. Scarcely any two plants are identical in growth and shape and colour of flower. Many of its local variations have received distinguishing names, but the drawback

to all these local forms is their liability in cultivation, to revert to the type. The most constant and distinct form possible is *C. valdensis* with grey, hairy foliage and wide bells of deep violet. The true *C. linifolia* seems hard to get hold of. I believe that the round basal leaves of the type should be almost entirely absent in this form, and the flower stems tall and erect. There is a plant I got from Lissadell as *C. Marchesotti* which fulfils all these requirements, and is probably the true *C. linifolia*. I have a somewhat similar but dwarfer plant bearing deeper purple bells usually singly—which I received under the name of *C. Venzlei*. The plant usually sent out as *C. linifolia* is as floppy as the type.

Another distinct form is *C. Carnica* with long and narrow trumpets of pale lilac. *C. Scheuzeri*, in its native habitat, is a fine moisture-loving form with large open bells; in cultivation it preserves its liking for moist places, but seems to lose its other distinctive characteristics. *C. Hostii* is much taller and bigger in every way than the type. *C. Alaskana* has very big drooping bells, and prefers light soil and hot exposures. *C. Beauvardiana*, *C. Baumgarteni* and *C. Scouleri* (if I have it true) are indistinct forms, but I saw a very distinct plant at Glasnevin with flowers of deep pure Prussian blue under the name of *C. rotundifolia splendens*. *C. Stenocodon* is an alpine form from the granite moraines in the Alps Maritimes. It runs about freely here in limestone moraine, and is very dwarf and compact, but my plants, although raised from collected seed, have not "narrow constricted trumpets" as described by Mr. Farrer. Most of these rotundifolia varieties have white forms, of which that of *C. valdensis* (which seeded white for the first time in my garden last year) is, I think, the best: its flowers are exceptionally large and pure. Other good white forms are those of *C. Hostii* and *C. linifolia* (dubia). There are also two semi-double forms, of which I much prefer *Mon. Correvons* "fl. pl." to the form known as "Soldanelle flora pl." *C. Macrophyza* is of rotundifolia blood, but quite distinct; it makes a fleshy root stock, from which it throws out branching stems bearing for a long period good sized rather widely opened flowers of lilac pink. In its native habitat it flowers throughout the winter, and Mr. Farrer stated that it retained this characteristic in his garden, but here I have never seen it in flower after the end of September.

The next largest group revolves round *C. garganica*. The type has crinkly heart-shaped leaves and very wide, open, starry blue flowers produced all along the runner-like stems which it throws out from its centre. With one exception, all forms of *C. garganica* I have come across prefer tight, horizontal chinks and sunny exposures. The so-called *C. Erinus* is a minute form of *C. garganica* with small flowers of pale China blue; it is the best doer of the section, and is indistinctly hardy. *C. garganica* vars. *villosa* and *hirsuta* have downy foliage and rather washy flowers. Var. *fenestrellata* has flowers of a distinct lavender mauve. Var. *W. H. Paine* has beautiful foliage of a deep, dull green and very dark violet flowers with a distinct white eye; it is rarely out of blossom, and an absolutely indispensable Campanula; it prefers cool exposures in light sandy leaf-mould and peat. There are white forms of *C. garganica* and var. *hirsuta*, of which the first is the most desirable.

Of the same blood as *C. garganica*, are *C. Elatines* and *C. Elatinoides* with crinkly leaves, either smooth or hairy, and smaller, flat star-shaped flowers produced all along the octopus-like arms, which radiate from the fleshy root-stock. Both these *Campanulas* must be grown in rock crevices in full sun and protected in spring from slugs. The new *C. Istriaca* is another *garganica* cousin, and a most beautiful plant with grey-green, slightly hairy leaves and good sized starry lavender purple flowers. This plant seems the least susceptible to damp of any of the hairy *Campanulas*, and I have it growing in open stony soil; it is slow of increase, and is at present extremely rare. *C. rupestris* has lovely blue, silver hairy foliage and blue flowers. It is, I fear, only a biennial, and my plants do not seem to have set sound seed. *C. fragilis* and its white form have deep, green crinkly leaves and wide open cups on radiating flower stems. These seem curiously brittle, and the plant is especially slug-beloved. I hate growing plants with zinc rings round them, but by no other method can I keep *C. fragilis*. Last of the *garganica* clan comes *C. acutangula* with tiny ivy-shaped leaves and starry flowers like those of a tiny *garganica*, but held upright on 2 or 3 inch thread-like stems, the flowers being of a distinct red purple. The foliage dies away as the flowers fade, but in a few weeks time a fresh green carpet of leaves springs up: it has not been a conspicuous success in moraine, but runs about freely in an open situation in very stony soil, and in one place now fills a yard wide pocket. In a recent note of Mon. Correvon's I observe that he doubts whether the plant which we grow under this name is the same as that which he grows, and which apparently he has had for some time, and which from his description seems to be larger in growth and flower. I have not yet seen his plant, but I believe all the *C. acutangula* in cultivation in the British Isles were propagated from the plants collected some four years ago in the Sierra Nevada, and distributed by Sundermann; whatever it may really be, it is a most delightful and easily-grown plant, and possibly one of the best *Campanula* novelties of recent years.

C. Abietina makes a close mat of bright green foliage, and bears on rather tall stems large bells of a distinct red purple; it needs rich soil and frequent division if it is to flower freely, and division should take place in spring when its growth is just commencing. If divided in autumn, slugs are apt to attack it before it makes new roots: it likes to have a low stone to grow over, and is not appreciated as much as it deserves, chiefly I think on account of its requirements not being fully understood. I received from Lissadell this season seed of a *Campanula* named *C. Abietina* var. *M. Vitosh.* I have not seen it in flower, but its foliage is quite distinct, being larger and looser. *C. Steveni* is a near relation with upright bells of a beautiful soft mauve, sometimes only three-petalled, it has a white counterpart and an even prettier dwarf form—var. *nana*. All three I find not easy to keep through the winter, and slugs seem especially fond of them.

C. pusilla is a delightful weed which must be kept from choicer things, as it spreads very rapidly by means of underground runners. The type has small heart-shaped green leaves and nodding tubular blue bells on wiry stems; its

white variety is even daintier. There is a taller form with larger bells of deeper blue and two forms with bells of a pale moonlight blue, one of which is sent out as *C. Willmottae*. Then I have a delightful little dwarf form I found intertwined amongst some *Saxifrages* collected for me which has very distinct shallow, wide, open cup-like bells of deep blue with recurving edges. This is worthy of a distinctive name, but has not yet received one. The true *C. caespitosa* I always imagined to differ from *C. pusilla* only in growth, making "tufts" instead of underground runners, but Mr. Irving, of Kew, who was recently in my garden, recognised a plant with small narrow tubular bells—rather constricted at the mouth—as *C. caespitosa*. I got this plant under the name of *C. caespitosa* var. *Venzioi*.

C. excisa approaches *C. Stenocodon* in growth, but its narrow flowers with their pierced lobes are most distinct. In a previous article upon *Campanulas* I dwelt upon the difficulty of keeping this plant, remarking that even in places where it was reported to be growing like a weed one season it mysteriously disappeared the next. I think it was two or three years ago that I wrote thus, and, as I anticipated, I at once received letters from an enthusiast who could not understand my difficulties with *C. excisa*, stating that, with him, it "grew like a weed." My enthusiast was Mr. H. E. Richardson, of Lisburn, who, despite the unfavourable climatic conditions of his locality, is a wonderfully successful grower of alpine. He generously offered to send me a supply, and when it came to hand I planted some of it according to his instructions and some of it in loose peat, sand and leaf-mould. At the present moment one tiny bit is alive in granite moraine and a fine piece in the peat, but all the rest is dead, and I have no abiding expectation of seeing any of it pushing up fresh growth next spring. I received also, as I anticipated, another letter from Mr. Richardson this year to say that, alas! nearly all his *C. excisa* had disappeared. I have therefore nothing to retract from what I said of this most curious plant two years ago. I have never been fortunate enough to follow its growth for two consecutive years in its native habitat, and can, therefore, only suppose that there are certain constituents in the soil which it needs, and which, not being present in large quantities, it soon exhausts. By no other supposition can I account for its habit of dying away in one corner and coming up strongly in another. It certainly seems to dislike lime, and as certainly seems to approve of leaf-mould and peat, and the only further suggestion I can make is that one should lift it annually immediately after flowering, and by replanting it again in fresh soil give it a chance to make fresh growth and gain strength before its resting period—spare bits might also be kept in pots for spring planting. It is possibly because the majority of nurserymen divide up their pot plants annually that one does not hear more complaints from them (although I think Stansfield wrote me two years ago that he had lost a lot of it. I wonder whether his plants had been divided and repotted that year?) It seems absurd that one should be outwitted by a plant that is apparently so robust, but in any case one must go on trying, as *C. excisa* is too distinct a *Campanula* for us to lose.

(To be continued.)

Hints to Novices.

By R. M. POLLOCK.

Most of the spring bedding should be completed. Wallflowers, Sweet Williams, Forget-Me-Nots, Canterbury Bells, Foxgloves, Violas, &c., may all be transplanted from their summer quarters to wherever they are wanted. Wallflower is indispensable in any garden, not only does it add considerably to the colour effect, but it is easily raised from seed, and it is one of the most sweetly-scented of our garden plants. "Blood Red" and "Cloth of Gold" are the two most generally grown, but Primrose Dame, pale lemon, and Eastern Queen, a curious mixture of salmon rose and buff, might well be added. Vulean is another deep velvet crimson, with large flowers.

Canterbury Bells are not always popular, and they certainly are very ugly and untidy when out of flower, as the old flower stems occasionally throw out a second bloom, but it is never sufficiently good to make a show and cannot be depended on, but when in full flower they are very handsome, and one gets in the Canterbury Bells a shade of pale lavender blue and pale pink that is not common in flowers, and is really only equalled in Sweet Pea. The unsightly appearance and the waste of space can be obviated by planting a little further apart, and in the spring raising a small stock of some good showy annual to be planted out between the Canterbury Bells, towards the end of May, such annuals as *Gilia liniflora*, white, about 18 inches high, which will remain in flower until late in the season, or *G. densiflora*, lilac, more crowded in the head than the former, but just as free. These two could be sown broadcast round the Canterbury Bells if desired. Violas are among the most popular as well as the most accommodating plants grown. They can be used as carpets, edgings, patches, or in ribbon borders.

As soon as the leaves fall the fruit trees may be pruned. It is well to get this operation started as soon as possible, as in Ireland hard frost seldom comes before Christmas, and if pruning be commenced early, it can be completed before the cold weather sets in. No pruning should be done during heavy frost. When the work is done gather up all prunings and burn them. This is very essential, especially the remark "burn." Throwing prunings on a rubbish heap to be burnt when time allows is not what should be done. The burning should take place at once. By doing this, much of the disease and insect pests, now causing immense trouble and anxiety to growers, would be greatly lessened. Take for example the hated American Gooseberry Mildew, it is on the tips of the shoots that this appears as well as the berries. In other fruit, such as apples, pears, plums, &c., it is in the crevices of branches and round the base of spurs and leaf nodes that the winter stage of many insects is spent. Immediate burning will assist the grower. When all is done the first spraying may be given, and directions for this will be found in the December issue of this paper.

Some of the well-ripened shoots of gooseberries and red and white currants may be kept and put in as cuttings. The strong, firm shoots should be selected, taken off with a small heel where possible, or cut across just below a joint, about 12 to 14 inches long. All the lower eyes should be removed, leaving only 5 or 6 at the top, the

weak point having already been removed. Open a V-shaped trench with a spade about 8 inches deep and insert the cuttings until within an inch or so of the first bud. Cover in and make firm. These cuttings should be 6 inches apart, and by next autumn will be fit to lift and put in their permanent quarters. Exactly the same method can be adopted for black currants, except that the lower buds should not be removed.

As regards edgings. Why will gardeners insist on planting their beds with bulbs for the spring, and not put some sort of an edging to the bed? Just compare two circular beds, one with an edging and the other without, and which is most pleasing to the eye? An edgeless bed always suggests a good picture hung on a wall without a frame. There are endless plants suitable for this purpose, either for spring flowering only, to come out when the bulbs are moved, or that can be left as an edging to the summer planting as well, and so do duty for two shifts. What better edging could a bed of Poet's Narcissus have than blue *Myosotis*. The white double *Arabis*, yellow *Alyssum*, and the lemon one *Alyssum saxatile* var. *citrinum* would all form good compact spring flowering edgings. The red leaved *Oxalis* (*O. corniculata* var. *atropurpurea*) which springs up unexpected in gardens, and is usually thrown out, would make a charming edging to a bed or a carpet to a *Crocus* bed. It apparently comes easily from seed, and could be grown on for the purpose.

The *Aubrietias* in all their colours make excellent edgings, and the smooth carpets or purple formed by the various varieties of *Aubrietias* cannot be had better from anything else. Two very suitable for this work are *Dr. Mules*, a deep purple, and *Hendersoak*, much lighter, but a good doer.

Noceea alpina, also known as *Hutchinsia alpina*, is a very low growing plant, making compact close deep green cushions, which are studded over in May, June and July with small white flowers, the whole thing not more than three inches high. It will do in sun or shade, and would be suitable as a spring or summer edging.

Among the *Acanas*, "New Zealand Burrs," we have four useful species, all quite distinct in their own way, and all easy to propagate:—

A. argentea, bronzy green; *A. microphylla*, brown foliage, with red spiny fruits during the summer and autumn; *A. Buchananii*, a pale pea green; *A. inermis*, with golden brown foliage. All these three form dense carpets, and will do in sun or shade.

The *Cerastium's*, also called "Snow in Summer," give us two suitable for edging with. They are strong growers, and would have to be watched, but the grey of *C. tomentosum* would be a change from the usual green. It is also well to remove the flowers, as they would be too tall for the edge of a bed.

Cerastium arvense compactum is a compact green variety, and close growing. As well as these, there are others which from their habits should be capable of being used too. Such well known plants as the common *Sedum album*, the white Stonecrop, and *S. sexangulare*, the Mountain Stone crop, both native plants, but no less useful on that account.

Lysimachia mummularia, "Creeping Jenny," from its very name, should be a good subject.

Thymus serpyllum var. *coccineum* is another plant which lends itself to this form of planting.

The Arboretum.

NOVEMBER is an important month in this department, as practically all hardy deciduous trees and shrubs can be safely moved and got into permanent quarters. Young stock may be transplanted into nursery rows as recommended for evergreens last month. It is, perhaps, needless to labour the subject of thorough preparation of the ground before planting a tree or shrub in what is to be its home for many years. In those fortunate localities, where the staple soil is deep and rich, or the atmospheric conditions are conducive to good growth, preparation of the site may be less important, but as a general rule the areas devoted to the cultivation of ornamental species or specimens are such as have been found unsuitable for more utilitarian purposes, hence the need for a good start.

Trees planted closely under forest conditions shade the surface of the ground and prevent evaporation of the soil moisture to some extent, and also shed their leaves and provide an annual mulch of leaf-mould. Isolated specimens in Arboretums, however, are usually planted in grass—that is to say, a hole of sufficient size is opened, and if the soil is poor and stony, fresh soil of better quality must be added or entirely substituted. It is a good plan to remove entirely a circle of the grass sod at least four feet in diameter, assuming the plant is a young one, and then roll back the sod for a further two feet all round, breaking up the entire area thus stripped and incorporating better soil, leaf-mould, or thoroughly decayed garden refuse. This will give the young tree or shrub something to grow in and make a good start, and it is surprising how a tree or shrub will withstand the poverty of the natural soil if it has been encouraged to grow strong and vigorously for some years after planting.

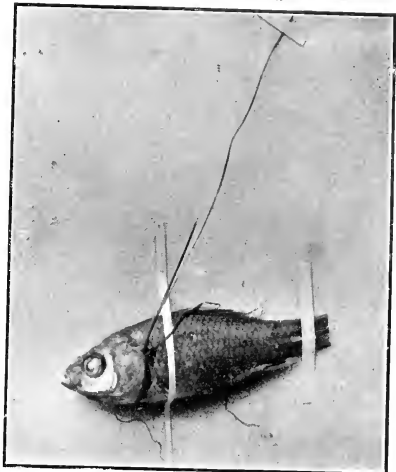
Now that leaves of deciduous trees are mostly down, an effort should be made to collect as many of them as possible for conversion into leaf-mould. A good heap of leaf-mould is invaluable in any garden or arboretum not only for potting purposes, but for mixing with poor soil, as stated above, and particularly for pointing into nursery beds. Half-decayed leaves too are excellent for pointing into shrubberies, which, for the sake of neatness, are often raked clean, but become impoverished when deprived of their natural mulch. Further, for dressing beds or plantations of Rhododendrons and other ericaceous shrubs half-decayed leaves are invaluable, and will often restore to health specimens which have become starved and unhappy.

During this month seeds of many of the finest fruiting shrubs may be secured, and afford a ready means of getting up stock. Barberries, such as *B. Pratii*, *B. aggregata*, *B. Wilsonae*, *B. Darwinii*, and many others are beautiful in fruit, and are also useful covert plants, and make fine ornamental hedges, and the same may be said of many of the new and old Cotoneasters, such as *C. Applamata*, *C. frigida*, *C. monspiciensis*, *C. amona*, and others of the older kinds.

Many other shrubs, of course, are bearing fruit, and so any quantity of home-raised stock can soon be available.

Germination in Gill of Goldfish.

A CURIOUS case of germination of grain has been found in the Royal Botanic Gardens, Glasnevin. One of the gardeners noticed a goldfish in the tank of the water-house with what appeared to be grass attached to its head. On taking the fish out of



the water and examining it he found that a grain, probably millet seed, had lodged in the gill opening. The young leaves grew out of the gill, and were quite green, the roots had penetrated through the body of the fish and forced their way out through its stomach.

Pots of rice and millet are placed round the tank, the water of which is maintained at about 75°.—W. P. M.

Roses for the Beginner.

QUITE recently we were told that the Roses at Dunsinea, Castleknock, Co. Dublin, had been remarkably fine late into the autumn. The owner, Mr. A. J. McNeill, is a keen rosarian, but modest, as all successful growers are. In reply to our request to give readers of IRISH GARDENING the benefit of his advice, he declares his knowledge is limited, and says: "All I could advise would be strong pruning, most extensive disbudding, and to confine oneself to a very moderate number of thoroughly proved Roses, such as Alfred Colomb, Hugh Dickson, General McArthur, Richmond, Lady Ashton, Mad. Abel Chatenay, Joseph Hill, The Lyon Rose, Lady Hillingdon, Lady Roberts, Harry Kirk and Pharisaeer.

"I have found Abel Chatenay the most useful Rose in wet weather, and Joseph Hill the best in fine weather. The Lyon is splendid, but does not grow here into a good bush.

"Of course one has a great many other Roses, but if one were beginning a small Rose garden one would do pretty well with the above dozen.

"There are so many Roses of different types now that we would be glad to hear from other Rose growers which varieties they think best for cutting and garden decoration."

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunsleath,
Ballywalter Park, Co. Down.

ROSE CUTTINGS.—Many kinds of Roses may be propagated from cuttings. Although the nurserymen find it better to bud their plants on strong stocks, gardeners and amateurs will find plants raised from cuttings quite satisfactory. Select well-ripened young shoots with, if possible, a heel of the old wood attached, a stout shoot of about 15 inches in length being preferable to a weaker one that is not so long. It is necessary to place the cutting fairly deep in the soil, say about a depth of 9 inches, so that the part where the roots form will keep moist. My plan is to place the cuttings in rows in trenches, treading the soil very firm about them. The Wichuriana type, such as Dorothy Perkins, Excelsa, Hiawatha, &c., are especially easy of increase by this means, and in this case smaller shoots may be used as cuttings. This type of Rose is so valuable for covering fences, trellises, &c., that those who have plenty of shoots available should insert a considerable number of cuttings, and the work should be pushed on without delay.

BEDDING PELARGONIUMS.—The cuttings which hitherto have occupied pits and frames should now be moved into their winter quarters; at this stage an abundance of ventilation is necessary. They should be given sufficient fire heat only to exclude frost and superfluous moisture. For several months water should be afforded cautiously, and only when absolutely necessary. All dead and decaying leaves and flowers should be promptly removed.

PLANTS IN COOL FRAMES.—The bedding plants in unheated frames must not be allowed to suffer neglect. Remove the lights whenever the weather is dry and there is not frost, and tilt them on wet days, it being undesirable that these plants should be coddled in any way. Keep the glass of the frames clean that it may admit the sunlight. In this dull season of the year excessive damp is often more injurious than cold, therefore take means to prevent any excessive damp arising amongst the young stock.

GENERAL WORK.—Clear away all the dead and decaying material from the herbaceous plants, all annuals that have flowered and any weeds there may be in the borders. The few flowers that still remain will then be more effective. Any vacant places that still remain should be filled in with spring-blooming plants, such as Iris, late flowering Tulips, Wallflowers and Myosotis; these should be planted carefully when the weather is dry. Chrysanthemums that have already flowered should be cut down to the ground level, and any plants lifted for stock that may be required for that purpose. In the clearing operations be careful that no labels are taken away or even disarranged. Sweep and roll the grass and paths, and make everything appear as tidy as possible. Montbretias may be taken up, divided and planted in rich soil, moving the smaller bulbs to the reserve garden for growing into flowering size. An abundance of protecting material should be at hand, such as bracken, heather, &c., for covering half-hardy plants on the approach of severe frosts. Half-hardy

climbers on walls should have a protective material spread over their roots, and in the case of 10° of frost a blind or some mats should be thrown over the top growth. If these details are left until frost arrives, it will frequently happen that they cannot be carried out in time to prevent injury.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitzgerald, Carrigoran, Co. Clare.

GRANTED favourable weather conditions and the soil in a satisfactory state, this should be a very busy month in fruit quarters. Root pruning, which I described in last month's notes, should be completed as quickly as possible, so that the lifting and replanting of such trees as require lifting may be got through before new trees are in hand for planting, wherever new planting is to be carried out. Assuming that preparations for planting as advised in September issue of IRISH GARDENING have been duly carried out, and the trees to hand from the nursery, every favourable opportunity should be availed of to the fullest extent to get through the planting of all kinds of fruit trees during this month and early part of next. This early planting gives the trees considerable advantage over those planted in the middle or latter half of the winter months, inasmuch that the early planted trees become established in the ground before severe winter sets in. They may be pruned in the spring months before growth commences, and invariably make a satisfactory amount of new wood during the growing season—advantages that practically amount to almost the gain of a year's planting over late planted trees. For permanent orchards the system of mixed planting is most generally followed, and for commercial purposes is the best—i.e., the permanent trees, strong growing varieties, standards on Crab stocks, in straight lines 25 to 30 feet apart each way with bush trees, of such fruits as are most likely to succeed, and meet the requirements of different localities; apples (on Paradise stocks), plums and such market pears as are known in the locality to be good croppers and suitable for market planted between the standard trees. In convenient proximity to good markets, black currants and gooseberries may be profitably grown between the lines of trees, but in districts remote from markets and railway, root crops or vegetables for home consumption should take the place of fruit bushes, &c. Planting should not be carried on while the ground is so wet as to adhere to the feet, nor during the prevalence of sharp frosts. If trees arrive from vendor with roots unduly dry (as they generally do if lifted in dry weather) it is very beneficial to place the roots in water, such as a stream, a pond, or cistern of water, and allow them to soak in the water a couple of hours before planting, or being heeled in to await planting. Previous to planting, all strong and damaged roots should be cut over with a good sharp knife or scateur, the damaged roots where they have been broken, and the strong roots shortened 3 or 4 inches; roots that have been growing straight down should be cut to within 6 or 8 inches of base of tree. Break up the soil very fine, and when planting carefully spread out the roots evenly, and keep them from working downwards. Be careful to completely fill all interstices between roots; this is much facilitated

by gently swaying the tree to and fro, or a gentle shaking of the tree causes the fine soil to fill in between the roots. Trample the soil very firmly as planting proceeds, trample from outside of hole towards the tree. Standard trees must all be staked as planted, using a good stout stake, and tying the trees so that they may not be damaged by chafing against the stake in windy weather; twist a piece of canvas or hay-band around the stem of tree before tying with string. Bush trees need not be staked unless planted in places much exposed to wind, or having exceptionally heavy heads; such should be staked to prevent any loosening by winds. Standard trees should be planted about the same depth or slightly deeper than they have been grown in the nursery, and bush trees should be planted with the junction of stock and tree 2 or 3 inches below the surface. As the trees are finished planting, slightly loosen the trampled surface with a digging fork or Bucco cultivator; this allows of proper aeration of the soil. For kitchen or enclosed gardens the preceding instructions as to planting new trees are applicable, though it is most advisable to plant in such gardens, in lines or borders only, pyramid or bush trees, apples that are worked on Paradise stocks, pears on Quince stocks; such trees bear abundant crops, but make slower and less rampant growth than trees on Crabstocks; they also bear crops of fruit earlier. When planting single trees for filling empty spaces, replacing old worn out trees, &c., I would strongly advise planting good, strong fruiting trees that will come into bearing the second season after planting, though for a season or two the crop should be limited to such an extent that it may not unduly retard growth of trees, and don't by any means plant them in poor, impoverished ground; if the ground is not in really good condition, it must be improved by the addition of well-rotted manure or a compost of new loam, leaf-mould and a little manure; on heavy retentive land any addition that will somewhat lighten the land, such as old mortar rubble, fire-heap ashes, road scrapings, &c., are all beneficial; this applies also when planting trained trees against walls, espaliers, &c. Bush trees in lines or borders should not be planted less than 12 feet apart, except where it is intended to ultimately transplant alternate trees for filling gaps, &c. Pyramid trees should be staked as planted, though bushes need not be staked unless having unusually bulky heads. Permanent horizontal and fan-trained trees should be planted from 15 to 20 or more feet apart, the former distance for fan-trained trees, the latter is none too much for horizontal-trained trees, as these well grown will readily cover 25 feet or more of wall space before being fully matured. Cordon-trained trees may profitably be planted 2 feet apart in the intervening spaces until crowded out.

BUSH FRUITS.—New plantations of all these may be planted this month and onward. Bush fruits all need good rich ground—gooseberries, red and white currants at 6 feet apart, black currants need 8 feet apart each way. Raspberries may be planted this month; for these a well-drained warm situation should be chosen, and as with strawberries they need specially well prepared ground, with subsequent liberal feeding to enable them produce satisfactory crops of fine fruits. The surplus young canes from fruiting plantations may be used for planting new squares.

if sufficient are available; if planted in lines and tied to wires, the lines should be 6 feet apart, the canes a foot or eighteen inches apart; wires need not necessarily be fixed at planting time, as the new planted canes must be cut down to a foot from ground before new growth commences, and the subsequent suckers or canes seldom need supporting the first summer; if the ground for these is not in first rate condition, it would be better to have the ground trenched or deeply dug and literally manured, leaving the canes to be planted in February or March.

Winter pruning of fruit trees and bushes may be commenced at any time after the foliage has fallen from the trees or bushes, and where a considerable amount of pruning is to be carried out advantage should be taken of all possible opportunities for getting this work well advanced during this month and early part of next, while reasonably good weather conditions may be expected; this advice specially applies where by reason of fungoid or insect attacks the necessity for spraying is apparent, as if the trees are pruned early in the season, a more extended period in which spraying may be carried out is assured. If pruning is unduly delayed probably favourable opportunities for spraying properly may not occur, and the season pass away with high winds and rainy weather, rendering spraying almost impossible; and with spraying (as with many other things), "well done is as good as twice done," thus reasoning it follows that the larger fruits should be first pruned, and precedence given to such as are to be sprayed. Where apple and pearscab have been much in evidence this season all prunings and fallen leaves from affected trees should be cleaned up and burned as soon as the trees are pruned, thereby destroying quantities of the dormant spores; diseased fruits also form a lurking place for the spores, and should be destroyed.

The pruning of young and extending fruit trees must be governed by the ultimate results aimed at, and to a great extent by the varying characteristics of different varieties; the results of previous prunings should also be closely observed. The principal aim with trees planted in open grounds last year, or a few years planted, should be to secure the foundation of a sturdy well-balanced head of branches and future development of large profitable trees. If the tree is producing a sufficiency of shoots proportionate to its age, select a suitable number of shoots for forming leading branches, and cut away a third or more of the shoot in strong erect-growing varieties, cutting back all other shoots to 3 or 1 buds from the base; with weaker growing varieties cut away half or more of the leading shoots, and with trees of more or less pendulous habit chose the most erect and strongest shoots. In all cases cut the leading shoots at a bud pointing in the direction it is desired that the branch should grow in. With trees of more advanced growth and bearing crops of fruit, the aim should be to keep the branches sturdy and well furnished with fruiting spurs, which should be formed year by year as the tree advances in size. To this end cut away all side shoots, leaving from 3 to 5 buds at base of shoots, and cut away from a third to half or more of the terminal or leading shoot. Too severe pruning of side shoots will result in a jungle of young growths without any fruiting spurs being formed. Where fruiting spurs may have become long and overgrown, or

crowded in the centres of trees, they should be freely thinned or shortened; if too numerous, cut a number out, leaving 2 or 3 inches of base, and from this new shoots will be produced these pruned in turn will eventually form a new set of fruiting spurs; this pruning applies equally to apples and pears. Pines should have much of the small spray growth left unpruned, and which will eventually produce fruit; all trained trees against walls, espaliers, &c., may be pruned in this manner, except Morello cherries which bear fruit on the young shoots, numbers of these should be tied in and the surplus shoots cut clean away. Peaches should be left as they are until later in the season, though if these were properly disbudded after growth was well advanced, and pruned after the fruit was gathered, they will need little or no pruning during winter season, indeed the life and usefulness of peach trees may be much curtailed by winter pruning persevered in. Similar treatment should also be accorded to figs where growing outdoors.

BUSH FRUITS. If these were thinned out or summer pruned after the fruit was gathered they will now need little pruning. On red and white currants, the leading shoots should be shortened and the side shoots cut back to within a few buds at the base to form spurs on which the fruit is borne. Gooseberries bear the bulk of their fruit on the young shoots, and may be pruned according to the crop desired; bushes that are needed to ripen the crop for dessert should be more severely pruned than bushes from which the fruit will be gathered green for market or jam, &c. Select a suitable number of young shoots, and just cut away a few inches from ends of shoots, spurring the remainder or cutting away a number altogether. Select the most erect-growing shoots, and clean out centre of bushes to a great extent. Black currants produce their fruit altogether on the young shoots of the past summer's growth, consequently in pruning these it is only necessary to leave young shoots to carry a good crop of fruit without overcrowding the bush; these shoots need not be shortened unless they have made growth so long as to disturb the even balance of bush, then they should be shortened a little; old and overgrown branches should be cut away altogether. When pruning black currants don't forget to look out for the "mity" buds. If the bush is badly affected, dig it up and turn it; if only slightly affected, cut clean out all the shoots which bear buds of abnormal size and rounded appearance which indicate the presence of mites, and at once burn these shoots.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. Shannon-Crawford, Esq., Lota Lodge, Glanmire, Cork.

The shortening days and the corresponding cessation of vegetable growth will give more time to the cultivator for the preparation of ground for next year's crops. All weeds, vegetable refuse, &c., should be cleared off the squares and used up in the refuse heap. Manure may be carted on to vacant spaces when the weather is suitable, and every available moment should be given to trenching. Ground trenched now and left in rough ridges will be in excellent

condition for forming seed beds in spring time by the simple operation of levelling the surface, thus saving much valuable time at a season when every minute counts.

Wet weather is to us in the south a much greater worry in winter than frost, but it is advisable nevertheless to have a supply of protective material ready to use at short notice on a frosty night. Dry bracken, leaves, straw, or even the driest pickings of the used stable litter, is useful for spreading lightly on tender crops, such as celery, lettuces, &c., removing the covering when the sun rises the following afternoon.

ARTHOPODES may be left in the ground with a slight dressing of leaves or litter to ensure a soft soil to dig the roots when wanted during frosty weather. The Globa variety will require a dressing of litter on each side of the rows, leaving the heart exposed.

ASPARAGUS BEDS, where the cutting down system is adhered to, ought to be tidied and lightly dressed with stable manure.

BEETROOTS, CARROTS AND OTHER ROOTS.—Complete the lifting and storing of these as advised in last month's notes, taking extreme care to avoid breaking any of the taproots in the beet. Carelessness in this respect will mean a spoiled white root instead of what is required—a blood-red sample.

CALIFLOWERS.—Late autumn sorts will be valuable now, and in the event of hard frosts coming on, draw all the good heads and store them in a shed. A disused mushroom or ice-house makes a splendid storing place for them. Hanging the plants by the root with head downwards, they will keep in good condition for some time. The later ones not yet headed may be laid down where growing with the head facing the north. Neither frost nor rain can do the same damage to the young curd.

CELERY. Continue to earth the later crops and keep a sharp eye on the weather, promptly covering with protecting litter when frost appears imminent.

BROAD BEANS may be sown on a well-sheltered dry piece of soil with every prospect of their standing the winter and turning in early in the following year, but do not waste seed and patience by sowing on wet heavy soils.

CABBAGES.—August sown may still be planted as succession crops. Little growth will take place from now until spring, so a firm soil will suit their needs.

PEAS.—Like broad beans, this excellent vegetable may be sown on a south, well-sheltered border. Given protection against the raids of mice, birds and slugs, very early crops will be gathered. Of course only the hardy early sorts, such as Pilot, William, &c. (and a variety called Essex Star, I have found a really good thing) are likely to give the utmost satisfaction.

SEAKALE.—Lift small quantities for forcing, but do not force extensively just yet. Finer produce will result from later forcing, and after all, seakale is the easiest forced of all vegetables.

To those who have a full supply of heat and good forcing houses, French beans may be sown in 7 inch pots, keeping the plants near the roof glass and taking great care in providing water.

TOMATO FRUITS which may have failed to ripen outdoors should be cut off in trusses and brought into a heated structure. If hung up, many of the fruits will ripen quite well and will prove useful for cooking.

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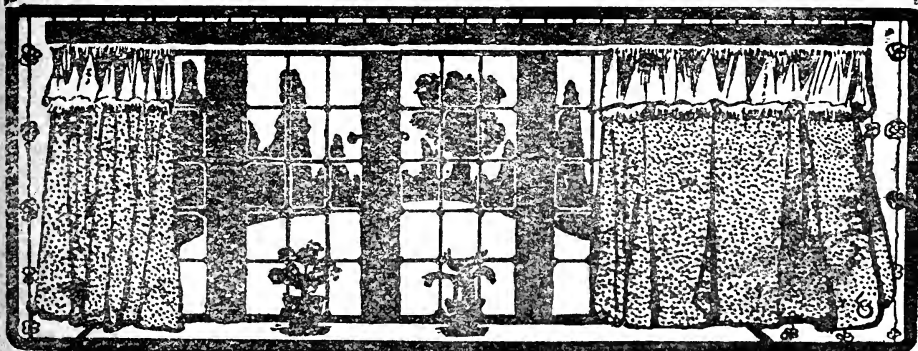
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Irish Gardening

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ADVANCEMENT OF HORTICULTURE AND

DECEMBER
1915

ARBORICULTURE IN IRELAND

EDITOR—J. W. BESANT.

The Holly.

Above, the Holly decks the scene,
With prickly leaves of glossy green,
And girl with balls of scarlet dye,
Boon Nature's provident supply
Of banquets for the eager bird,
Save when to village church transferr'd
It lends symbolic colours gay
To grace the Christian holiday.

—*Bp. Mant.*

At ordinary seasons we think of the Holly as a hedge plant or as an ornamental evergreen, but on the approach of Christmas it assumes an altogether different significance. Then there is a big demand on the Holly for decoration of a different kind and much hunting sometimes for the best berried bits. When exactly the Holly was first used for Christmas decorations I do not know, but it is certainly a long time ago, for it was early in the last century that the Irish poet, John Keegan, wrote the following verses, entitled "The Ivy and the Holly Girl":—

"Come buy my nice fresh Ivy and my Holly
sprigs so green,
I have the finest branches that ever yet were
seen.
Come buy from me, good Christian, and let me
home, I pray,
And I'll wish you 'Merry Christmas Time' and a
'Happy New Year's Day.'

"Ah! want you buy my Ivy? the loveliest ever
seen!
Ah! want you buy my Holly boughs all you who
love the green?
Do take a little bunch of each, and on my knees
I'll pray
That God may bless your Christmas and your
'New Year's Day.'

* * * * *
" 'Twas a dying maiden sung while the cold hail
rattled down,
And fierce winds whistled mournfully o'er
Dublin's dreary town.
One stiff hand clutched her Ivy sprigs and Holly-
boughs so fair,
With the other she kept brushing the hail-drops
from her hair.

* * * * *

"I dreamed of wanderings in the woods amongst
the Holly green,
I dreamed of my own native cot, and porch with
Ivy screen.
I dreamed of lights for ever dimmed, of hopes
that can't return—
And dropped a tear on Christmas fires that never
more can burn."

The above four verses are taken from Mr. William Dallimore's book on the "Holly, Yew and Box," where it accompanies quotations from other poets, many of whom have sung the praises of the Holly.

It is not my intention to discuss the cultivation of the Holly at this season, which is perhaps the worst of all for planting, but it may be interesting to consider its flowers. The flowers of the Holly are not conspicuous, and are probably seldom taken much notice of by casual observers, but they have some interest in relation to the production of berries. It is not uncommon to receive enquiries as to why certain Holly trees do not produce berries. The fact is that most Hollies are of one sex only—that is, on one tree the flowers will be found to have perfect stamens and undeveloped pistils, and on another the pistils will be perfect but the stamens undeveloped. Hence if the tree be a male one bearing fertile stamens only it can bear no fruit. On the other hand, a female or pistillate tree may be so situated that pollen from a staminate tree cannot reach it, and in this case also there may be no crop of berries. In both cases some berries may be produced, due to the presence of a limited number of flowers having both stamens and pistils fully developed; and further, berries may be produced which do not contain fertile seeds due to imperfect pollination. It is therefore where Hollies are grown in quantity that there is the greatest chance of a good crop of berries.

The Golden-rayed Lily.

Lilium auratum.

This beautiful Lily is one that may well engage the attention of the proprietor or owner of a small garden, since not a few instances are on record of specimens grown in cottage gardens far surpassing in beauty and vigour any to be seen in the largest public or private gardens.

As a pot plant, *Lilium auratum* and some of its varieties have long enjoyed popularity, and in this way can be grown in the smallest garden. Most people, however, prefer plants that can be grown in the open ground, and if it can be established *Lilium auratum* will amply reward any amount of trouble in giving it a fair start. As a rule it is recommended to plant *L. auratum* in sandy peat, a commodity not always available to the amateur, though in many parts of Ireland the soil is of a peaty nature, requiring only to be broken up and mixed with sand to render it suitable. Where peat is absent it would be an easy matter to obtain a bushel or so and mix it with the natural soil, placing sharp sand under and around the bulb when planting. Failing peat, leaf-mould is a capital substitute.

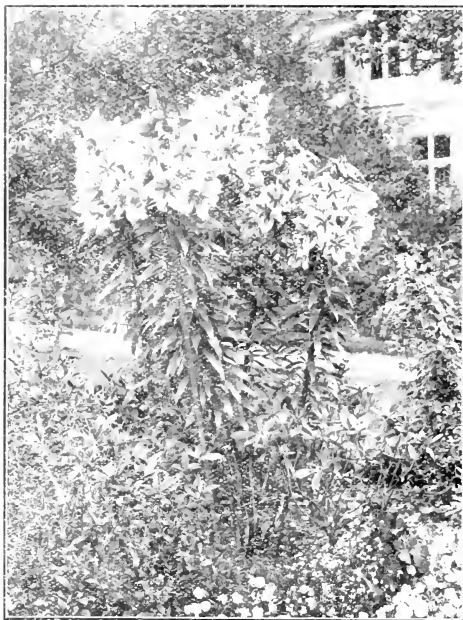
In the November issue of IRISH GARDENING Mr. G. N. Smith alluded to the Golden-rayed Lilies in the public park at Warrenpoint, and remarked that since planting they had had nothing but an annual mulch of leaf-mould and road scrapings. The illustration in the present number depicts more clearly than words the success of the treatment. Such a result is worth working for, and considering that very good bulbs may be purchased for from ninepence to eighteenpence each, according to size, they are

well within the reach of small growers; and the largest bulbs are not always the best. Very often a large bulb will give a good display the first year and then deteriorate, while a small one will appear weak at first, but subsequently improve and grow stronger annually.

A point to note in planting is that *L. auratum* produces roots from the base of the flower-stem as well as from the base of the bulb, hence it is advisable in all but heavy wet soils to plant at least six inches deep to allow for this stem-rooting. In wet soils plant shallower and mulch or topdress as described above.

Lilium auratum *platyphyllum* is said to be the hardiest variety, bearing beautifully spotted flowers, while *L. auratum* *rubro-vittatum* is perhaps the most striking, having a red band down the centre of each petal.

B. DUBLIN.



LILIUM AURATUM IN WARRENPOINT PUBLIC PARK.

Michaelmas Daisies as Cut Flowers.

I READ with much interest your correspondent's article on the above, containing as it does much valuable advice and also information with regard to the best varieties suitable for decorative purposes, which should do much to still further popularise this useful family of border plants.

Might I be allowed, though with all due respect to the writer, to draw attention to one variety which he has not mentioned—viz., Climax. This belongs to the *Novi Belgii* section, and is probably the finest variety of its kind that has ever been raised for garden decoration and cutting. It originated in the gardens at Aldenham, from which place so many others have been introduced by Mr. Peckett, and I venture to say that no other Aster ever gained such popularity.

Market growers found its worth and grow it

in large quantities, and huge quantities find their way into Covent Garden market. It is a tall-growing variety, nearly 6 feet; a free and easy doer, on which I have never seen a trace of mildew, although others near by have been badly affected.

For the back of the Daisy border it makes a handsome plant, with its immense clear blue flowers perfectly carried on pyramidal spikes, and, like many of the others, admirably suited for planting in suitable open positions amongst flowering and foliage shrubs.

E. B., Queenstown.

slightly paler than in the older species. Another distinction is that the foliage remains green in autumn, while *C. plumbaginoides* takes on a brownish-red tint.

The plants thrive in a well-drained sandy loam, in which leaf-mould and peat may be freely mixed. Propagation is by cuttings made of the soft young shoots about mid-summer, and placed in a close-heated frame. A very much larger percentage root in this way than when cuttings made of firmer growths are inserted later in the season.

A. O.



Photo by]

MICHAELMAS DAISIES AT ALDENHAM.

[Ernest Beckell.

Ceratostigma Willmottianum.

THIS new hardy *Plumbago* from China should prove very suitable for cultivation in Ireland. Introduced by Mr. E. H. Wilson, *Ceratostigma Willmottianum* is much more robust in growth than *C. plumbaginoides* (*Plumbago Larpentis*), also a native of China, which was first introduced in 1846.

Under genial conditions the subject of this note may be expected to form bushy plants three or four feet high. The flowering season extends from July until November or December, the familiar *Plumbago*-blue colour being perhaps

Cratægus Cordata.

AMONG the many beautiful species of *Cratægus*, native of North America, the Washington Thorn *Cratægus cordata* is one of the most distinct and pleasing. It forms a round-headed tree of moderate height, with rich green-lobed leaves. The Washington Thorn is very free-flowering each year early in July, being literally "smothered" with white blossoms. These are one-half inch across, freely borne in axillary and terminal corymbs, followed by quantities of orange-scarlet fruits. For a thorn the fruits are small, being a quarter inch in diameter, sug-

growing throughout the year in the United States. Unless taken by the birds, the trees hang on to the trees, and are ornamental well into the new year.

It is a native of the Eastern United States and is said to have been first introduced to Britain about 1738.

A. O.

Cyrilla Racemiflora.

This late-flowering shrub is a native of the Eastern United States. From this locality it is not surprising to find that the plants thrive best in the southern and western parts of the British Isles. In other localities the foot of a sunny south or west wall is the best position.

Cyrilla racemiflora in its native home is said to be a large bush or small tree, but with us it is a comparatively small shrub up to three or four feet high. The small white flowers are freely produced on slender racemes, up to six inches long, in beauty from September until November.

Propagation is by cuttings made of half-mature shoots inserted in a close, slightly-heated frame during late summer. A well drained sandy loam, to which peat and leaf mould is added, forms a suitable soil.

A. O.

The Alpine Garden.

The busy weeks of autumn have now passed, and all reconstructing, replanting, thinning out and cutting back have been done.

During the next few months our alpinists have to face their worst enemy, the damp, which affects every one of the higher alpinists, but is particularly severe on the plants with downy foliage, to which protection must be given.

A pane of glass, supported at the corners by stones, sticks or glass, is all that is necessary for each plant, but the covering of the bigger stretches of *Androsace Chumbyi*, *Sarmentosa*, *luciginosa* and *Potentilla nitida* (here) is not such a simple matter.

A small light, if it can be procured, is excellent, but if not, a double layer of white butter-paper placed between two pieces of rabbit wire the required size, and supported at each corner by a small stake, to which it can be firmly tied, answers the purpose; but, of course, must be renewed about every two months.

The alpine house and all frames, including the *Primula* frame, have been gone through, drainage seen to in each pot, and repotting done where necessary.

Any *Primulas* which looked sick were potted

up in peat and fine sand, and have recovered wonderfully.

The September propagations are now ready for potting, and this is being done when the weather prevents outdoor work.

There are also plenty of seedlings ready for pricking out into boxes or pans. This work should be done as soon as possible, as late December and January are very bad times for changing the quarters of tender seedlings.

The outdoor work being carried on at the moment is chiefly a general tidying up, and when the weather is favourable topdressing is done.

In large alpine gardens it is impossible to get all the topdressing done in the spring, unless, of course, a large number of hands are kept; so it is a great help to have some plants attended to before that busy season is upon us.

All *Androsaces* have been topdressed with sand, loam, leaf-mould and lime-rubble; alpine *Phloxes* have been given a richer compost; *Primula* "Dusty Miller," sand, loam, and a little peat; and such *Primulas* as *Cashmiriana* have been given a slight topdressing of cow manure.

The autumn garden was exceptionally bright this year, helped greatly by the gorgeous colouring of the shrubs: *Cercidiphyllum Japonicum*, *Acers palmatum*, *rubrum*, and others, and *Berberis thunbergii* being particularly noted.

At the moment we are kept very busy brushing up the leaves of the deciduous shrubs, as they are a great danger to alpine plants.

Amongst the small plants especially noted this year are *Raoulia australis*, a delightful subject for the moraine, with a creeping habit and silvery foliage; *Linum salsoloides nana*, flourishing in partial moraine; *Viola* "Crimson Crown," with charming purple and cream flowers, and *Cyananthus lobatus*.

This last-named, a native of Chinese Tartary, with wonderful flowers of indigo-blue, was planted out in March in peat and loam on the shaded slope at the side of the moraine. Here it started to bloom in July, and flowered incessantly until late November.

Cuttings were taken in July, rooted under a cap glass, and potted up in August, and put in a frame for the winter.

Cuttings taken early are an advantage, as it gives the young plant time to become established in its pot before it goes to rest for the winter.

Cyananthus incanus is also beautiful, easily propagated in the same way: it is, however, a more difficult plant to keep.

Berberis stylosa is another pretty alpine worth noting, propagated very freely from seed.

M. E.

Nov. 13th, 1915.

Iris sibirica.

OUR illustration depicts the value of this, one of the best known Irises, for massing.

The specific name would imply that it is a Siberian Iris, but it is also found wild in Southern Europe. There are many varieties to be found in gardens, and still others may be expected, as seeds are freely produced, and many variations invariably occur giving scope for selection and improvement.

What may be considered the type plant has blue flowers, usually veined with white. The leaves are narrow, and the flower-stems, which are hollow, usually carry several flowers extending well above the foliage, thus gaining much

There are two forms of *I. sibirica orientalis* which are of rare beauty—viz., Blue King and Snow Queen, which have large flowers of fine form and effect. The cultural details of the Siberian Irises are simple, and may be summed up in the two words, moisture and manure. Nowhere do they look so well as by the water-side, and the banks of a lake, pond or stream may be made beautiful by planting colonies of the various forms and varieties, where their roots will reach the water. An annual mulch of decayed manure in spring will be very beneficial and will much increase the vigour of the flower spikes. Where water is not available they may be grown quite satisfactorily in the herbaceous border, ensuring that the soil about them is kept moist and rich. The flowering season is early summer.



IRIS SIBIRICA IN THE GARDENS AT HARRISTOWN HOUSE.

in beauty and effect. As stated above, many varieties exist varying chiefly in colour, some being pale and others dark blue, while some are nearly white. Two very fine forms are *I. sibirica atrocaerulea* (dark blue) and *I. sibirica azurea* (sky-blue), which, as recorded in the August number of IRISH GARDENING, were very fine at Newry, where large breadths of them are grown.

Iris sibirica orientalis is a distinct and desirable variety, bearing larger flowers, usually singly, and not carried so well above the foliage.

Mr. W. R. Dykes, a generally accepted authority on Irises, is inclined to consider this form a distinct species. For garden purposes, however, we need not worry as to its botanical position, for it is well worthy of cultivation.

The Kaffir Lily.

The name of Lily in any shape or form is a misnomer as far as the plant under notice is concerned, as it belongs to the Iris family.

A native of South Africa, it grows freely in most parts of Ireland, and produces its handsome scarlet flowers in October and November. A sunny position in moist sandy soil appears to suit it well. If planted in shade or in a soil too wet an enormous mass of growths result, but few flowers are produced, and the plant loses its greatest charm. The aim should be therefore to provide soil which will give sufficient moisture to ensure satisfactory growth during summer, and yet allow the growths to become sufficiently firm to produce abundance of flowers in late autumn—a season when they are much appreciated.

Mistletoe—*Viscum album*.

With the approach of Christmas large quantities of mistletoe find their way into our cities, and will be found adorning the windows of high-class florists and the barrows of the street hawker, and commanding a ready sale in both cases.

The custom of using mistletoe in Christmas decorations is apparently an old one, and dates at least as far back as the seventeenth century. In an old book entitled "Things not Generally Known," it is stated that Christmas cards in praise of holly and ivy were known even earlier than the fifteenth century, but that allusion to mistletoe can scarcely be traced for two centuries later, or before the time of Herrick, who wrote:

"Down with the Rose-mary, and so
Down with the Bays and Mistletoe,
Down with the Holly, Ivy and all
Wherewith you dress the Christmas Hall."

Mistletoe seems to be parasitic on quite a variety of trees, most of the old writers including the oak as a host plant. Modern observers, however, generally exclude the oak, or mention it as but rarely infested by mistletoe.

In the Botanic Gardens at Glasnevin it may be seen on various species of pyrus, also on asculus, acer, robinia, and lime.

In the September issue of the *Monthly Bulletin of Agricultural Intelligence and Plant Diseases* there is an extract from a Swiss journal giving a list of deciduous host plants which includes "Rosaceae, Populus, Salix, Alnus, Betula, Ulmus, Fraxinus and Tilia, and among Conifers Silver Fir and Scots Pine are mentioned as its chief hosts."

The general appearance of mistletoe is well known to most people, but it may not be so well known that the male and female flowers are borne of separate plants. The flowers, of course, are inconspicuous and usually escape observation unless looked for during summer. The white berries containing the seed are familiar and are greedily eaten by thrushes and other birds, who spread the plant by carrying the seeds to other trees, where, if the host be a suitable one, they germinate. The seed when deposited on a branch inclines at once to fall off, but is prevented from leaving the branch by the sticky fluid which surrounds it; thus it comes to rest on the side or under surface of the branch. The root or "sinker," as it is often termed, grows into the branch until it reaches the wood, and finally becomes deeply imbedded in it through the formation of new layers of wood annually which gradually grow up round the so-called "sinker." Above the limit of the wood the "sinker" may produce lateral "roofs" which travel parallel with the branch. The laterals also produce "sinkers" which penetrate to the wood, and buds may be formed which will burst through the bark and form new mistletoe bushes. Thus the parasite may spread over a considerable part of a tree without the introduction of more seeds.

Many mythological legends are extant respecting mistletoe, but they need not be recounted here.

"The Treasury of Botany" says:—"The origin of the modern custom connected with mistletoe is not very clear. Like many other customs its original significance is only guessed at. It known

perhaps the innocent merriment now associated with the plant would be exchanged for a feeling of stern disapproval, and the mistletoe would be banished from our homes. In such a case, however, ignorance is bliss."

Again, from the work quoted at the beginning of these notes we learn that "kissing a fair one under the mistletoe and wishing her a happy new year as you present her with one of the berries for luck is the Christmas custom of our times." That was written in 1859, and at least part of the custom is still with us. Long may it continue!

HOLLY BERRY.

Smaller Campanulas for the Rock Garden.

PART II.

By MURRAY HORNIBROOK.

CAMPANULA isophylla, its white form, and *C. Mayii* are delightful plants for those who can winter them. I have never seen those wonderful festoons of blossom out of doors that one sees to perfection in cottage windows. Here they are not truly hardy and I no longer put them out. *C. muralis* is everybody's plant, absolutely hardy; its bright green leaves are an attraction in mid-winter, and its profusion of blue bells makes a fine patch of colour for a long period in summer. Var. *Bavariae* is larger and darker; var. *Muretti*, smaller and paler, though it prefers a chink. *C. muralis* is not particular, and seeds itself more freely than any of the other chink-loving Campanulas.

C. alpina one must be careful about; the true plant makes small narrow-leaved rosettes, and at the side throws up a spike bearing a few deep-blue bells; it is not difficult in very stony soil, but is rarely seen in cultivation, and, though not a biennial, has that unfortunate monocarpous tendency displayed by the "Spike" Campanulas. There is a white form which I have never seen and a false form (a hairy *rotundifolia*—indistinguishable from *C. Valdensis*) which one sees too often.

C. barbata is held by some to be merely a geographical form of *C. alpina*, but it is a far more robust plant, throwing up spikes of large, pale lavender bells, with their characteristic "beard." I see the plant described as "rarely perennial," but have found it absolutely perennial when planted with its back to a stone, high up. What it dislikes is a heavy winter soil. There is a beautiful white form and a very rare one-flowered form—var. *uniflora*. I had a plant of somewhat similar habit for one year—*C. Moesiaca*—raised from seed collected by poor Ball when he was in Bulgaria; it was distinct and very pretty, but died after flowering, and set no seed. Not very far from these are the rare *C. orbicular* and *C. bellidifolia*, both of which I find difficult to keep, but *C. tridentata* and *C. Saxifraga*—which are of the same kidney—I find easy enough if their new growths are protected from slugs in very early spring. They make rosettes of spoon-shaped leaves and bear deep purple bells. Var. *Aucherii* seems an especially fine form, with enormous bells, one on each stem, borne freely in early May.

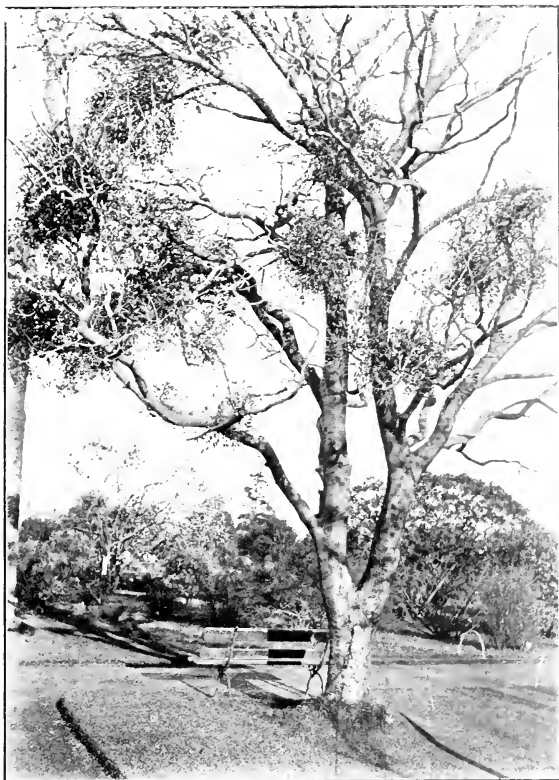
Another rosette-forming *Campanula* is *C. Mirabilis*, with Saxifrage-like rosettes of bright green leaves and trailing stems bearing erect China blue cups; it is a biennial, but sets plenty of seed, which germinates readily. *C. planiflora* or *C. nitida* makes compact very dark green rosettes, with tall flower stems, upon which appear, rather sparsely, almost flat, dark blue flowers; it is very distinct, and hails, I believe, from N. America and seems to appreciate sandy peat; it increases slowly, and has white and double forms.

I am not quite sure about those delightful gem, *C. Tommasiniana* and *C. Waldsteiniana*; as we grow them, the former has narrow, erect, yellow-green foliage about four inches high and tubular drooping lilac flowers; the latter similar, but narrower foliage of a grey-green hue and erect star-shaped flowers of a deeper tone; both are deciduous, and should be divided frequently (in early spring); but Correvon makes these names synonymous, and sends out *C. Waldsteiniana* as *C. flexuosa* (under the latter name I have received a milfy Eastern biennial not far from *C. rupestris*). Whatever their true names may be they are gems of the first water, perfectly perennial and easy in open stony soil, and should be included in every collection.

C. crispa is new to me, and has not as yet flowered; its foliage is not unlike that of a dull *C. muralis* springing up from a taproot; it is said to bear lilac flowers, and seems to prefer a rock chink. Other novelties which I had and lost were—*C. hypopolia*, with curious grass-like foliage, and *C. dasycarpa*, a dwarf Japanese gem. I also got seed of *C. colorata*, which, if true, was an erect plant, with hairy stems and foliage and small lilac flowers not far from *C. rotundifolia*; it proved only biennial here, but I see a few self-sown seedlings appearing; it is not a particularly

attractive plant. *C. Allioni* is a gem—a true moraine plant, said to be a lime later, but perfectly happy here in limestone moraine; it is quite possible that it may grow even more readily in granite chips. I cannot say, as granite is unobtainable here. It forms a taproot from which radiate underground stolons forming flat rosettes from each of which arises a large, almost stemless, upturned bell; there appear to be

several forms of *C. Allioni* differing in the width of their foliage and size and colour of their bells. I have never seen the white form, which is extremely rare. It is better to plant this *Campanula* in spring as it is not everywhere an easy plant to bring through our wet winters, and as an extra precaution I yearly place a sheet of glass over it to throw off the winter rain. *C. Genisia*, another true moraine plant, with distinct, almost steel-blue flowers. I find the most difficult of all *Campanulas*. Mr. Farrer, in one of his early books, spoke of yard-wide patches in his moraine. I have rarely seen it in cultivation at all, have never seen robust plants of it, and have never succeeded in establishing it myself, although I have tried it every year in varying moraine mixtures. *C. lanata*,



MISTLETOE GROWING ON 'JERU'S FLAYA' IN THE BOTANIC GARDENS, GLASNEVIN.

or *velutina* (are they really synonymous? I see Correvon catalogues them separately), though biennial, as a rule, is well worth growing, and comes very readily from seed; it loves the hottest rock chink one can give it and, when strong enough, its beautiful blue silver silky rosettes send up an eight to fifteen inch radiating pyramid of soft pink or yellow-white bells (like Canterbury Bells); with me it invariably dies after flowering, but I saw a plant at Mucklagh (The O'Mahony's Lodge in Co. Wicklow) two years ago growing on a wall which from the number of its basal rosettes must have been several years old.

C. carpatia is everybody's plant, making compact tufts of grey-green foliage and bearing quantities of blue, mauve or white flowers, with open cups, on six-inch stems. I scarcely imagine that there is now in cultivation any plant that might be recognized as the type *C. carpatia*, it crosses so, interminably with *C. turbinata* and seeds itself so readily that scarcely any two forms are exactly alike. Var. *Riverslea* with steel-blue flowers, var. *Isabel* with wide open flat blue flowers, and var. *Lissadell White*, a cream-white form with violet tinge at base, are all good, and in almost every garden one comes across good unnamed forms of this plant. The true *C. carpatia*, I am told, should have upright bells, two or three on a stem; true *C. turbinata*, hanging bells, singly. I have a collected *C. turbinata alba* which is a pretty thing, slightly hairy, greyish foliage and hanging white bells, borne singly. This is probably true and is a much smaller and neater plant than the *carpatia* forms, which seem usually top heavy and inclined to flop; but none of these plants have any fads — they will grow, increase and seed themselves apparently in any soil or situation not too arid or dank, and flower profusely.

C. Collina is a beautiful plant, with large flowers of deep imperial purple, it needs a rock-bound pocket, as it is a most invasive plant, increasing rapidly by underground runners; it makes a wonderful patch of colour in any sunny spot in loam, but unfortunately its flowering period is rather short. Another dwarf ramper which must be admitted with suitable precautions is the *acaulis* form of the common *C. glomerata*, whose blue Canterbury Bells are absolutely stemless. I have received plants practically identical with *C. glomerata acaulis* from nurserymen under the names of *C. incurva* and *C. Leutyveinii*. I can find no authoritative description of either of these plants, and therefore cannot say whether all three are really, synonymous.

(To be continued.)

Rose Growing for Novices.

YEAR after year one observes with much regret the misdirected energy with which a great number of people who are apparently flower-lovers attempt to beautify their garden-beds with highly coloured combinations of the commonplace varieties of annuals which, though admirable enough in their own way, still have only a transitory interest and appeal. An equal, or even less, amount of application and time properly utilised in the formation and growing of a Rose garden would produce what would be not only an object of immediate beauty and pleasure, but one that would increase in value as years go by. It is well known that many are deterred at the outset from becoming Rose growers by the jargon of professional wisacres whose little vanity is to babble of what seems to the uninitiated as secrets of the trade. This should be treated very lightly, when one considers that the most high-browed professional was at one time the veriest novice, with all his troubles and so-called secrets yet to learn.

There is no mystery about successful Rose growing. Prize blooms can be equally produced in the small cottage garden and in the most luxuriant garden where the staff is numbered by

the score, given the determination, once the start is made, interest and knowledge quickly grow, and the pride of conquest is not the least of one's pleasures.

Roses can be grown in the most modest of gardens and in any soil which is not actually unworkable or incapable of being cleaned. Whether you wish to plant a dozen or a hundred the method is the same. Each plant requires about two cubic feet of root room. If you have the energy and leisure, dig deeper, and the results in a few years will amply reward the extra attention. If the soil is naturally heavy and retentive of too much moisture, you must see to proper drainage. A layer of broken brick or stones should be placed at the bottom of the hole. On this could be added a layer of turf, broken, not too small, with the grass downwards, and tread firmly. Nothing is better for Roses than a good basis of old farmyard manure, and six inches is not too much. Over the manure shovel in the finest and cleanest soil you have, and press again firmly. The actual planting will now require some care. Examine the roots, and any that are bruised or broken should be cut off and any taproots shortened. Previous to planting they should have been soaked for at least half an hour to plump them up. Some Roses having longer stocks will require to be more deeply planted. Gauge the depth so that when the various roots are separated and spread out without overlapping, the junction of the Rose and stock is about two inches below the level of the soil. Shallow planting is as fatal as too deep planting, and too much attention cannot be given to this point. In the former case hard frost may prove fatal, and for most Roses of moderate growth the loss of summer heat for the roots cannot be easily remedied if the latter method is adopted. When the proper depth is reached cover the roots with fine soil; old potting stuff is excellent for this. The coarser soil can now be added and pressed well down, but not too hard if the soil is too wet or sticky after heavy rains. Give a good watering to fix the clay about the roots: half a gallon is not too much. Another small layer of manure will be most beneficial, and the hole can be filled in with the remaining soil. Finish the operation by adding a little fine soil about the neck of the plant, and, if the weather is frosty, heap up some, cone-shaped, that will offer sufficient protection. A layer of straw manure is often advocated, but this has a bad effect when the soil is heavy, and is not at all necessary.

In most districts, except probably in some places in the north, the effect of frost is not serious enough to make one nervous if the Roses are properly planted. Any long stems should be shortened to about a foot or so to prevent any damage during strong winds.

The roots of Standard Roses need not be more than four inches below the soil, and here the greatest care must be exercised in fixing the supporting stake firmly in the ground. This should be done before the planting of the tree, and the stake should be long enough to reach above where the Rose is budded on the brier. You will find the benefit of this if the growth is very vigorous and requires tying.

Roses can be planted any time between November and March, when the ground is free from frost and snow and not too wet. Before the hard weather sets in the hardier Hybrid Teas and Hybrid Perpetuals could be got down, but it is often safer to defer the planting of the weaker

Teas till the end of February or March, according to the suitability of the weather.

In purchasing, it is more economical to deal with a reliable firm. The initial cost may be more, but you will get strong healthy plants, and the guarantee as to the name will be a real guarantee. If the Roses are received during a spell of frost, do not attempt any planting; keep them indoors in a cool place until the frost disappears. The roots can be sprinkled if there is any danger of too much dryness.

Whether you plant along a border or in a special Rose bed, you should insure that the bushes should have room for future growth. Two feet apart will be ample for the vigorous varieties, and eighteen inches for those of moderate growth. Roses other than the Climbing sorts should be at least two feet from a wall; one foot will be sufficient for the Climbers. As to any particular colour scheme, this should not cause any worry. Of course the ideal system is to have beds of one Rose, but this is not always convenient; and in the ordinary border planting, if the grower finds any two apparently clashing to his trained sense, the offending bush can be easily shifted.

There should be no difficulty in the choice of the varieties. Though the list may be very long, a certain number having stood the many tests required have been chosen by the National Rose Society, and from these one's own selection can be readily made.

Rose producers often take a pardonable pride in describing their own Roses in rather luxuriant language, and give the others rather Cinderella treatment; but a little experience will save the amateur from any risk. All gold medal Roses will not be found suitable to all gardens, and if you require Roses that will bloom profusely, do not be disappointed when one meant purely for exhibition purposes does not come up to your expectations.

The Hybrid Teas are the best all-round Roses for variety of colour and perfume and continuity of bloom; they are really more perpetual than many of the so-called Hybrid Perpetuals. The following is a list that may be recommended, not necessarily in order of merit:—Richmond, scarlet; Lady Ashtown, deep pink; Madame Ravary, orange-yellow; Betty, coppery rose; Caroline Testout, satin pink; George Dickson, dark crimson; Lady Pirrie, salmon and apricot; George C. Waud, orange-vermillion; Countess of Derby, flesh; White Killarney, General McArthur, crimson; Madame Melaine Souperet, sunset yellow; Madame Jules Grolez, silvery rose; Edward Mawley, crimson; Gustave Grunerwald, carmine-pink; K. A. Victoria, creamy-white; Rayon d'Or, sunflower yellow; J. B. Clark, scarlet; La Tosca, salmon and flesh; Le Progres, yellow; Madame E. Herriot, raw red; Mrs. A. Hammond, ivory and apricot; Viscountess Folkestone, cream; Lyon, shrimp pink and chrome-yellow; Mrs. Forde, carmine-pink; Earl of Warwick, salmon and rose; Mme. Leon Pain, silvery salmon; Duchess of Wellington, saffron-yellow; Pharisaer, white and flesh; Liberty, velvety crimson; British Queen, white; Brilliant, bright scarlet; H. V. Machin, crimson; Leslie Holland, scarlet crimson; Lady Mary Ward, orange and apricot; Mrs. A. Carnegie, white; Ophelia, silvery salmon; Queen Mary, carmine and yellow.

Some of the Hybrid Perpetuals are almost essential, such as Hugh Dickson, crimson;

Frau Karl Druschki, white; Mrs. John Laing, pink; Victor Hugo, dazzling crimson; Prince C. de Rohan, very dark crimson; Ulrich Brunner, cherry red; Captain Hayward, scarlet; General Jacqueminot, crimson; Coronation, flesh-pink.

A few good Teas for general cultivation are:—Mrs. H. Stevens, white; Lady Roberts apricot; Molly Sharman Crawford, white; Miss A. de Rothschild, citron-yellow; W. R. Smith, bluish white; Mrs. Edward Mawley, pink; Alex. H. Gray, lemon-yellow; Harry Kirk, sulphur-yellow; Madame Hoste, pale lemon; Madame Constance Souperet, deep yellow; Lady Hillingdon, apricot yellow; Mrs. Foley Hobbs, ivory white.

J. A. F. G.

(To be continued.)

Hints to Novices.

By R. M. POLLOCK.

ALL alterations in the garden can now be done, and it is well to do them early. Once the new year comes in, work seems to accumulate in a rush, and the days seem hardly long enough for the work that must be done. Patches that have sunk, or where the drainage is bad and where the water lies, should be opened up, and correct drainage introduced. Clinkers, broken bricks and rubble make excellent drainage. Trellis work on wall will require attention. Sometimes a corner may become detached which will get caught by a high wind, and all will be swept off the wall. New beds can be cut and made now so that they will be ready for spring planting. Whatever these new beds are to be used for, they should be properly prepared for growing plants. In most modern villa houses the soil appears on the surface to be fresh and good, but the depth of a spade down will most probably bring the owner to such a collection of jam-pots, slates, gas-pipes, pots, saucers, tree stumps, &c., as can hardly be beaten. No plants can be expected to grow in this class of soil, and the ground should be well trenched, all this rubbish removed, and good soil and manure put in its place. The result in the future will well repay the initial expense.

There is now a certain class of garden which is not considered complete without a pergola of some sort, and it certainly forms an excellent means of utilising the various rampant growing plants which have been so much increased by recent introductions, but like many other good things it has in many cases been abused, and built in quite unsuitable positions and covered with unsuitable plants. On the other hand spaces often suggest themselves for pergolas which are used in some other way, or may be not used at all. A pergola is really a covered way, or covered alley, and it is a means of obtaining shade largely used by the inhabitants of Southern Europe, from whence the idea has been introduced into this country. A true pergola should have a flat stiff roof—that is to say, not made of chains or ropes. In many good pergolas, such as that at Kew, chains have been used, and these have been slung from post to post along the sides and across to the post opposite. The result of this method is that the plants are considerably confined once they reach the top of the uprights, and the path below can never become even partially shaded,

as there is considerable space between each pair of posts. Sometimes, also, the uprights are of iron, but in spite of the strongly rooted idea in people's minds that climbing plants dislike iron, the Roses at Kew, where the posts are of iron, grow and flourish. "The proof of the pudding is in the eating."

The pergola at Carton, Maynooth, is built of red brick, which is crude in the early stages, but fortunately soon tones down with age. That at St. Anne's, Clontarf, is also red brick, with a paved path and low growing semi-shade loving plants growing along the side and between the tiles. When Herbert Park, Ballsbridge, was being laid out as a public park, a very pleasing pergola was built on the site of one of the many pavilions of the International Exhibition of 1907. This pergola runs at right angles to a pond, it is slightly raised above the surrounding ground, and it is built of solid, square grey stone pillars, with a wooden roof composed of what look like narrow railway sleepers. Several plants, in some cases all different, are planted to each pillar. Here and there there are steps which descend to the level of the water and pleasure grounds. Were this structure in a private garden, where the necessary care and attention could be bestowed on it, an almost ideal pergola would result.

No pergola should be constructed at random in a garden, it should have a definite purpose, it should lead to something, and that something should only be attained by going through the pergola. Where possible it should dominate something, and it should be situated in a place where semi-shade is desirable. Whether it is curved or straight depends entirely on the position. As regards planting, this is also a question for the owner who can make it solely for Roses, or Vines, or Clematis, &c., or it can be planted with a variety of these and many more suitable subjects, which will give charming effects at all seasons of the year with flowers, coloured stems, coloured leaves, and coloured berries.

If the notes of work for November have been attended to, some of the fruit tree pruning will have been done, but in any case by the middle of December some of the trees will be ready for spraying. Fortunately, winter spraying of fruit trees is now recognised as one of the essential routines in fruit growing, and it is specially fortunate that it should be acknowledged as essential in Ireland, where the damp atmosphere is so favourable to the growth of such parasites as moss and lichen.

SPRAY NO. 1.—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 25 gallons water.

SPRAY NO. 2.—The cleansing spray for keeping the trees healthy, free from moss and lichen, and the bark clean. This should 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.), $\frac{1}{2}$ lb. soft soap to 10 gallons water. This spray should be used warm.

SPRAY NO. 3.—For insects. To be used on all fruit trees where fly of any sort is present:—2 lbs. quassia chips, 1 lb. soft soap to 10 gallons water. This spray, like No. 2, should be used warm.

The Month's Work.

The Flower Garden.

By W. KING, Gardener to Lord Dunleath,
Ballywalter Park, Co. Down.

PLANTING SHRUBS.—The present season is the best in the year for the planting of trees and shrubs. If the ground has not been made ready, however, time must be taken to prepare it. Shrubberies are too often neglected. The commonest species are allowed to crowd on the choicer specimens. Autumn is the season to put these matters right, either by transplanting or grubbing out the commoner sorts. There are so many beautiful sorts that we can ill afford the room for numerous plants of such shrubs as box, laurel, privet, &c., excepting when they are used for shelter or as covert plants. Shrubs of one kind or another may be had in flower nearly the whole year, either on walls or in the open border. Straggling plants of any common shrubs should be cut down and the root grubbed up, taking the opportunity thus provided to improve the soil by trenching it; and if it is of a heavy nature, working in plenty of decayed leaves and vegetable refuse. In soils of a cold retentive nature it is desirable to form beds above the level of the surroundings, and carry out planting only when the ground is in a suitable condition. It is essential to observe this when planting small specimens. In the case of large shrubs, holes should be made sufficiently large to accommodate all the roots. Directly planting is done see that proper stakes are provided, such as will keep each plant in a firm condition.

PAMPAS GRASS.—Few plants are more attractive when properly placed than the pampas grass. At this season of the year the plants are particularly elegant, with their tall and decorative plumes. As isolated specimens on the lawn, or when planted on either side of a walk or drive, or beside water, the pampas grass is effective. A position sheltered from strong winds should be afforded it, otherwise the slender stems carrying the feathery plumes will be damaged and their beauty marred.

GENERAL REMARKS.—Any flower-beds that are not planted with bulbs, or spring bedding, or bare parts of the shrubberies should be dug or trenched. If the soil needs enriching give it a good dressing of manure, leaf-soil, or vegetable refuse. Let the surface of the ground lie as roughly as possible so as to expose it to the influences of frost and air. It is suitable time to make or mend garden paths. If new ones are being prepared, excavate the soil to a sufficient depth, and place at the bottom a quantity of hard core or large stones, then some smaller pieces, finishing with a good layer of finely sifted coal ashes or gravel, rolling the whole thoroughly. Where there is a considerable amount of traffic the material forming the path should be at least one foot deep. Any worn patches in the grass edging, by the side of paths or carriage drives, may now be renovated. Remove the turf and place sufficient soil to raise the verge to its proper level. If the grass is badly worn, it is better to use fresh sods, but in some cases all that will be necessary will be to reverse it, placing the worn part inside, and levelling it by adding some fine soil. Violet

frames should be examined, removing dead or decaying leaves and loosening the soil. Afford water with care, but in most cases it will only be necessary where hot water pipes are employed. Ventilate freely on every suitable occasion, and see that the glass is thoroughly clean.

The Fruit Garden.

By ALFRED BARKER, Gardener to Lady Fitz-Gerald, Carrigoran, Co. Clare.

JUDGING by the weather conditions in this locality so far as November has passed away, it is very doubtful if such operations as planting, lifting, root pruning, &c., can have been carried out to as satisfactory or desirable extent as could be wished for in November; the first three or four days here were favourable enough for any kind of work amongst fruit trees, but quite suddenly a period of unusually stormy and wet weather set in, such as we rarely experience so early in November; during the week ending Saturday, 13th, the rainfall here was nearly four inches, including hail and snowstorms, this rendering the ground unpleasant to survey, and working on it quite out of the question. Wherever such conditions have delayed planting, &c., no possible opportunity should be lost for pushing on such work as far as possible before Christmas, and I would recommend even getting through the work with the ground somewhat on the wet side, rather than allow it to hang on over to the new year in the expectation of better weather conditions with the turn of the season, as a wet November does not by any means portend a drier termination of the winter. All kinds of pruning should also be pushed on quickly, so that the requisite manuring and digging may not be unduly delayed, and have to be carried out too late for the soil to be well pulverised and settled down before new growth commences.

Bush fruit squares and borders should be dug as soon as cleared of prunings, &c.; currants of all kinds should receive a reasonable allowance of decayed farmyard manure annually, if they are to be kept in robust growth and carry heavy crops of fruit and gooseberries such as are required to produce fine ripe fruit for dessert or exhibition, &c., should be liberally manured, otherwise a dressing of farmyard manure biennially will suffice for gooseberries. As the digging of the squares proceeds, remove the surface soil under the bushes, to about the spread of the branches, until a few roots are met with, then spread the manure over the cleared ground. The removed surface soil should be deeply buried in the digging or trench between rows of trees, and the manure covered over with clean soil from the ground between trees. The burying of this surface soil tends, to a great extent, to ward off attacks of gooseberry caterpillars. The larvæ of the gooseberry sawfly usually winters in the ground underneath the bushes that have been infested, so that the removal and deep burial of the surface soil destroys this larvæ, thus very largely destroying the embryo caterpillars. A handful or two of basic slag sprinkled around each tree over the fresh digging is a very beneficial addition for all bush fruits.

It is very advisable to put in a batch of cuttings of bush fruits, so that a few bushes may be at any

time available to replace worn out or sickly bushes, and to increase any particularly desirable varieties; this also means healthy clean stock, an important matter in these times, while the destructive gooseberry mildew, currant mite, &c., are so prevalent and troublesome. Cuttings should be made from straight clean shoots, of moderate thickness, of last summer's growth; cut the shoots in lengths of about 18 inches, the buds should be removed from lower part of red and white currants and gooseberries, retaining only a few buds at top of cutting, so that the ultimate bush may have a clean stem over ground. Black currant cuttings may be inserted as cut from the bush, unless it is intended to produce bushes with a stem, in this case the lower buds must be cut out, though black currants are more satisfactory grown with branches from ground level; if grown with a stem and head of branches, autumn winds frequently break many of the young shoots away, and spoil bushes altogether. When inserting the cuttings, a partially shaded or out-of-the-way position suits them best; they may be inserted in lines a foot or more apart, with six inches or more between the cuttings. About half the cuttings should be inserted in the ground, and all made quite firm, with surface of ground left quite fine and well closed in about the cuttings.

As the larger fruits are finished pruning, any favourable opportunity for spraying should be availed of, and especially where trees are badly infested with moss and lichens, &c., and which are to be sprayed with a caustic wash; in such cases it is quite possible when spraying is left over to the new year that the weather conditions may prevent thorough spraying until the season is so far advanced as to render the use of caustic sprays injurious to swelling buds; early spraying of such subjects also gives an opportunity of detecting such parts (if any) as may have been missed, or not sufficiently wetted to destroy lichen, &c., and these could then be sprayed a second time to complete the destruction of pests.

Where apple and pear scab has been prevalent during past season, winter spraying is also a very valuable preliminary to spring spraying for this troublesome fungoid pest; and for this I think I may, without transgressing on the special claims of any maker's compounds, recommend a complete spraying of apple and pear trees, with a solution of sulphate of copper, 1 lb. of the sulphate to ten gallons of water; this spraying to be followed up in spring-time, as advised, with one of the many compounds prepared to combat scab attacks. The sulphate of copper, in such quantity as may be deemed sufficient for the trees to be sprayed, may be tied up in a piece of canvas or fairly porous bag, and suspended in the water until completely dissolved; the mixture is then ready for use. It should be dissolved in a wooden tub or barrel. Carefully spray every particle of the trees, paying particular attention to old corrugated stems and coarse bark. When applying to wall trees, if the branches are loosened from the wall to ensure back of branch being sprayed, so much the better, but in any case spray all that can possibly be reached of the parts of trees next the wall. Trees in the open must also be thoroughly sprayed.

Pruning and nailing of wall trees should be got through so far as possible this month, making the most of any time when weather permits of this work being carried on. A piece of board or

wooden trellising should be used for standing on, both as a means of reducing undue trampling of borders, and keeping the worker's feet drier and warmer. The pruning of wall trees, having filled their allotted space, consists, first, of regulating the fruiting spurs, if overcrowded, and unduly long; where too numerous, some should be cut clean away, and overgrown spurs shortened; a portion of the overcrowded spurs may have two or three inches of base left, from which young shoots will be produced next season, and these shoots being pruned in due course, will ultimately form new fruiting spurs, and thus allow of more old ones being removed in after years. After going through these spurs, cut away the shoots of past summer's growth, or the over-lengths of shoots summer pruned, leaving about four buds (or more) at base of shoots. Horizontal-trained trees on either walls or espaliers that have not filled their space, should have the centre stem (or shoot) reduced, to form twelve to fifteen inches long, cutting at a side bud. When growth recommences several shoots will be produced about the end of shoot (if the tree is in good growing condition), the uppermost one must be trained upright, and two of the best placed shoots trained to right and left, to form a new tier of branches. The leading shoots of past summer's growth at points of branches must be shortened from a third to half their length, but in shortening these branches be guided to a great extent by the result of previous prunings, especially on pears, which vary considerably in growth and production of fruit spurs; if the leading shoots are pruned too long much of the branches may be left void of spurs, thus indicating the necessity for closer pruning. Where fan-trained trees have not filled their centres more young shoots must be tied in to form branches, and the leading shoots on extending branches pruned the same as on horizontal-trained trees. Cordon trees may be treated similarly where they have not attained to their desired length. As nailing and training of trees proceeds, all old shreds and ties should be closely examined and replaced with new ones if there is the least doubt as to their being sound enough to wear over another season. Shreds should be used on the young branches, and tarred string to tie the old or stouter branches, being careful not to make the ties so tight as to cause injury to branches by cutting, as they swell or expand when growing.

The Vegetable Garden.

By A. PEARSON, Gardener to A. F. Sharman-Crawford, Esq., Lota Lodge, Glanmire, Cork.

THE short, dark days of December are not by any means dull days in a well-ordered garden, indeed much of the success in growing next year's crops is due to the spade-work carried out in the winter months; naturally, digging, manuring, trenching and renovating, bulk largely in the present month's work, but many apparently trifling jobs are quite as necessary to the thorough working of the vegetable garden, such things as the making and painting of labels, gathering and preparing pea sticks in their various lengths, making and repairing baskets, seed boxes, &c., are jobs to be carried out in wet days when outdoor work is at a standstill, and, moreover, much valuable time is saved when spring comes. Preparation for

seed sowing seems a premature subject, but it is really one of importance, and the early border should be in readiness for the introduction of small things next month. Nothing is more suitable than the spent soils from the potting shed, and all these should be saved; errors in the past year's crops may be rectified, and bad varieties eliminated in the new order, which will now engage the gardener's attention. A plan of next year's cropping will, of course, be made, and the long nights now give the necessary time for thinking out the details.

FORCING.—Both sea-kale and rhubarb can now be forced profitably, and only well prepared roots not forced last year should be employed; a mild, rather than a violent, temperature suits the requirement of these roots. Spraying with lukewarm water once or twice per day favours the growth of the young shoots.

BRASSICAS.—Many of these have felt severely the effects of the November frosts, and should any broccolis be now showing the curd, protect by either lifting bodily or laying down as advised in last month's notes. Autumn sown cabbages occupying their permanent quarters will require firing after prolonged frosts; this is best done by pressure of the feet round the plant when the ground thaws.

CARROTS and other roots in storehouse should be examined now and again, and decaying roots removed.

CELERY.—In the event of a long spell of frost being likely, a favourable day should be chosen for lifting a supply. The roots if placed in a root store will keep fresh for some days. This ensures a supply for household use no matter how hard the weather may be, without the trouble of having to break down the trenches by pick; of course the necessary protecting material must be always ready.

ENDIVE.—Blanch as required and transfer to frames or sheltered spot those plants growing in exposed positions.

LETTUCES.—In hard weather protect with litter, frames or cloches, but give air at every favourable opportunity.

PARSLEY.—Should the batch grown for winter supplies be wintering badly (as indeed it is likely to on cold heavy soils), lift and pot some of the best plants; placed in a heated house these will give the few required leaves until the spring supplies come in.

Throughout the year I have advocated extensive and intensive cultivation, I still urge it. Without resorting to "French gardening," we can make a good deal more of our space than is usually done.

In September, 1914, the Editor, the late Mr. C. F. Ball, asked me to write an article urging the necessity for conserving the food supplies. The need exists to day as much, if not more so, than it did then. There is no panic in asking every one to till more than usual, to work harder, and be more thrifty is the bounden duty of every one who is responsible for a square yard of soil.

With the last of the monthly notes for 1915 I offer my apologies to any reader who may have expected more detail in the notes of the past twelve months. An editor must limit his contributors to space. I accept the shelter afforded by saying that my inclination to state how it should be done was often confined to a general observation.

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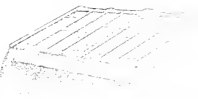
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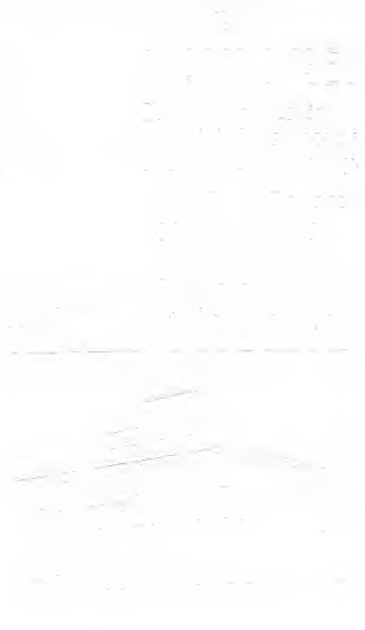


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75 to 80 Dawson Street, DUBLIN

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58 Gold Medals and 16 Silver
 Awards awarded to our Exhibits
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 APPLE, BUSHY, SPRUCE, splendid plant-
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ALEX. DICKSON & SONS, LTD.
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1915

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IRISH GARDENING

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IRELAND'S PREMIER SEED ESTABLISHMENT

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Rhodes pre-
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By Geo. W. E. [unclear]
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planting in the
arrangement and ecology
the produce of his
to the most all parts of
and on new and
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Handbook for Amateurs.

is a book designed for fruit-growing for
is of value to the vast
of suburban residents who
to add at home.
includes, pears, peaches,
the numerous
and pruning being
photographs
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most popular branch
who is desirous of
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Pests from Slugs.
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digging over and
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...and hydrastine.
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"AS USUAL"

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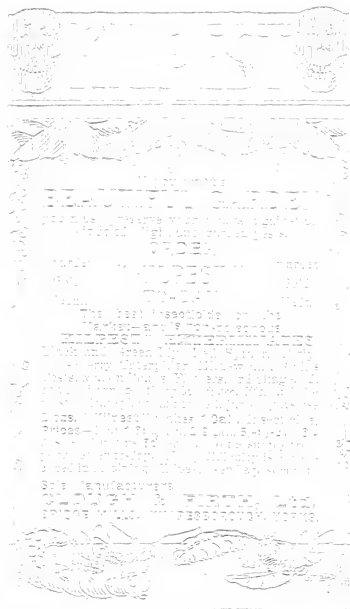
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is suggested, to cultivate in poor soil conditions. Plants should be densely and regularly planted and plenty of leaf-mould or well-rotted cow-manure should be dug in during autumn. In the case of treatment with leaf-mould it may be accomplished by sowing. The beds may be arranged under artificial or natural shelter. Mr. W. Edmondson, Motrice, Middle Farm, 1887, has written, "I have sown only 12 seeds of Golden Seed, and it is inferior to some of the best I have seen. My plants are grown in a well-shaded place and I have planted bushes and much better results have been obtained at 10 o'clock plants from the heat of the midday sun, and from heavy rain and driving winds. Beds sown in autumn are starting so that the fruit is as small as the plants are, and do not seem adapted for this purpose. The plants seem to be sunk several inches in the soil. We do not get much moisture. A 2-lb. tub of water will give 15 in. below the surface should never be sown on wet soils. Mr. W. Edmondson, 1888, has written, "I have sown Golden Seed successfully in the sands of apple trees near Moscow."

Golden seed is propagated by dividing up the rhizomes of older plants in the spring (April or May). These bear used by those of young beds from end to end of the rhizome, and a flying piece containing one of these will grow in a suitable conditions. These are planted in rows 6 in. apart with 1 1/2 in. between the roots. The plant usually bears a single leaf the first year and two leaves and a single flower the second year. Golden seed is a slow but most sure bearer in the suitable conditions, the time between planting and harvesting being three years. The plants should



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10 DAME STREET—DUBLIN

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Quantity	Price	Quantity	Price
100	0 10	100	0 10
50	0 08	50	0 08
25	0 06	25	0 06
10	0 04	10	0 04
5	0 03	5	0 03
2	0 02	2	0 02
1	0 01	1	0 01
100	1 00	100	1 00
50	0 50	50	0 50
25	0 30	25	0 30
10	0 15	10	0 15
5	0 08	5	0 08
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to remove Lichen, &c.

- BEPLER'S LIME-SULPHUR WASH
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For disinfecting and killing insects on plants, fruit, and foliage. It is the most powerful and reliable disinfectant ever used. It is also used for the purpose of disinfecting the hands and clothing of those who are in contact with the plants.

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Branches of leafless flowers for large stems, over 50
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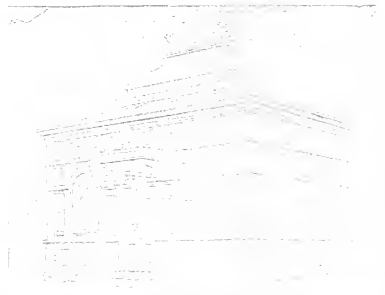


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The Aster has for many years held a prominent position as a Bedding Annual, but unfortunately the seed sold in this country has been almost entirely grown in Germany.

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CHEMICAL WORKS

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MESSRS. DRUMMOND & SOXS, LTD., Dawson Street, Dublin, send their annual catalogue of garden seeds. This old established firm needs no introduction to readers of IRISH GARDENING, and as usual have a very full list of all that is best in flower and vegetable seeds. Messrs. Drummond's strains are well known for their excellence, and a glance at the many beautiful illustrations with which their catalogue is adorned will convince intending patrons that this memorable year shows no diminution in quality.

MESSRS. EDWARD WEBB & SONS, of Stourbridge, send their sumptuous Catalogue of Flower and Vegetable Seeds, Grasses, Tools, Manures and other Sundries; in fact, this handsomely bound and beautifully illustrated work is one that should be in the hands of all interested in gardening. In spite of the unsettled state of the British Islands at the present time it is comforting to see that our seedsmen are carrying on "business as usual," and apparently without difficulty in obtaining full supplies of all seeds required for use or ornament. Messrs. Webb have long occupied a prominent place in the gardening and farming world, and it is no exaggeration to say that of recent years their magnificent strains of flower and vegetable seeds have come rapidly to the front and are now looked upon by gardeners as second to none. It is a matter for congratulation that no appreciable advance in prices is noted, a testimony to the business ability of the members of this enterprising firm, some of whom, it may be mentioned, are also doing noble work with His Majesty's Forces. In conclusion, we

heartily recommend Messrs. Webb's Catalogue to the notice of our readers with the full confidence that they will not be disappointed in the contents.

ROSES FOR AMATEURS. - From Mr. E. Percy Smith, 13 Witham Place, Boston, Lines, comes a somewhat unusual catalogue, designated as above. Mr. E. P. Smith is, it appears, an amateur himself, and loves Roses. In order to indulge his hobby he grows something like 10,000 plants annually, and although they are grown simply for pleasure, Mr. Smith offers them to other amateurs in order to help to pay the expense of cultivation. He makes no extravagant claims for his plants, but states that they are very hardy and will bear well transplanting. Mindful that he is catering for amateurs, Mr. Smith has much to say regarding cultivation, soils, manures, insecticides, &c. Mr. Smith makes a special feature of pot plants with dormant or shot buds— that is, buds that were put on last season—these are of exhibition varieties only. There is also a supplementary list of older varieties, mostly offered at 6d. and 8d. for dwarfs and 1s. 6d. for standards.

Irish Show Fixtures for 1915.

Co. Clare Horticultural Society Spring Show at Ennis—about April 15th, 1915. Notice to be given in March of the actual date. Hon. Sec., Rev. R. Scott.

Co. Clare Horticultural Society Summer Show at Ennis, Thursday, August 5th, 1915.

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fully grown as an open bush, and generally the best results are got by cultivating it against a wall where the long slender shoots produced in early summer can become well ripened and furnished with flower buds which open in winter. Hard frost has little effect on buds or open flowers, since the latter simply close a little only to open again with the thaw or an hour or two of winter sun. There are two forms of the Winter Sweet, one regarded as the type and another called grandiflora, which has distinctly larger flowers, and is the more desirable.

In the matter of cultivation there is no difficulty. Any good garden soil will produce ample growth, but a detail of paramount importance is pruning. This should be done immediately after flowering, and consists in cutting hard back all the longer shoots which have flowered. If a few of the shorter spurs are left with the faded flowers a crop of seed can often be got, but this cannot be relied on to produce the large flowered variety, although quite good and useful plants may be raised in this way. Regarding propagation, seeds as first stated form a ready means of increase, while layering is a fairly sure means when carefully carried out. The wood is extremely brittle, necessitating great care in putting down the layers. Cuttings are rather difficult to root, but at the Botanic Gardens, Glasnevin, they have been rooted in two ways. In both cases young shoots pulled off with a heel in May or when the shoots were considered long enough were used. In the one instance they were inserted in sandy soil under a bell glass kept close and shaded,

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...	0 8	0 10
...	0 6	0 10
...	0 3	0 1
...	1 1	2 0
...	0 3	0 6
...	2 0	5 0
...	0 3	0 1
...	12 0	13 0

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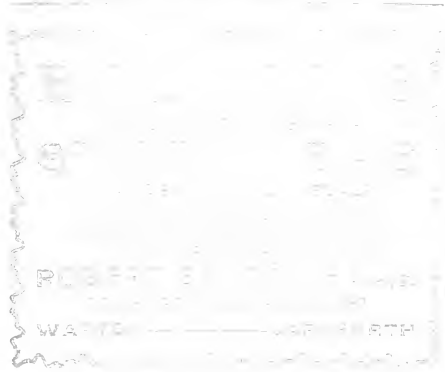
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Mrs. Hardcastle's Bykes, blush	Flora Norton Spencer, blue
John Ingman, carmine-rose	
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Reviews

The British Flora Gazette.

This is a monthly journal devoted to the British Flora, and is published by the enthusiastic "Flora Club," 15, St. James's, V.M.H.F.S.

It is wholly devoted to the flora of Britain, containing articles on the T. B. Hayward's collection, A. P. Woodhouse's "Flora from 'Sports,'" and other papers on "Plant Hunting," &c., all written by well-known botanists, who write well and in an interesting manner.

Flora Growing

Those who are taking an interest in the great beet industry in the U.K. will be glad to find the February number of the "Flora Gazette" from the growers, too, the article on "Flora Growing" should be of the greatest assistance to gardeners as well as farmers. The notes on some of our manure are of much value. Much other matter of interest to gardeners is to be found in *Journal of the Royal Hort. Soc.*

Sports.

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and the Schedule with Rules and Regulations is now issued. Numerous numerous classes to suit various competitors, and the prizes include two Silver Challenge Cups and numerous other special prizes.

Catalogues.

H. CANNON & SONS. - This old-established Firm has issued its Seed and Plant Guide for 1915. The Firm is now under new management, and is determined to maintain its prominent place in the Trade. In the novelty list we note *Brumia obscura* 'Chenil's Blue', a fine blue form which should appeal to those who have to provide a display of greenhouse flowers in early spring. *Androsace*s are represented by several new varieties of distinct shades, and other novelties are offered in Sweet Peas, Asters, &c. The body of the catalogue is well stocked with standard varieties of flowers and vegetables.

BLACKBURN & LANGDON. - Whenever Begonias are mentioned gardeners at once think of the enterprising Firm which has done so much to raise the standard of excellence of these beautiful greenhouse flowers. Their 1915 Catalogue will

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5 ozs. for 12,000	12,000	4 6	1
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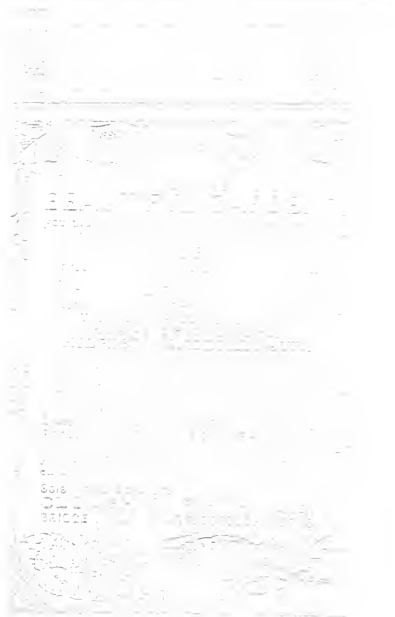
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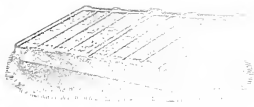
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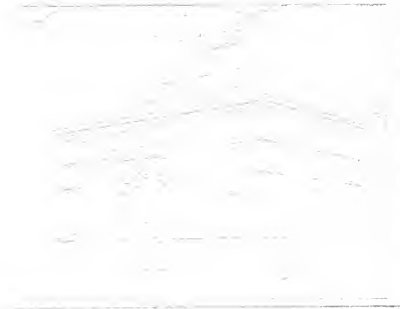
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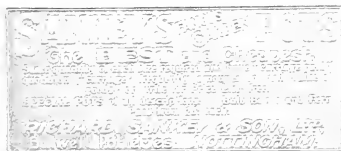
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Royal Horticultural Society of Ireland.

THE monthly meeting of the Council was held at the Society's offices, 5 Molesworth Street, Dublin, on the 12th ult., when letters were read from Lady Ardilaun and Lord Iveagh, a vote of thanks being passed to Lord Iveagh for again generously placing the St. Stephen's Green grounds at the disposal of the Council for the autumn show, August 24th. It was unanimously resolved that Lord Iveagh be asked to honour the Society by accepting the office of President. Judges were nominated for the spring show and the staging committee appointed. It was decided to postpone the next stated monthly meeting of the Council owing to the then proximity of the show. Arrangements were made for holding a meeting of the vice-presidents and general committee of the Irish branch of the Vegetable Products Committee on the 18th ult., which was duly held, when Sir Frederick W. Moore, Joint Hon. Sec., gave a detailed account of the work done, and working arrangements in full operation. Mr. D. L. Ramsay, Hon. Treasurer, gave an account of donations received and payments disbursed, with a summary of the gifts in kind, with purchases made by the committee and consigned for the Fleet. The meeting was largely attended, the Marquis of Headford presiding.

Obituary.

WITH great regret Messrs. Young & Co. notify us of the death of Mr. Thomas Hughes of Cheltenham, their much respected foreman. Mr. Hughes was taken suddenly ill on Wednesday, the 24th ult., whilst at his work at Messrs. Young's Carnation Nurseries at Hathley, Cheltenham. Deceased who was well known by all show-goers, had been in Messrs. Young's employ for many years and was much esteemed by his employers and respected by those with whom his daily duties brought him in contact.

Ireland's Foreign Trade.

HIS MAJESTY'S Government has just issued a special licence to Messrs. Wm. Power & Co., Seed Merchants and Nurserymen, Waterford, granting permission to export a considerable quantity of their world-famed Seeds to Denmark.

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April	22nd	County Clare Horticultural Society Spring Show, Emis, Hon. Secy, Rev. R. Scott, The Mouse, Emis.
July	21st	The Torenure and Districts' Horticultural Society, Hon. Secy, Ed. Carroll, 1 Rostrevor Terrace, Rathgar, Co. Dublin.
August	5th	Co. Clare Horticultural Society's Summer Show, Emis, Hon. Secy, Rev. R. Scott, The Mouse, Emis.
..	10th	Co. Galway Horticultural Show, Ballinacree, Hon. Secy, Miss O'Shaughnessy, Birch Grove, Ballinacree.
..	11th	Kingstown Horticultural Society, Hon. Secy, Mr. McDonnell, Rose, M.A.
..	24th	R.H.S.I. Autumn Show, Lord Aveugle's Grounds, Dublin.



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7 0	11 0	7 0	11 0	
0 8	1 2	0 8	1 2	
1 6	2 6	1 6	2 6	
AFFINITIES				
16 0	0 10 0	16 0	0 10 0	
18 0	0 12 0	18 0	0 12 0	
1 0	5 6	1 0	5 6	
0 8	2 0	0 8	2 0	
1 0	2 3	1 0	2 3	
0 2	0 1	0 2	0 1	
0 2	0 6	0 2	0 6	
0 2	0 7	0 2	0 7	
0 8	1 0	0 8	1 0	
0 6	0 9	0 6	0 9	
1 0	2 6	1 0	2 6	
1 0	1 6	1 0	1 6	
0 1	0 6	0 1	0 6	
0 6	0 10	0 6	0 10	
0 3	0 6	0 3	0 6	
2 0	3 0	2 0	3 0	
FLOWERS				
9 9	1 1	9 9	1 1	
0 7	0 9	0 7	0 9	
0 10	1 1	0 10	1 1	
0 3	0 6	0 3	0 6	
1 0	2 0	1 0	2 0	
0 8	1 0	0 8	1 0	
2 0	1 0	2 0	1 0	
0 8	1 0	0 8	1 0	

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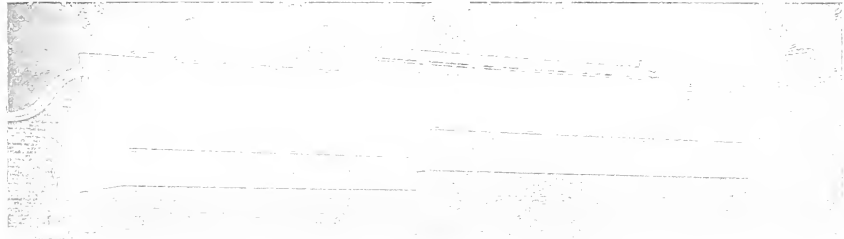
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WOOD LATH and **SOPHIE PLANKS** for Shading Conservatories, Greenhouses, &c.

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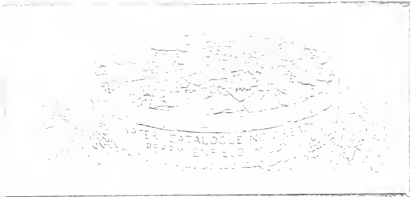


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SAVES WEARY WEEDING.

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30 Gallons... 5/-

10 Gallons... 2/-

5 Gallons... 1/-

2 Gallons... 6/-

1 Gallon... 3/-

WILLIAMS' WEEDOL

50 lbs... 30 Gallons

Per 1/2 Tin,
to make 30 Gallons.

Saves Trouble and
Expense of Returning
Pathways.

30 Gallons... 5/-

10 Gallons... 2/-

5 Gallons... 1/-

2 Gallons... 6/-

1 Gallon... 3/-

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Bar Frames, Benches, Dining Furniture,
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 100, Strand, London, W.C.2.



Royal Horticultural Society of Ireland

THE monthly meeting of the Council was held at the Society's offices, 5 Molesworth Street, Dublin, on the 14th ult. A balance sheet of the spring show was submitted and approved, and accounts in connection with it, including the prize list, were ordered for payment. It was arranged that the schedule committee should meet at an early date to compile the spring show programme for 1916. Sir Frederick W. Moore, Hon. Secretary, reported recent work of the Irish Branch of the Vegetable Products' Committee, formed under the auspices of the Society, progress being good. (We have now pleasure in adding that the Great Southern and Western Railway have generously conceded free carriage to Dublin of gifts of produce for the Fleet.) Mr. Thomas Jackson, Farnfeldin, Stillorgan, and Mr. Richard Hazleton, M.P., Ivy Lodge, Blackrock, were elected members of the Society.

Catalogues.

MESSRS. WATSON, 61 SOUTH GREAT GEORGE'S STREET, DUBLIN, have issued their Catalogue for the Summer-Planting Season. This Catalogue is a most useful and handy reference for all those who are engaged in the business of growing and planting the most popular plants used in the summer flower garden. The practical and beautiful illustrations are representative of the best specimens of the most valuable plants, such as the following:—Acanthaceae, Anemones, Aster, Magnolia, Camellia, Pansies, etc., etc. The plants are guaranteed, and are raised so as to be suitable for the individual. It so includes many of the most valuable plants to ensure a good result in the garden. Messrs. Watson offer a large variety of plants in pots for greenhouse and conservatory, so that anyone requiring the stock of a small or large conservatory quickly can do so, and at a comparatively small outlay. Putting round flower stakes and vegetable plants of many kinds, basket plants and plants for which they complete an admirable list.

Smith's "Perfect" Patent Weed-Killer

MARVELLOUS INVENTION MOST EFFECTIVE
Nothing like it ever seen before. Soluble in Cold Water. No Free. No Return Empties

1 Tin sufficient to make 25 gallons 80 1 9
4 Tins 100 .. 0 6 5
8 Tins 200 .. 0 12 9 Box 3d. extra
12 Tins 300 .. 0 17 0 .. 4d. ..
20 Tins 500 .. 1 7 0 .. 5d. ..
30 Tins 750 .. 2 6 0 .. 1s. ..

Carriage Paid on 5 Tins and upwards to Stations in Ireland.

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The Powder Weed-Killer I got from you last month is the best I ever used.

GLENELLEN, MILTON

Your Weed-Killer is the only one I ever tried that is any use. Yours never fails
—L. CREAGHE CREAGHE-HOWARD

SMITH'S LIQUID WEED-KILLER

1 gallon 1 6 3 gallons 13 6 5 gallons 1 2 0
2 .. 2 0 4 .. 16 0 6 .. 1 5 0
3 .. 3 0 5 .. 18 0 7 .. 1 7 0
4 .. 4 0 6 .. 20 0 8 .. 2 0 0

Carriage Paid on 5 gallons and upwards.

Double Strength (1 to 50) PRICES—

1 gallon 5 6 5 gallons 13 6 5 gallons 38 0
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3 .. 7 0 7 .. 17 0 7 .. 54 0
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Carriage Paid on 4 gallons & upwards.—Drugs & Chemicals, etc., in all parts of the Kingdom, and on all lines, carriage paid.
NOTICE.—These Preparations are Poisonous. Sole Proprietors, MARK SMITH, Ltd.

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DUBLIN

Insecticides, Fungicides, Fumigants, Spraying Machines, &c.

Ag. Soc. - Agricultural Soc.

Sept. 20th

At a meeting of the Agricultural Society held at the residence of Mr. J. H. ... on the evening of the 20th inst. the following prizes were awarded: ... (The text continues with a list of names and prize categories, including mentions of 'The Queen', 'The King', and 'The Prince' in various contexts, likely referring to agricultural products or events.)

... (Continuation of the Agricultural Society meeting report, listing names such as Mr. J. H. ... and Mrs. ... and their respective prizes or contributions.)

... (Continuation of the Agricultural Society meeting report, mentioning 'The Queen' and 'The King' again, possibly in a different context or as a separate entry.)


W. & A. G. DEMAND

ROBINSON'S

EMERALD AND VEGETABLE MANURE

EMERALD

... (Small text describing the product's benefits)



**produces
vigorous,
healthy
and
fruitful
growth**

**W. & A. G. DEMAND'S
EMERALD MANURE**

is a Blood and Stimulant

... (Text describing the manure's effectiveness and history, mentioning 'The Queen' and 'The King' again.)

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W. & A. G. DEMAND & SONS, Ltd.

THREE WINE BARDS, CLOVENFORDS, N.B.

... (Continuation of the Agricultural Society meeting report, mentioning 'The Queen' and 'The King' again.)

Fumigant:

1 gal.
2 do.
3 do.
4 do.
5 do.
6 do.

Carriage Paid

NITROGEN

P

1 pint
1 quart
1 gallon
Carriage Paid

L

2 1/2 lbs.
5 lbs.
10 lbs.

M

Use also 2000's
HUNTER & CO., LTD.

Joseph Bentley & Co., Ltd.

United Fertiliser

For Catalogue giving details of

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THE GREAT MAN

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Concentrated... for spraying...
100 lbs. 100 lbs. 100 lbs.

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General Fertilising Properties and Staying Powers

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NOT INJURIOUS TO ANIMALS OR BIRDS.

100 lbs. 100 lbs. 100 lbs.

IMPROVED METAL CONES

Registered No. 80,397
For Fumigating in Greenhouses.

FOWLER'S LAWY SAND

For... and...
100 lbs. 100 lbs. 100 lbs.

SUNSHINE GLASS SHADING

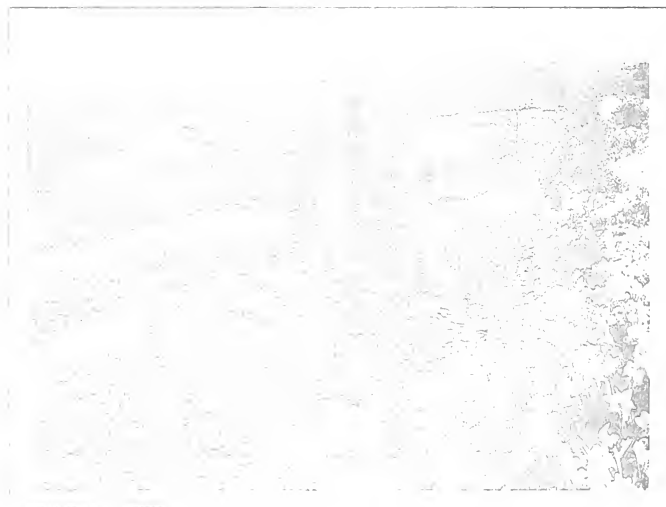
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SOLE MANUFACTURERS:
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Fertilisers and...
The Horticultural Bureau.

U.S. Department of Agriculture, Washington, D.C. 20250
 Various other Daffodil prizes presented by Mrs. R. J. Staepoole, 1; Mrs. Maunsell, 1; Mrs. Stansfield, 1. Five vases of Flowering Shrubs prizes presented by Inspector General Fitzgibbon, U.S. Ag. R. J. Staepoole, 1; Mrs. Wilson Lynech, Mrs. Butler, 3. Collection of specimens Flowering shrubs, staged (prizes

presented by Mrs. R. J. Staepoole, 1; Mrs. Maunsell, 1; Mrs. Stansfield, 1. Five vases of Flowering Shrubs prizes presented by Inspector General Fitzgibbon, U.S. Ag. R. J. Staepoole, 1; Mrs. Wilson Lynech, Mrs. Butler, 3. Collection of specimens Flowering shrubs, staged (prizes

Daffodil Garden in British Columbia.



DAFFODIL GARDEN IN BRITISH COLUMBIA

Presented by the Agent General, Mr. J. H. TURNER, Salisbury House, Finsbury Circus, London, E.C.

presented by Mrs. R. J. Staepoole, 1; Mrs. Maunsell, 2. Six bunches of double Polyanthus—Mrs. J. Stansfield, 1; Mrs. W. Lynech, 2. Six bunches of Polyanthus—Mrs. J. W. Macnamara, 1; Mrs. A. Green, 2; Colonel Miller, 1; Henn, 3. Six bunches of Anemone, mixed—Mrs. Stansfield, 1; Lord Inchiquin, 2. Six bunches of Wallflowers—Mr. R. J. Staepoole, 1; Mrs. Maunsell, 2. Twenty-five vases of Hardy Spring flowers (prizes presented by Lady Inchiquin)—Mr. R. J. Staepoole, 1; Mrs. Wilson Lynech, 2; Miss Butler, 3. Twelve vases of Hardy Spring

presented by Mr. R. J. Staepoole)—Mrs. H. V. Macnamara, 1; Mr. R. J. Staepoole, 2. Six vases of Chionodoxa (large flowering)—Lord Inchiquin, 1; Mrs. H. V. Macnamara, 2. Six vases of Chionodoxa Stellata—Mrs. H. V. Macnamara, 1. Six vases of Cyclamen—Mrs. H. V. Macnamara, 1. Six vases of Tulips—Major Hickman, 1; Rev. R. Scott, 2. Six spikes of Hyacinths—Rev. R. Scott, 1. Six vases of Primula Obconica—Rev. R. Scott, 1; Lord Inchiquin, 2. Three pots or bowls of Daffodils—Mrs. H. V. Macnamara, 1; Rev. R.

Scott, 2. Three pots of Lilies of Tulip—Mrs. H. V. Macnamara, 1; Rev. D. Scott, 2. Three pots of Lily of the Valley—Mrs. H. V. Macnamara, 1.

Section III.—Collection of Vegetables and Salads, staged—Major Higgins, 1. Two Broccoli—Mr. R. J. Staepohl, 1; Major Higgins, 2. Mrs. Vere O'Brien, 3. Two sticks of Maudslayi—Mr. R. J. Staepohl, 1; Lord Inchiquin, 2.

SPECIAL PRIZES.

Best arranged hutchon table—Mrs. H. V. Macnamara, 1; Mrs. H. Mills, 2; Mrs. Mealy, 3. Miss Macnamara, very highly commended. Best arranged vase of cut flowers—Mrs. H. V. Macnamara, 1; Mrs. Higgins, 2; Mrs. Phillips, 3.

W. BARR.

Chapelized.

Irish Show Fixtures for 1915

July 21st—The Leeward—The Races, Woodlands, Co. Wick. See R. H. D. for details. Telegrams: Leeward, Wick, Ireland.

August 5th—The Clays R. & Co. Land Show, Sligo. See R. H. D. for details. Telegrams: Sligo, Ireland.

1st—The Curragh—The Curragh Show, Curragh, Co. Wick. See R. H. D. for details. Telegrams: Curragh, Wick, Ireland.

17th—The Curragh—The Curragh Show, Curragh, Co. Wick. See R. H. D. for details. Telegrams: Curragh, Wick, Ireland.

18th—The Curragh—The Curragh Show, Curragh, Co. Wick. See R. H. D. for details. Telegrams: Curragh, Wick, Ireland.

September 19th—The Curragh—The Curragh Show, Curragh, Co. Wick. See R. H. D. for details. Telegrams: Curragh, Wick, Ireland.

THE SAFEST AND BEST
NON-POTATOES

Used in all principal gardens in Ireland, Kent, Hampton Court, and at White City. 1/2 gallon, 4/-; 1 gallon, 7/6.

LABOR FREE SEEDING
Specially recommended by the National Live Stock & Poultry Shows, Dublin, 1914, and the Royal Horticultural Society, London, 1914.

THE PERFECT GARDEN
sent to any one. Write and Post Free.

W. BARR, Seedman, 10, St. James's Street, Dublin.

Send for a circular containing full details.



THE CURRANT & CO.
Write for a circular containing full details.

London Labour

[Faint, illegible text in the left column, likely a list of names or categories.]

... quantity at the usual ...
 ... pots were very ...

The following list for the month:

	From	To
	s. d.	s. d.
	15 0	26 0
	1 0	3 0
	2 0	6 0
	1 0	1 3
	0 8	1 0
	1 0	2 0
	2 0	0 0
	0 3	0 6
	0 3	0 6
	0 2	0 1
	0 3	0 5
	0 6	0 8
	0 4	0 8
	0 8	1 0
	0 4	0 8
	0 6	0 8
	2 0	5 0
	12 0	15 0
	0 6	0 8
	1 3	4 0
	0 8	1 0
	1 0	1 6
	1 0	1 6
	0 4	0 8
	1 0	1 6
	1 0	3 0
	1 0	1 9
	0 2	0 4

- CELEBRATED XL ALL SPECIALLY PREPARED... (text partially obscured)
- XL ALL MACHINE FERTILIZING SERIES... (text partially obscured)
- XL ALL NICKELINE LEAVES INSECTICIDE... (text partially obscured)
- XL ALL INSECTICIDE... (text partially obscured)

Other XL ALL Preparations... GRUB KILLER... LAWN SAND... WORM POWDER... TOMATO MANURE... Don't forget to ask your Nurseryman or Seedsmen for my small pink list.

G. H. SERRAVALLO, Manufacturer, 284 Borough High Street, London, S.E.

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DESIGNING Laying out and Planting of Lawns and Renovating of Old Gardens... RICHARD G. WOOD, SEVENTH FLEMING Mount Henry Dalkey, Co. Dublin

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THE FOUR PLANTS... MRS. MCGILL'S FURNISHING... No Spices... W. DARLINGTON & SONS

Wholesale Horticultural Sundries... W. DARLINGTON & SONS

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The Cleansing Committee of the Dublin Corporation... Applications for the third, second, and third districts... FRED J. ALLAN, Secretary

DESIGNING... THE CLEANSING COMMITTEE'S OFFICES... DUBLIN, 1915

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Persons who desire to attend any of the courses... THE SECRETARY, Department of Agriculture and Technical Instruction, Dublin

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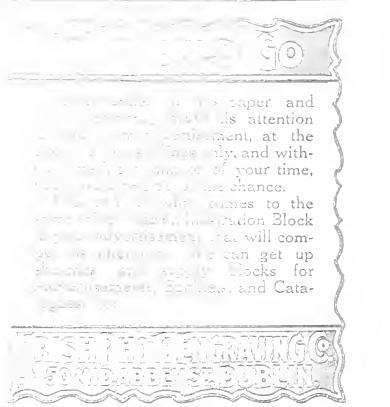
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BOYD

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WINTER GARDEN ...

People ... GARDEN ... TEMPLES ... HEATH ... WOOD ...

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CATALOGUE

OF
**CHRYSANTHEMUMS and
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Post Free on Application

WELLS' BOOK

ON THE CARE OF THE CHRYSANTHEMUM "

POST FREE 1/6

W. WELLS & CO., Merstham, SURREY

WELLS' WEED KILLER.

SAVES WEARY WEEDING.

50 gallons of mixed solution will kill all weeds on 200 square yards of paths, &c.

POWDER.

1/2	tin for 12 galls. solution	} Free Tins and Cases.
1/4	" " 25 "	
6/12	" " 200 "	

LIQUID. 1-50.

1	gallon	2/-	drum free
1	"	3/0	" 9d. extra
1	"	6/6	" 1/6 "
1	"	14/-	" 2/6 "
1	"	25/6	case 5/- "



WELLS' WEED KILLER is the most successful fumigant for the destruction of weeds, Hebe, and other plants, Bordeaux, and other plants, and is also used for the Summer Shade, &c.

Large quantities of above articles at proportionately lower prices
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WELLS' WEED KILLER
 The most effective
 and economical
 method of
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 weeds and
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 on paths, lawns,
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 open spaces.
 It is also
 used for the
 destruction of
 weeds in
 gardens, and
 for the
 fumigation of
 greenhouses,
 and other
 structures.
 It is sold in
 tins, drums,
 and cases.
 Price 1/6 per
 tin, 3/0 per
 drum, 25/6
 per case.

WELLS' WEED KILLER
 The most effective
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WEED KILLER

Greatest and Best

For Destroying Weeds and Moss on Carriage Drives, &c.
Used in N. K. S. Gardens, New, &c., &c.

POWDER WEED KILLER.

Dissolves quickly in cold water

Size of No. 1. To make 25 galls. 7 6; 10 galls 2 6.
Tins No. 2. " " 2 6; " " 2 6.
No. 3. " " 1 0; " " 8 1/2 post paid.

LIQUID WEED KILLERS.

One gallon to be mixed with 25 gallons of water.
Prices—1 gallon, 2 8 (tin free); 5 gallons, 7 6
(drum, 2 8); 10 gallons, 13 4; 16 gallons, 20 4;
20 gallons, 25 -; 40 gallons, 48 -. Carriage paid
on 2 gallons. Drums or casks of 10 gallons and
over charged 5 - each, and allowed when returned.
Strength, 1 in 50. Prices on application.

"ACME" LAWN SAND.

Marvellous destructive effect on Weeds and Moss
on Lawns. Fertilizes the grass; no other manure
needed. 7 lbs., 1 8; 56 lbs., 10 -; 1 cwt., 13 -.
Carriage paid.

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For destroying all leaf-eating insects, such as cater-
pillars, &c. 8d. per lb., sufficient for 20 gallons.

"FUMERITE,"

For destroying all ground vermin. To be dug into
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Carriage paid.

EXTRACT OF QUASSIA.

Pint, 1 3; 1 gallon, 8 -. Carriage paid.

QUASSIA-TOBACCO INSECT CIDE.

Pint, 1 3, post free; 1 gallon, 8 - (drum, 8d.).
Carriage paid.

Other Garden Chemicals, prices and particulars on
application

The Acme Chemical Co., Ltd.,

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DUBLIN AGENTS: Hayes, 1, Temple Bar; Reynolds, 110, 12, Great St. Andrew's,
and W. Deane, 10, and 8, 11, 12 and 13, Great Street.

COOPER'S
PREVENTIVE
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FOR ROSE, STRAWBERRY and other MILDIEWS
(1/2 Pint, 2 1/2; 1 Gall. 8 1/2; 2 Galls. 17 1/2; 5 Galls. 42 1/2)

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(1/2 Quart, 2 1/2; 1 Gall. 8 1/2; 2 Galls. 17 1/2; 5 Galls. 42 1/2)

COOPER'S
PREVENTIVE
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FOR THE DESTRUCTION OF THE CODLING MOTH
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(1/2 Pint, 2 1/2; 1 Gall. 8 1/2; 2 Galls. 17 1/2; 5 Galls. 42 1/2)

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DISEASES AFFECTING TOMATOES.
(1/2 Pint, 2 1/2; 1 Gall. 8 1/2; 2 Galls. 17 1/2; 5 Galls. 42 1/2)

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(1/2 Pint, 2 1/2; 1 Gall. 8 1/2; 2 Galls. 17 1/2; 5 Galls. 42 1/2)

EVERYONE INTERESTED IN
PERPETUAL CARNATION CULTURE

should read C. H. TAUDEVIN'S
New "Guide to Perpetual
Carnation Culture"

It gives every detail for successful culture of an
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Please write for Catalogue of Perpetual Carnations,
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C. H. TAUDEVIN & CO.,
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1915

SOUNDERS

Warringside

10, Grosvenor Road, N.W.

“THE WARRINGSIDE LONDON”

1915



WARRINGSIDE

Royal Horticultural Society of Ireland.

THE monthly meeting of the Council was held on the 11th ult. at the Society's Offices, 5 Molesworth Street, Dublin, Mr. E. D'Olier presiding. The Marquis of Headfort wrote accepting the office of President of the Society, vacant by the death of Lord Ardilaun. Intimation was received that Mr. R. H. Bannish would present prizes for hardy Pijoula classes, and that Mrs. Harold Nutting would present a challenge cup for Alpines at the spring show. Arrangements were made for the Schedule Committee to compile the 1916 spring schedule for confirmation at the next Council meeting. Specimens of Heuchera seedlings from Mrs. Butler, Prieststown House, Meath, and of flowering shrubs from Messrs. Pennick, Delgany, were accorded a vote of thanks. A meeting of the vice-presidents and general committee of the Irish Branch of the Vegetable Products' Com-

mission was held in the same office on the 18th ult., Sir John Ross of Bladenburg, K.C.B., presiding, when Sir Frederick W. Moore and Mr. Jas. Robertson, Hon. Secretaries, stated progress achieved by sending supplies of fruit and vegetables to the North Sea coast; and Mr. D. L. Ramsay, Hon. Treasurer, reported as to quantities shipped to date, and also on the financial condition of the committee. The following resolution was proposed, seconded, and unanimously adopted—viz., "That while the committee feel they can congratulate themselves on the extent of the work that has been accomplished, they recognise that the time has come when another public appeal must be made for additional funds and increased supplies. They have ample evidence that the supplies are greatly appreciated—many appreciative letters have been received from the officers of the Fleet, and herewith instruct their hon. officers to take whatever steps they consider necessary to the end of increased publicity and financial help."

Smith's "Perfect" Patent Powder WEED KILLER

MARVELLOUS INVENTION WITH EFFECTIVE Nothing like it ever seen before. Soluble in Cold Water. No Fumes. No Residue. Emulates

TESTIMONY

ENN SCORTH

The Powder Weed Killer I got from you last month is the best I ever used.

GLENLEN, MOUNTON

Your Weed Killer is the only one I ever tried that is any use. Yours dearest
—L. BRADY GREENE—
H. WARD

SMITH'S LIQUID WEED KILLER

1 gallon 10/00
2 gallons 18/00
3 gallons 25/00
4 gallons 32/00
5 gallons 38/00
6 gallons 45/00
7 gallons 52/00
8 gallons 58/00
9 gallons 65/00
10 gallons 72/00

12/6 15/0 17/6 20/0 22/6 25/0 27/6 30/0 32/6 35/0

Carriage Paid on 4 gallons & upwards.—Delivery in Dublin, Cork, & Galway, by Special Carriage. Everywhere else by Parcel Post. Orders sent by Post must be accompanied by Payment in Advance.

IRISH AGENT—D. M. WATSON, M.P.S., Chemist, 51, South Great George's Street, DUBLIN

Insecticides, Fungicides, Fumigants, Spraying Machines, &c.

interest, and walking home he sat down on a grassy bank to rest, where he was found some time afterwards, having passed peacefully away in the gardens and amongst the flowers and shrubs he loved so well.

A Scotchman by birth, a gardener by instinct, the beautiful grounds over which he exercised his supervision testified to his skill and ability. He was ever ready to show any casual visitor the many beauties of Narrow Water. He was competent, kind and hospitable, and will be long remembered for his charming personality.

G. N. S.

Annual General Meeting of the Sanitas Co., Ltd.

The chairman (Mr. G. T. Kingzett, F.L.C., F.C.S.) congratulated the shareholders upon a record year's trade and the maintenance of the

Ask Your Nurseryman or Seedsmen

For the following Well Known and Highly
Efficient Horticultural Preparations.

THE CHEAPEST INSECTICIDE OF THE DAY "NIQUAS"

(NON-POISONOUS) IMPROVED
A Concentrated Extract of Quassia, combined with other valuable ingredients, forming a cheap, safe, and effective Insecticide for syringing and dipping. It destroys all Insect Pests infesting Trees and Plants, whilst no possible injury to vegetation can result from its use.

It can be applied with syringe or pump, or used for dipping.

PRICES—Half-pint, 1/2 pint, 1/8 quart, 3/8; half-gallon, 4/- gallon, 7/6; five gallons, 25/-; ten gallons, 45/-; 1 gallon sufficient for 30 gallons of water.

STANDEN'S MANURE

(Established over 35 Years)

Exceeds all others in General Fertilising Properties and Staying Powers, Analysis on Application.

Sold in Tins, 8d., 1/4, 2/6, 5/6 each; and in Kegs, well secured, to prevent loss through exposure, 25 lbs., 3/6; 50 lbs., 13/6; 100 lbs., 22/6

CORRY'S

"OPTIMUS" WORM POWDER

(NON-POISONOUS)

For the complete destruction of Worms on Lawns, Bowling Greens, Putting Greens, and Golf Links.

NOT INJURIOUS TO ANIMALS OR BIRDS.

Prices—

Lbs.	7	11	25	50	112	5 cwt.	10 cwt.	1 ton
each	1/9	3/4	5/6	7/6	12/-	37/6	110/-	210/-

For fumigating in Greenhouses.

"LETHORION"

IMPROVED METAL CONES

Registered No. 52,597

To destroy Insect Pests. The Candle attached to each Cone only needs lighting, and there is no further trouble. They are most efficacious.

No. 1. For frames and "lean-to's" up to 1,000 cubic feet. Price, 8d. each.

No. 2. For small greenhouses up to 1,500 cubic feet. Price, 9d. each.

No. 3. For a well secured house of 2,000 to 2,500 cubic feet. Price, 1/- each.

FOWLER'S LAWN SAND

This preparation is for destroying Daisies and other weeds on lawns and at the same time stimulating the growth of the grass. If one tin is tried as a sample, its value will be at once appreciated. Sales are largely increasing.

Tins, 1/4, 2/4, and 5/- each; Kegs, 1 cwt., 8/6; 1/2 cwt., 15/-; 1 cwt., 30/-

ELLIOTT'S

"SUMMER CLOUD" SHADING

Registered Trade Mark No. 14,925.

(The only genuine original and improved article)

For Greenhouses. A pleasant green shade is given to the glass. In packets, 3/- for 100 feet of glass, and 2/6 each for 300 feet.


Sole Manufacturers:

CORRY & Co., Ltd., LONDON

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If you FUMIGATE OR SPRAY
Do it Effectively and Use

NICOTIGIDE



Fumigant		Fast	Each	Cartridge Foil
1 pint for 5	20,000	15/-		
1 pint for 10	10,000	7/6		
2 oz. for 5	2,000	1/6		
2 oz. for 10	1,000	7/6		

NICOTIGIDE FUMIGATORS, 1/- each for 5,000 cubic feet
NICOTIGIDE

PLANT SPRAY

Is very effective against all insect pests, including the Wood-boring Moths etc. It will kill the eggs of a Wood-boring Moth before it hatches. 1 pint 12/-; 2 pints 2/-; quart 3/6; 1 gallon 5/-; 2 gallons 10/-; Carriage Paid. Ask your Seedsmen for it.

LAWN SAND

entirely eradicates Daisies, Worms, etc. etc. See description on tin and label.

25 lbs. will cover 100 sq. yds. 36/-; 50 lbs. and 25. 56/-; 100 lbs. 100/-; 1 cwt., 18/-; 1 cwt., 22/-; Carriage Paid.

WORM POWDER

A certain remedy for removing Worms and destroying Worm Eggs. Use 1 lb. to the sq. yd. Simply sprinkle fairly thickly on the grass and water in 24 hours.

1 lb.	2 cwt.	5 cwt.	10 cwt.	20 cwt.	50 lbs.	100 lbs.
3/-	7/6	12/6	23/-	45/-	85/-	150/-

Use also CORRY'S TOBACCO POWDER & QUASSIA EXTRACT
Ask your Seedsmen for the article and receive all particulars

HUNTER & GOW, Ltd., 31 Thomas Street, LIVERPOOL

The market for the various articles of the above list is reported by the following:-
 Apples, - The market for apples is reported to be very brisk, the latter is remarkable for the quantity of the fruit which is being consumed. The market for the fruit of the mid season is very brisk, and the fruit is being sold at a high price. The market for the fruit of the late season is also very brisk, and the fruit is being sold at a high price. The market for the fruit of the early season is also very brisk, and the fruit is being sold at a high price. The market for the fruit of the mid season is very brisk, and the fruit is being sold at a high price. The market for the fruit of the late season is also very brisk, and the fruit is being sold at a high price. The market for the fruit of the early season is also very brisk, and the fruit is being sold at a high price.

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The following table shows the prices of the various articles of the above list:-

Article	Quantity	From	To
		s. d.	s. d.
Apples	per bushel	11 0	26 0
Oranges	per bushel	2 6	6 0
Lemons	per bushel	1 0	1 6
Pineapples	per bushel	0 10	1 8
Strawberries	per bushel	0 10	1 6
Raspberries	per bushel	1 0	2 6
Blackberries	per bushel	1 6	3 0
Gooseberries	per bushel	0 3	0 6
Loganberries	per bushel	0 1	0 8
Red Currants	per bushel	0 3	0 6
White Currants	per bushel	0 3	0 8
Black Currants	per bushel	1 6	3 0
Red Currants	per bushel	0 6	0 10
White Currants	per bushel	3 0	5 0
Black Currants	per bushel	1 0	6 0
Spiced Currants	per bushel	0 3	0 7
Black Currants	per bushel	1 6	3 0

1915

The following are the names of the
 winners of the prizes offered by
 the Agricultural Society of
 the State of New York for the
 year 1914. The names of the
 winners are given in the order
 in which they were announced.
 The names of the winners of the
 prizes for the year 1914 are
 given in the order in which they
 were announced. The names of
 the winners of the prizes for the
 year 1914 are given in the order
 in which they were announced.



EDFORD

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

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The most reliable for
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 Has won first prizes & medals.
 Sold by druggists, seedsmen, &c.

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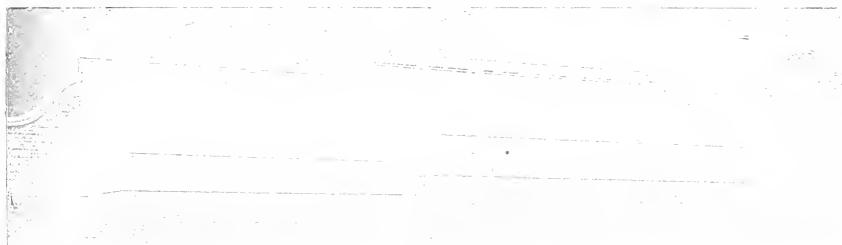
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WOOD LATH and **SOUND BRIMS** for Shading Conservatories, Greenhouses, &c.

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ANNUAL SHOW

By kind permission

Lord Iveagh's Grounds, Dublin

TUESDAY, AUGUST 24th, 1915



Sweet Peas, 27 classes. Roses. Challenge Cups for Dahlias,
 12 classes. Dahlias, 6 classes. Geraniums, Carnations, Sweet
 Fruit, 32 classes; Vegetables. Fosses and Vegetables, Gold,
 16 classes, Cro. " " " Silver and Bronze Medals.

INCREASED CASH PRIZES.

Entries close August 15th.

Schedules sent free from

E. KNOWLTON, Sec., 5 Miles north S., DUBLIN

WEBB'S THE FINEST SEEDS FOR AUGUST SOWING

Vegetable Seeds FOR AUGUST SOWING

- WEBB'S Emperor Cabbage 6d. and 1. - per pkt. 1 S. per oz.
- WEBB'S Favourite Cabbage 6d. per packet; 1 - per oz.
- WEBB'S Red Globe Tripoli Onion.
- WEBB'S Monster White Tripoli Onion.
- WEBB'S Mammoth Red Tripoli Onion, each 6d. and 1 - per pkt.
- WEBB'S Winter White Gas Lollo-Rose.
- WEBB'S Hardy Green Cabbage Lettuce, Each 6d. and 1 - per pkt.
- WEBB'S Prize-taker Tomato 6d. oz.
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WEBB'S EMPEROR "Giant" Great Cabbage"
 6d. and 1s. per packet; 1s. 6d. per ounce. Post Free


...of magnificent
...a flower
...Companion Cup for
...Bath. On
...exhibited varieties
...praise, but this
...high standard.
...manner.
...bed with two
...Delphiniums. One
...variety,
...the other was filled
...Lady Tweed-
...soft pink), Mrs.
...Tumbling (rich
...may be
...the exhibit, which
...healthy foliage and
...without the least
...The colours were
...A few hanging
...varieties as Golden
...Crysanthemum gave
...Gold Medal).—
...House Exhibition
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...the experience of many years.
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Do it Effectively and Use

NICOTIGIDE

Fumigant

1 pint for
2 pints for
6 oz. for
4 oz. for
2 oz. for



Per Each
10,000 15/-
20,000 7/6
12,000 4/6
8,000 3/-
4,000 1/6

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NICOTIGIDE FUMIGATORS, 1/- each for 5,000 cubic feet
NICOTIGIDE

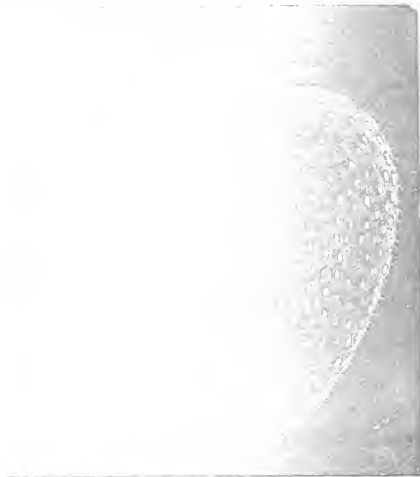
PLANT SPRAY

is very effective where it is a substitute for fumigation. We advise you to try it. It will also be useful as a Winter Dressing for bushes, etc.
1 pint 12/-, 2 pints 21/-, 3 quarts 31/-, 4 gall. 51/-, 5 gall. 71/-, 6 gall. 91/-, 7 gall. 111/-, 8 gall. 131/-, 9 gall. 151/-, 10 gall. 171/-, 11 gall. 191/-, 12 gall. 211/-, 13 gall. 231/-, 14 gall. 251/-, 15 gall. 271/-, 16 gall. 291/-, 17 gall. 311/-, 18 gall. 331/-, 19 gall. 351/-, 20 gall. 371/-, 21 gall. 391/-, 22 gall. 411/-, 23 gall. 431/-, 24 gall. 451/-, 25 gall. 471/-, 26 gall. 491/-, 27 gall. 511/-, 28 gall. 531/-, 29 gall. 551/-, 30 gall. 571/-, 31 gall. 591/-, 32 gall. 611/-, 33 gall. 631/-, 34 gall. 651/-, 35 gall. 671/-, 36 gall. 691/-, 37 gall. 711/-, 38 gall. 731/-, 39 gall. 751/-, 40 gall. 771/-, 41 gall. 791/-, 42 gall. 811/-, 43 gall. 831/-, 44 gall. 851/-, 45 gall. 871/-, 46 gall. 891/-, 47 gall. 911/-, 48 gall. 931/-, 49 gall. 951/-, 50 gall. 971/-, 51 gall. 991/-, 52 gall. 1011/-, 53 gall. 1031/-, 54 gall. 1051/-, 55 gall. 1071/-, 56 gall. 1091/-, 57 gall. 1111/-, 58 gall. 1131/-, 59 gall. 1151/-, 60 gall. 1171/-, 61 gall. 1191/-, 62 gall. 1211/-, 63 gall. 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5711/-, 288 gall. 5731/-, 289 gall. 5751/-, 290 gall. 5771/-, 291 gall. 5791/-, 292 gall. 5811/-, 293 gall. 5831/-, 294 gall. 5851/-, 295 gall. 5871/-, 296 gall. 5891/-, 297 gall. 5911/-, 298 gall. 5931/-, 299 gall. 5951/-, 300 gall. 5971/-, 301 gall. 5991/-, 302 gall. 6011/-, 303 gall. 6031/-, 304 gall. 6051/-, 305 gall. 6071/-, 306 gall. 6091/-, 307 gall. 6111/-, 308 gall. 6131/-, 309 gall. 6151/-, 310 gall. 6171/-, 311 gall. 6191/-, 312 gall. 6211/-, 313 gall. 6231/-, 314 gall. 6251/-, 315 gall. 6271/-, 316 gall. 6291/-, 317 gall. 6311/-, 318 gall. 6331/-, 319 gall. 6351/-, 320 gall. 6371/-, 321 gall. 6391/-, 322 gall. 6411/-, 323 gall. 6431/-, 324 gall. 6451/-, 325 gall. 6471/-, 326 gall. 6491/-, 327 gall. 6511/-, 328 gall. 6531/-, 329 gall. 6551/-, 330 gall. 6571/-, 331 gall. 6591/-, 332 gall. 6611/-, 333 gall. 6631/-, 334 gall. 6651/-, 335 gall. 6671/-, 336 gall. 6691/-, 337 gall. 6711/-, 338 gall. 6731/-, 339 gall. 6751/-, 340 gall. 6771/-, 341 gall. 6791/-, 342 gall. 6811/-, 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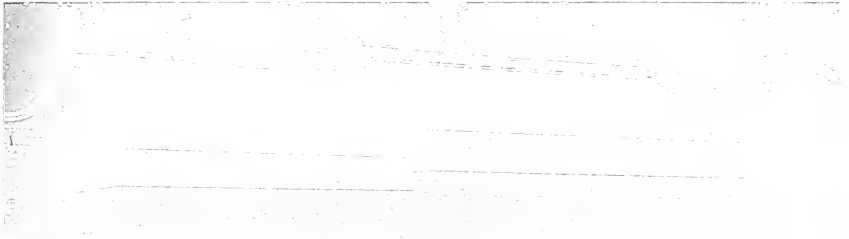
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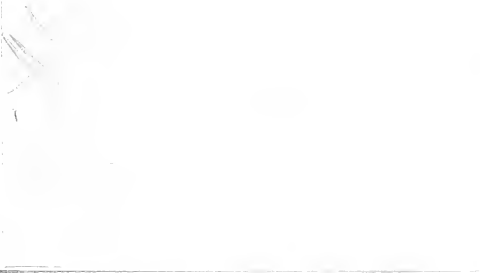
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KIND

BULLOCK'S BULB SEEDS

FOR THE GARDEN AND THE HOUSE

Bulb



- Round Bards
1 1/2, 2 1/2, 3 1/2, 4 1/2, 5 1/2, 6 1/2
and 7 1/2.
- Round Bards with holes
in sides 1 2
- Oval Bards 1 1/2, 2 1/2 & 3 1/2
- Olong Bards plain
1 1/2, 2 1/2, 3 1/2 & 4 1/2
- Prepared Fibre
raw washed 4 -
tanned 1 3

Narcissus and Tulips

- Barri Conscious, *double*, *white*,
son cup 1 2
- Bicolor Empress, *double*, *white*,
golden orange 1 2
- Madam Florence, *double*, *white*,
— Victoria, *double*, *white*,
form 1 2
- Emperor, *double*, *white*,
orange 1 2
- Golden Spur, *double*, *white*,
orange 1 2
- Sir Watkin, *double*, *white*,
flower 1 2
- Von Sion or Catawissa Flower
Downy Dye 1 2

Polyanthus Narcissus

- Grand Monarque, *double*, *white*,
cup 1 2
- Paper White, Grandiflora,
white, early 1 2

Double Flowered Tulips

- A selection of the finest varieties.
- FIRST SIZE BULBS 1 2
 - SECOND SIZE BULBS 1 2
 - Madam Florence, *double*, *white*,
— Victoria, *double*, *white*,
form 1 2
 - Emperor, *double*, *white*,
orange 1 2
 - Golden Spur, *double*, *white*,
orange 1 2
 - Sir Watkin, *double*, *white*,
flower 1 2
 - Von Sion or Catawissa Flower
Downy Dye 1 2

EDMONDSON'S BULB SEEDS

SEED AND BULB MERCHANTS

10 DANE STREET, LONDON, E.C. 1

If you FUMIGATE OR SPRAY

Do it Effectively with

NICOTINIDE

in migrant

1 pint for	East	West	Carriage Per Pint
1 pint for	40,000	15	
2 on for	20,000	10	
4 on for	12,000	6	
2 on for	8,000	4	
2 on for	4,000	2	



NICOTINIDE FUMIGATORS, 11 1/2 inch for 5,000 cubic feet
NICOTINIDE

PLANT SPRAY

is very effective against all the most common and destructive insects. It will not injure the plant and does not leave any deposit. 1 pint 12; 2 pints 2; quart 3; 1/2 gallon 5; 1 gallon 10. Carriage Paid. Ask your Gardener for it.

LAWN SAND

is the best for lawns. It kills all insects and keeps them off the grass. 28 lbs. will cover 100 sq. yds. 28 lbs. and 28 lbs. 12; 1 cwt. 22; 2 cwt. 42; 1 cwt. 22. Carriage Paid.

WORM POWDER

is a certain remedy for destroying all the most common worms. Use it to the soil. Simply sprinkle daily during the first 14 days.

Use also DOW'S TOBACCO POWDER & QUASSIA EXTRACT. Ask your Gardener for the above and prices of all horticultural goods. HUNTER & SON, 111, Street, MALDEN, S.E.

ASA THOMAS' VERMIFORM AND SPIDER MITE

For the following Well-Known and Highly Efficient Horticultural Preparations.

THE CHEAPEST INSECTICIDE OF THE DAY

"VERMIFORM"

(VERMIFORM) (VERMIFORM)
A Concentrated Extract of Quassia, combined with other valuable ingredients, forming a cheap, safe, and effective insecticide for spraying and dipping. It destroys all insect Pests in Killing Trees and Plants, without possible injury to vegetation, may result from its use. It can be applied with syringe or pump, or used for dipping.
PRICES—Halfpint 1-1/2; pint 1/2; quart 2/6; half-gallon 4/-; gallon 7/6; five gallons 25/-; ten gallons 45/-; 1 gallon sufficient for 25 gallons of water.

STANDER'S MANURE

(Established over 35 Years)

Exceeds all others in General Fertilising Properties and Staying Powers. Analysis on Application.
Sold in Tins, 30 lbs., 2 7/8 6 each; and in Kegs, well secured, to prevent loss through exposure, 25 lbs., 3 5/8; 50 lbs., 10 6; one ton, 22 6.

CORRY'S

ROTTENING "HORSE" POWDER

(HORSE-POISONING)

For the complete destruction of Worms in Lawns, Gardens, and other places. It is not injurious to animals or birds.

Tins, 1/2	3/6	5/6	7/6	12/-	18/-	25/-	35/-	50/-	75/-	100/-
Kege, 1/2	3/6	5/6	7/6	12/-	18/-	25/-	35/-	50/-	75/-	100/-

For Fumigating in Greenhouses.

"ELECTRICION"

IMPROVED METAL CONES

Registered No. 32,587

To destroy Insect Pests. The Candle attached to each Cone only needs lighting, and there is no further trouble. They are most efficacious.
No. 1. For frames and "lean-to's" up to 1,000 cubic feet. Price, 2/6 each.
No. 2. For small greenhouses up to 1,500 cubic feet. Price, 3/6 each.
No. 3. For a well secured house of 2,000 to 2,500 cubic feet. Price, 4/6 each.

FOWLER'S LIGHT SAND

This preparation is for destroying all other weeds on lawns and at the same time stimulating the growth of the grass. If one has tried it a sample for value will be at once appreciated. Sales are largely wholesale.

Tins, 1-	2/6	5/-	each; Kegs, 1 cwt., 2 7/8; 2 cwt., 16/-
			per cwt. 35/-

ELLIOTT'S

"SUMMER CLOUD" SHADING

Complete Trade Mark No. 14,220.
(The only genuine original and improved article)
For Greenhouses. A pleasant green shade is given to the glass. In shades 1/2 for 100 feet of glass, and 2/6 each for 500 feet.

Sole Manufacturers:

CORRY & Co., Ltd., LONDON

Merchants and Manufacturers of Horticultural, Seedsmen and Florists' Supplies, and Technical materials, Glass, and other articles of horticultural and floricultural interest.



SLUGS SLUGS SLUGS



SANITAS POWDER will rid your Garden of Slugs, and protect your Seeds and Plants from all pests such as Slugs, Worms, Rats, Mice, Sparrows, Cats, &c.

Leaflet and Free Sample with instructions Free, and 1/- Tins and 12/6 per Cwt. of all chemicals, stores and Sundries.

THE SANITAS CO., Ltd.,
Limehouse, London, E.
Awarded Medal at Royal Horticultural Exhibition, 1911.

DICKSON'S HAWLMARK BULBS

REDUCED IN PRICE.

Hyacinths, "The Royal Twelve" Exhibition Varieties, 6 - ::
 " " "The Popular Twelve" First size bulbs, 4/- ::
 " " " " For bedding in separate colours named, 15/- 100
 " " " " mixed colours, 10/ 6 100, 1/6 dozen

Tulips. Early single, finest sorts, from 3/- 100 :: ::
 " Darwin and May Flowering, Prize Stocks grown on
 our own farms, see special list :: :: ::


Narcissus, Crocus, Snowdrops, Lilies and other choice bulbs
 :: :: :: in great variety :: :: ::

Send for our Catalogue—it will interest you

BOWLS FOR BULBS a large selection. Call at our warehouse
 :: :: :: and inspect our stock. :: :: ::

ALEX. DICKSON & SONS, Ltd.
 HAWLMARK ————— 61 DAWSON STREET, DUBLIN

Little's Weed Destroyers



KILLS ALL WEEDS, MOSSES, &c.

On Carriage Drives, Gravel Paths.

Double the strength of most Weed Killers.


1 gallon to 60 gallons water.

1 gallon Drum, 3/- ... Drum Free.
 40 " Cask, 2/- per gal., Cask Free.

LITTLE'S WEEDOL
 Powder Weed Killer

Per 1/3 Tin,
 To make 30 Gallons.

Saves Trouble and Expense of Returning Packages.



Morris Little & Son, Ltd. Doncaster

RIVERS'

Fruit Trees—Roses
Vines, Figs, Oranges

and

Orchard House Trees

A LARGE AND
SELECT STOCK
ALWAYS ON VIEW

Illustrated and Descriptive
Catalogue

POST FREE

THOS. RIVERS & SON
SAWSBRIE GENDERS—HERTS
Seedling Nurseries, &c.

Established 1820

S. Spooner & Sons
FRUIT TREE GROWERS
HOUSLON MILLS LBS
HOUSLON—MIDDLESEX

Fruit Trees Speciality

Over half a million to select from

800,000 selected Two and
Three-year Old Apples on
English Paradise.

Catalogues free on Appli-
cation. Inspection invited

FLOWERS

FOR WINTER

and for next Spring

PLANT NOW.

Daffodils and Narcissi

MACKEY'S POPULAR COLLECTION
100 Bulbs in 10 best hardy named varieties
for 4/3; mixture, 3/- the hundred.

Mackey's Cottage Tulips

50 Bulbs in 10 best varieties for borders—
3/-; 100 Bulbs, 5/6

Mackey's Grand Darwin Tulips

50 Bulbs in 10 fine varieties for 5/6;
Finest mixed, 5/- the hundred.

Mackey's Hyacinths

FOR POTS, BOWLS OR GLASSES

3", 4", 4 1/2" and 5" - the dozen. Mixed
varieties, 1/9 the dozen.

St. Brigid Anemone

Finest mixed, 10d. doz.; 6/- the hundred

Sir JAMES W. MACKEY
LIMITED

SEEDSMEN — DUBLIN

*257 Catalogue of Bulbs, and Roses and Fruit
Trees free on application.*

BOLTON'S

THE LEADING HOUSE FOR

SWEET PEAS

Awarded 134 Gold Medals

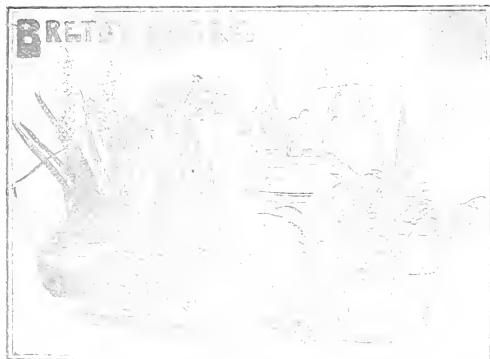
Catalogues Post Free :: ::

ROBERT BOLTON, F.R.H.S.

THE SWEET PEA SPECIALIST
WARTON — CARNFORTH

BULBS AND BOWLS

FOR CULTIVATION IN FIBRE



- Round Bowls
 10d., 1 3, 1 6, 1 10, 2 4
 and 3 6.
- Round Bowls, with holes
 in sides 2 2
- Oval Bowls 1 3, 2 6 & 3 10
- Oblong Bowls, plain
 1 2, 1 4 & 2 8
- Prepared Fibre
 per bushel 4 -
 per peck 1 3

Narcissus and Daffodils

- Barri Conspicuous*, yellow, with crimson cup 0 6
- Bicolor Empress*, white perianth, golden trumpet 1 0
- Madam Plémo*, the finest bicolor 1 6
- Victoria*, a fine flower of perfect form 1 0
- Emperor*, pale rose perianth and golden trumpet 1 0
- Golden Spur*, the golden trumpet 1 0
- Sir Watkin*, golden trumpet and grand flower 1 0
- Von Sion or Helamonius Plenus* (Dutch) 1 0

Polyanthus Narcissus

- Grand Monarque*, white with yellow cup 1 3
- Paper White, Grandiflora*, pure white, early 1 0

Choice Named Hyacinths

A selection of the finest varieties.
 FIRST SIZE BULBS from 4d. to 6d., each
 SECOND SIZE BULBS 3d., each; 2/8 per doz.

Early White Roman Hyacinths

EXTRA SELECTED BULBS.
 per doz. from 2 to 2 6

Dutch Roman or Miniature Hyacinths

These charming varieties are specially suitable for "cool" situations, the spikes are looser and more graceful than in ordinary Dutch Hyacinths, and the bulbs being small quite a number can be placed in a bowl of ordinary size.
 IN VARIOUS SHADES, distinct
 per doz. 1 4; per 100, 9/6

EDMONDSON BROTHERS

SEED AND BULB MERCHANTS

10 DAME STREET — DUBLIN

County Clare Horticultural Society's Show.

THE Annual Fruit and Farm Produce Show of the County Clare Horticultural Society was held at the Courthouse, Ennis, on Thursday, and notwithstanding the unfavourable weather conditions was one of the best shows yet held. There was a magnificent display of the splendid apples for which Clare has earned such a high reputation, they were on the whole of unusual size and rare quality, and the winners included such well-known names as Mrs. Coffey, Miss Scott, Major Hickman, Mr. J. Enright, Mrs. Frost, Lord Inchiquin, all winners at leading Irish shows. A stand of forty-five dishes, sent in for exhibition by Lady Fitzgerald, of Carrigoran, who has been successful at all the leading Irish shows, came in for very general admiration. Some of the apples weighed over 25 ozs. In the words of the judge, the fine display was proof that Ireland was second to no country in fruit growing, if carried out on proper lines. This splendid display from Carrigoran was in itself an object lesson to fruit producers. And that the fine Tradaree country is peculiarly suitable for apple culture was once again demonstrated by the magnificent display from its orchards. The cooking apples especially were of huge proportions, and the judges were much impressed by their excellent colouring and all round quality. The dessert apples also were of suitable size and of good quality. In addition to the collection from Carrigoran, Mr. Jones, of Kilkenny, had a nice exhibition stand of plants, and did a considerable amount of business.

The arrangements throughout were perfect,

and Rev. R. Scott, the enthusiastic hon. secretary to whom the Society owes so much of its success, must be congratulated on having achieved another distinct success.

Judges.—Fruit—Mr. A. J. Elgar, The Gardens, Killarney House. Farm Produce—Mr. G. Milne, Lough Cutra, Gort. Honey, &c.—Mr. Alf. Barker, F.R.H.S., Carrigoran. Luncheon Table—Mrs. Stephenson, Limerick.

The List of Awards has been omitted owing to want of space

Reviews.

THE JOURNAL OF THE BOARD OF AGRICULTURE. The October number of this useful journal is now with us and contains much useful information for agriculturists. Horticulturists will find much of interest in Professor James Hendrick's paper on the "Manurial Situation and its Difficulties," in which he discusses the probable shortage of certain chemical manures, and offers suggestions as to the cheapest manures per unit of nitrogen or phosphate as the case may be. With the scarcity of farmyard manure now so often felt by gardeners, they would do well to acquaint themselves with the unit method of determining the value of a manure. An apparently cheap manure may be actually dearer per unit of fertilising material than one which is higher priced per ton or hundredweight. Mrs. Roland Wilkins continues her observations on the "Work of Educated Women in Horticulture and Agriculture," and many other articles on "Compound Manures," "Bracken as Litter," "Agricultural Co-operation," &c., &c., make interesting and instructive reading.

DICKSON'S HAWLMARK BULBS

REDUCED IN PRICE.

Hyacinths. "The Royal Twelve" Exhibition Varieties, 6 - ::
 " "The Popular Twelve" First size bulbs, 4/- ::
 " For bedding in separate colours named, 15/- 100
 " " " mixed colours, 10, 6 100, 1/6 dozen

Tulips. Early single, finest sorts, from 3/- 100 :: ::
 " Darwin and May Flowering, Prize Stocks grown on
 our own farms, see special list :: :: ::

Narcissus, Crocus, Snowdrops, Lilies and other choice bulbs
 :: :: in great variety :: :: ::

Send for our Catalogue—it will interest you

BOWLS FOR BULBS a large selection. Call at our warehouse
 :: :: and inspect our stock. :: :: ::

ALEX. DICKSON & SONS, Ltd.
 HAWLMARK—61 DAWSON STREET, DUBLIN

Miscellaneous Section.

CELEBRATED XL ALL SPECIALITIES. Gardeners declare after twenty years' experience that these are still the best on the market.

XL ALL WINTER WASH (Caustic) for Fruit Trees and Bushes. 1 lb. tin, 1s.; 28 lb. tin, 16s. 1 lb. tin makes 8 to 12 gallons of Wash.

XL ALL NICOTINE FUMIGATING SHREDS. No apparatus required; burns on the floor of the greenhouse. In packets, each 6d., 1s., 2s., and 4s. 6d.

XL ALL NICOTINE LIQUID INSECTICIDE. In bottles, 8d., 1s. 2d., 2s.; in tins, 3s. 6d., 5s., and 10s.

XL ALL INSECTICIDE B. non-poisonous. No licence required to sell this. In bottles, 6d., 1s., 1s. 6d.; in tins, 2s. 6d., 4s., and 7s. 6d.

XL ALL WIREWORM AND GRUB KILLER, kills all soil insects. In tins, 6d., 1s., and 2s.; in bags, 2s. 9d., 3s. 9d., 6s., and 9s. 6d.

XL ALL TOMATO MANURE. XL ALL GARDEN FERTILISER, &c.

Don't forget to ask your Nurseryman or Seedsman for my small pink list.

C. H. RICHARDS, Manufacturer,
234 Borough High Street, London, S.E.

LANDSCAPE GARDENING

DESIGNING, Laying out and Planting of New and Renovating of Old Gardens. The Making and Planting of Rock Gardens, Rockeries, Water and Bog Gardens, and Pergolas a Speciality.

Plans Prepared.

RICHARD C. McM. SMYTH, F.R.H.S.

Mount Henry

Dalkey, Co. Dublin

Seed of choice and rare **ALPINES** from a very large collection. All those who possess a **ROCK GARDEN** should send for my Catalogue, they will find something new and desirable. **H. CORREVON, CHENE-BOURG, GENEVA.**

"KATAKILLA" POWDER INSECTICIDE WASH. Non-poisonous. The most effective economical Wash for destroying Green Fly, Dolphin, Caterpillars, and all insects in Fruit Trees, Roses, Vegetables, &c. Ready for use. Ready measured. 1s. cartons, to make 10 gallons Wash, and 3s. cartons, to make 50 gallons Wash.

From all Seedsman and Nurserymen.

Patentees and Sole Manufacturers,
McDOUGALL BROTHERS, LTD., 66 68 Port Street,
Manchester.

AUTO-SHREDS IS CERTAIN DEATH to leaf-minning 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. 9d.; 10,000 cubic feet, 3s. 6d. each. Obtained of Seedsman and Florists; if unobtainable apply direct—

W. DARLINGTON & SONS,
Ltd.

Wholesale Horticultural Sundriesmen,
HACKNEY, LONDON, N.E.

Trade Terms and Catalogue of Sundries upon receipt of business card.



WHY PLANT FOREIGN BULBS?

Plant now a Kewlay Colour Border of **HARDY PERENNIAL** Plants, which will flower from Spring to Winter, and will not require to be replanted annually. All these plants are raised in the United Kingdom. Cease importing from abroad, and keep money in this country.

N.B.—British firms and their employees require support equally with the Dutch!

Please write for Special (reduced) War Prices to **KELWAY & SON,** Retail Plant Department, LANGPORT, SOMERSET.

NATIVE TIMBER.

The Directors of the Great Southern and Western Railway invite offers of Scotch Fir and Black Spruce Sleepers, 8' 11" x 10" x 5", and a few 8' 11" x 9" x 4 1/2"; also of Logs to cut 10" x 5" Sleepers. Particulars may be obtained of the Company's Storkeeper, at the General Stores, Inchicore, Dublin.

R. CRAWFORD, Secretary.

Kingsbridge, Dublin,

November, 1915.

EUREKA' WEED KILLER.

SAVES A BARY 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
19	" 25 " "	and
6	" 100 " "	Cases

LIQUID. 1-50.

1 gallon	- 2 -	drum free
2 "	- 3 6 -	" 9d extra
5 "	- 9 6 -	" 1 6 "
5 "	- 14 -	" 2 6 "
10 "	- 25 6 -	cask 5- "

'EUREKATINE' The successful fumigant.
'EUREKA' Insecticide, Lawn Sand, Heliole Powder, Bordeaux Mixture, Worm Killer, Hayward's Summer Shade, &c.

Larger sizes of above articles at **proportionately lower prices**

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Pure Ichthemic Guano.

The Richest Plant Food, and the Most Na ural Fertilizer.

Supplied in Tins and Bags, 6d. to 2/6. Carriage paid on quantities of 20 lbs and upwards.

OTHER SPECIALITIES

"Tomorite," the Proved New

Tomato Fertilizer. : : : :

Lawn Sand, an exceptional line

In Bags, 2s. 6s. upwards. Carriage Paid

Sole Proprietors and Manufacturers -

PRENTICE BROS. Ltd.

CHEMICAL LABORATORIES

STOWMARKET, England.



LAXTON'S FRUIT TREES

New Pamphlet with Cultural Hints Gratis.


MANY THOUSANDS of Well Trained, Beautifully Rooted APPLES, PEARS, PLUMS, PEACHES, NECTARINES, APRICOTS, CHERRIES, FIGS, VINES, NUTS, GOOSEBERRIES, CURRANTS, RASPBERRIES, &c., &c.

AS . . .

STANDARDS, 2- and 2/6 each; BUSHES, 1/6 to 3/6 each; PYRAMIDS, 2/6 to 5/- each; ESPALIERS, 3/6 to 5/- each; CORDONS, from 1/6 to 2/6 each; WALL TREES, 3/6 to 7/6 each; POT FRUIT TREES, 5/- to 10/- each :: :: :: :: ::

New fully Illustrated and Descriptive Catalogue Gratis

LAXTON BROTHERS, BEDFORD



**LAXTON'S
FRUIT TREES**

**IN ALL SHAPES
CATALOGUES GRATIS
LAXTON BROS
BEDFORD**

SANKEY'S FAMOUS GARDEN POTS
 The **BEST** and Cheapest.
 State quantity of each size required and have "cheapest sold" quotation ("carriage" frequently amounts to half value of goods), or write for Price List, free.
 SPECIAL POTS of all descriptions, Bull, Horn, and Fern Pots from 2d. each.
RICHARD SANKEY & SON, LTD.
 Bulwell Potteries, NOTTINGHAM.



Vermorel's Knapsack Sprayer
"ECLAIR" No. 1

The Best and Most Reliable for
 Spraying Fruit Trees, Potatoes, &c.
 HAS WON OVER 500 FIRST PRIZES & MEDALS.

Sold by all Ironmongers, Seedsmen, &c.

WELLS' CATALOGUE

OF

**CHRYSANTHEMUMS and
 PERPETUAL CARNATIONS**

NOW READY :: :: Post Free on Application

WELLS' BOOK

"The Culture of the Chrysanthemum"

POST FREE, 1 6

W. WELLS & CO., Merstham, SURREY

IF YOU COULD GO

to each reader of this paper and could personally draw his attention to your own advertisement, at the cost of a few shillings only, and without wasting a minute of your time, you would be glad of the chance.

You can do what comes to the same thing—use an Illustration Block in your advertisement that will compel his attention. We can get up sketches and supply blocks for Advertisements, Booklets, and Catalogues, &c.

IRISH PHOTO ENGRAVING CO.
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SPECIAL AUTUMN OFFER

OF
Fruit Trees, Roses, and Hardy
Perennials.

IMMENSE STOCK, WELL GROWN, TRUE
TO NAME, AT LOW PRICES.

* The Barnham Nurseries, Limited, offer a wide selection of finest varieties, and will forward Descriptive Catalogue free on application. 150 acres under cultivation. Cash Orders of £1 and over Carriage Paid to any address in the United Kingdom. Planters are invited to send list of requirements, when a very low inclusive price will be quoted.

SPECIALITIES.

500,000 Fruit Trees and Bushes in 500 varieties

Market varieties in great numbers.

100,000 Roses in 250 varieties. :: ::

100,000 Hardy Flowering Plants in 500 varieties.

250,000 Trees and Shrubs in 250 varieties. ::

50,000 Hardy Climbers in 100 varieties. ::

INSPECTION INVITED.

The Barnham Nurseries,
BARNHAM, SUSSEX. LTD.

Established 1820

S. Spooner & Sons

FRUIT TREE GROWERS

HOUNSLOW NURSERIES

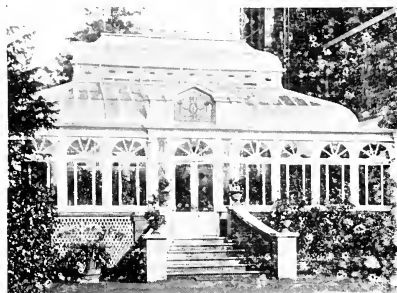
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Fruit Trees a Speciality

Over half a million to select from

300,000 Maiden Two and
Three-year Old Apples on
English Paradise.

Catalogues free on Appli-
cation. Inspection invited



ON DUTY.

Owing to the fact that our works have been given over to the requirements of H. M. Government, we are obliged to discontinue making, until further notice, our well-known Glasshouses, Conservatories, and Horticultural Buildings. We have, however, certain stock, which in order to make room for additional machinery, is being offered at pre-war prices in order to clear.

List of Clearance Lines may be had on Application.

BOULTON & PAUL, Ltd.

Horticultural Builders

NORWICH, Eng.

Daisy Hill Nursery, Newry

is the most interesting Nursery in the County and contains the most complete Collections of Shrubs and Plants extant.

T. SMITH.

BOLTON'S

THE LEADING HOUSE FOR

SWEET PEAS

Awarded 134 Gold Medals

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THE SWEET PEA SPECIALIST
WARTON—CARNFORTH

MACKENZIE & MONCUR, LTD.

HOTHOUSE BUILDERS AND HEATING ENGINEERS

TO HIS MAJESTY THE KING.

SANITARY AND ELECTRICAL ENGINEERS AND GENERAL IRONFOUNDERS

SPECIALTIES:

ALL KINDS OF HOTHOUSES IN TEAKWOOD, ARCHANGEL LARCH OR PETROGRAD REDWOOD * IMPROVED VENTILATION GEARING. PATENT WOOD SPAR BLINDS * (NONE OF THIS WORK IS DONE ON THE UNSATISFACTORY PIECE-WORK SYSTEM, ALL JOBS UNDERTAKEN BY US BEING CARRIED OUT BY HIGHLY SKILLED WORKMEN AT TIME RATES.) HEATING BY LOW PRESSURE HOT WATER OR BY STEAM * IMPROVED DUPLEX SYSTEM OF COMBINED HOT WATER SERVICE AND HEATING. * IMPROVED IRONCLAD SYSTEM OF ELECTRIC LIGHTING—THE ONLY ABSOLUTELY FIRE-PROOF SYSTEM.

CAST IRON STABLE FITTINGS AND ALL KIND OF ESTATE CASTINGS

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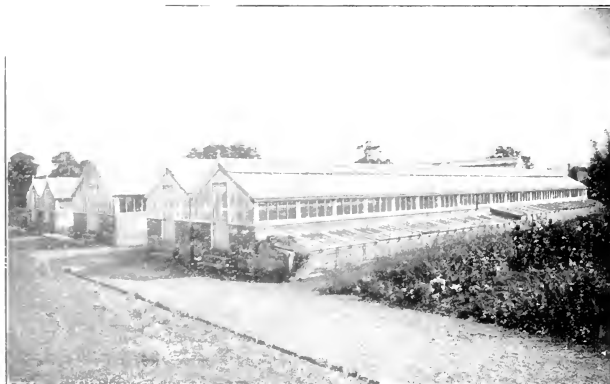
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Catalogues.

THROUGH the courtesy of Messrs. R. Wallace & Co., Colchester, we have received copies of three of their latest catalogues. For many years Messrs. Wallace have had a reputation for several important classes of hardy plants, and have done much to popularise them by their beautiful displays arranged with consummate taste at the leading British exhibitions. Their present catalogues contain the *élite* of the hardy plant garden. In the Bulb Catalogue special attention is directed to the Darwin and Cottage Tulips, of which large stocks are grown at Colchester. Needless to say all other bulbs, tubers, &c., in any way suitable for the garden are included. The catalogue of Flowering Shrubs and Dwarf Conifers is replete with new and choice species, the cover being adorned with sprays of *Cotoneaster rugosa* Henryi, a new shrub of much promise. Within are offered all the finest Barberries, Cotoneasters, Deutzias, and other choice things collected in China during recent years, while the best of the older shrubs and their improved varieties are adequately represented and described. The Alpine and Herbaceous Catalogue will repay study by all interested in hardy plants. The outside cover bears a handsome picture of *Primula vineiflora*, while within is a lovely reproduction of a colony of *Primula pulchella*. Attention should also be drawn to the lovely photographs of Tulips, *Erenurus Wallacei*, and *Lilium giganteum* in the Hardy Bulb Catalogue.

MESSRS. LITTLE & BALLANTYNE, Carlisle, have favoured us with a copy of their new Planters'

Guide and Catalogue of Trees. The firm has been established for a hundred years, and have a wide and well deserved reputation for forest trees. The enterprise of the firm is displayed in the announcement that 500 acres have lately been acquired high on the Cumberland mountains for the purpose of growing young forest trees under the hardest possible conditions. Such foresight deserves success. In addition to forest trees a fine selection of ornamental trees and shrubs is offered, together with trees specially grown for parks, streets and avenues. Fruits, stove and greenhouse plants, ferns, alpine and herbaceous plants, all unite to make a most interesting and useful catalogue.

Correspondence.

GARRYRHU,
CHARLEVILLE,
7th Nov., 1915.

THE MANAGER OF IRISH GARDENING.

DEAR SIR,—I shall be pleased to continue my subscription to IRISH GARDENING after this period. I should be sorry to think of deserting your plucky enterprise at this time of difficulty. May I offer my sincere sympathy with you and your staff in the great loss you sustained by the death of your late most gallant Editor at the Dardanelles. No words can express my admiration for brave men like him.—Yours truly,
D. R. DALY.

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PROBABLY more fruit trees are planted in December than in any other month of the winter. If the ground is in a fit state both December and January are excellent months for planting, though on wet soils the work is often delayed till February or March. In this changeable climate it is wise to obtain delivery of the required trees as early as may be, so that the trees will be at hand on a suitable day when the ground is not too wet. Trees may safely be heeled in on arrival from the nursery pending permanent planting.

The work of the Department of Agriculture has given a great impetus to fruit planting for commercial purposes in Ireland. This has naturally led to a greatly increased demand for sound healthy trees, and Messrs. Wm. Watson & Sons, Ltd., have probably the largest stock in this country. A visit to the extensive plots of young fruit trees at their Killiney nurseries opens one's eyes to the extent of the demand, for there are tens of thousands of favourite apples, such as Bramley's Seedling, Beauty of Bath, &c., all the best kinds for Irish cultivation being grown in proportionate quantity. It is a pleasure to see such fine trees grown under up-to-date methods at home, and the trained trees of all kinds of fruit for wall and espalier are well done. In addition to full collections of the larger fruits, such as Apples, Pears, Plums, Cherries, Peaches, Nocturnes, Apricots, &c., small fruits such as Raspberries, Currants, Gooseberries, Loganberries, and all other fruits in demand are well represented in the nurseries. Growing in large quantities naturally enables Messrs. Watson to quote moderate prices. Planters nowadays obtain remarkable value for their money, as a study of the firm's current catalogue goes to show. A copy of this publication may be had post free from Messrs. Watson's Head Office, Clontarf Nurseries, Dublin.

Dublin's New Park.

FIRST PLACE AWARDED TO WATERFORD FIRM.

The Dublin Corporation have had under consideration for the past four months plans and specifications submitted by a number of competitors for the laying out of a New Park at Fairview, and the final decision was referred to Sir Frederick Moore, Curator of the Botanic Gardens, and Mr. C. F. McCarthy, F.R.I.A., City Architect. These gentlemen have now awarded First Place to Messrs. Wm. Power & Co., the celebrated nurserymen and seed merchants, Waterford, to whom we offer our congratulations.

The principal features in the accepted plans include some nine acres for athletic sports, also a children's playground, hockey and cricket ground, seven tennis courts, and sufficient area for football to allow one full sized Association game, and about two acres will be allocated to a boating lake and model yacht pond.

The main entrance will be opposite Fairview Avenue, and from this point a very beautiful landscape effect will be introduced showing bandstand and boating lake with rustic boat-house in the distance. The total area when complete will amount to fifty-five acres. A striking feature will be the main avenue, 40 feet wide, with four rows of standard avenue trees running through the park from Annesley Bridge to Howth Road.

When complete, Fairview Park will equal any of its kind in the Kingdom, and we trust the Corporation will lose no time in putting the work in hands, and thus give a considerable amount of employment.

The Treatment of Peach Leaf-curl
(*Exoascus deformans*.)

The writer reports experiments carried on for several years in Northern Italy on protecting peaches from the attacks of leaf-curl. Fifteen ungrafted trees in the open were used, as well as 7 ungrafted cordons on trellis and 8 more against a south-west wall protected above by an 18-in. glass roof.

Of the 15 trees in the open, 6 were covered in February with a muslin net stretched to the tops of four poles and supported by two cross canes; the remaining 9 were left uncovered and sprayed twice with Bordeaux mixture at the end of

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1 pint for
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NICOTICIDE

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is very effective where it is not convenient to fumigate. We advise you to try it. It will also be useful as a Winter Dressing for Peaches, &c. 1 pint 1/2; Pint, 2/- quart 3/6; 1/2 gall, 5/-; gallon 10/- Carriage Paid. Ask your Seedsmen for it.

LAWN SAND

entirely eradicates Daisies, Weeds, Moss, &c., besides stimulating the grass. 28 lbs. will dress 100 sq. yds. 6d., 1s., and 2s. 6d Tins; 1/2 cwt., 6s.; 1 cwt., 11s.; 1 cwt., 20s. Carriage Paid.

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is a certain remedy for removing Worms and clearing Worm Casts. Use 1 lb. to the sq. yd. Simply sprinkle fairly thickly on the grass and water copiously. 14 lbs. 1/2 cwt., 1 cwt., 5 cwt., 1 ton, 2 tons.

Use also GOW'S TOBACCO POWDER & QUASSIA EXTRACT. Ask your Seedsmen for the above and for all imitations.
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A Concentrated Extract of Quassia, combined with other valuable ingredients, forming a cheap, safe, and effective Insecticide for syringing and dipping. It destroys all insect Pests infesting Trees and Plants, whilst no possible injury to vegetation can result from its use. It can be applied with syringe or pump, or used for dipping.

PRICES Half-pint, 1/-; pint, 1/6 quart, 2/6; half gallon, 4/- gallon, 7/6; five gallons, 25/-; ten gallons, 45/- 1 gallon sufficient for 80 gallons of water

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No. 1. For frames and "lean-to's" up to 1,000 cubic feet. Price, 6d. each.

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FOWLER'S LAWN SAND

This preparation is for destroying Daisies and other weeds on lawns and at the same time stimulating the growth of the grass. If one tin is tried as a sample, its value will be at once appreciated. Sales are largely increasing.

Tins, 1/-, 2/6, and 5/- each; Kegs, 1/2 cwt., 8/6; 1 cwt., 10/-; 1 cwt., 30/-

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November and again in the middle of February. None of the codons were sprayed with Bordeaux mixture, but those on the trellis were covered with a si char net, except for two in the middle of the row.

The result was that none of the covered-in trees, whether sprayed or not, showed any trace of leaf-roll; the others were all badly attacked even when treated with the fungicide. The difference was particularly striking in the case of the trellis trees, where the two uncovered trees alone were diseased, those almost touching them on either side being perfectly free. The walk-ways protected by the glass roof were also free from infection.

The writer recommends his method to small growers as inexpensive, and an important factor in ensuring a healthy growth in continued fruitfulness. Effective covering with a muslin net so as not to intercept air and light assures an almost constant setting of the flowers. *Monthly Bulletin of Agricultural Intelligence and Plant Diseases*, July, 1915.

Agricultural Lectures for Wounded Soldiers at Petrograd.

THE Imperial Museum of Petrograd has for some years past organised agricultural lectures for soldiers, which were given by the Museum staff. The course was interrupted at the beginning of the war, but was resumed when the military hospitals were filled with soldiers who had been

wounded on the battlefield. These lectures are not considered as an amusement for the soldiers, but as forming part of the agricultural propaganda among the rural population, and the wounded much appreciate them.

All the lectures are illustrated by means of special lantern slides and the demonstration specimens of the Museum; the audience are presented with books, pamphlets, wall-maps, &c., dealing with agricultural matters. Those wounded whose state of health allows them to leave the hospital visit the Museum very readily, the staff gives them all necessary information, while once a week, in the afternoon, cinematograph pictures of agricultural subjects are shown and explained. In order to fix the subjects of the lectures better in the minds of the hearers, the Museum publishes short illustrated summaries of each, with a list of the books dealing with it.

At the present time, agricultural lectures are being held in 83 hospitals in Petrograd and the neighbourhood.—*Monthly Bulletin of Agricultural Intelligence and Plant Diseases*, July, 1915.

A Comparison of Tillage and Sod Mulch in an Apple Orchard.

A CONTINUATION of the studies at the New York Agricultural Experiment Station to determine whether the apple thrives better under tillage or in sod. The experiment summarised in this paper was begun in 1903 in an orchard of Baldwin trees. The tilled land was ploughed each spring

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Specially prepared for use during the Winter Months when the trees are dormant. Kills all **Fungoid Growths, Lichens, Mosses, American Blight** and all **Insect Pests**, larvae, eggs, &c., without injury to the trees.

PRICES: 1 to 6 tins, 1/2; 12 tins, 1-; 25 tins, 10 d.; 50 tins, 10d. each. PRICES: 1 and 2 gal. Drums, 4- per gal. and 10 gal. Drums, 3.9 per gal.

One tin makes 11 to 16 gallons Wash.

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Caroline Testout, pink.
Harry Kirk, yellow.
Betty, ruddy-gold.
Md. A. Chateau, salmon.
Rayon d'Or, deep-yellow.
Lady Battersea, cherry-red.
Grace Molyneux, apricot.
Lady Roberts, coppery-yellow.
Lady Hillingdon, golden-yellow
Miss Alice Rothschild, citron
yellow.
Mrs. Amy Hammond, apricot.
Leslie Holland, crimson.
Dorothy Ratcliffe, coral.
J. J. L. Mook, fiery red.
Mrs. J. H. Welsh, rich red.
Md. Melanie Souper, saffron
yellow.
Lady Ashtown, pink.
Lieut. Chazure, velvety-red.
F. K. Druschki, pure white.
Hugh Dickson, crimson.
Le Progress, golden-ellow.
Lady Pirr-e, coppery-salmon.
Pharisaer, flesh-pink.
Juliet, gold and red.
George Dickson, crimson,
shaded black.

Gen. McArthur, crimson.
F. Ferniehurst, copper-fawn,
F. E. Couthwaite, cream and
rose.

Edu Meyer, coppery-yellow.
Entente Cordiale, sulphur.
Duchess of Portland, cream.
Com. Felix Faure, blackish-red
Mons. Paul Ledé, yellow and
rose.

CLIMBERS.

Alberic Barbier, saffron.
Bouquet d'Or, yellow.
Md. Berard, golden-carmine.
Clim. de Dijon, yellow.
Clim. F. K. Druschki, white.
Clim. K. A. Victoria, white.
W. A. Richardson, orange.
Clim. Mrs. Grant, pink.
Dorothy Perkins, shell pink.
Excelsa, scarlet D. Perkins.
Hiawatha, deep crimson.
Blush Rambler, blush.
Cruss an Teplitz, scarlet.
Clim. Lady Ashtown, pink.
Clim. Caroline Testout, pink.
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ing—it is worth it.

This year's volume (1915) can be
supplied bound in Green Cloth, in
time for Xmas, 5/- post free.

and cultivated from four to seven times. The grass in the sod plot was usually cut once, sometimes twice, all other operations being identical for all the plots.

The experiment was divided into two 5-year periods. During the first period the orchard was divided in halves by a north and south line, and during the second period by an east and west line. Thus, one quarter of the orchard was under tillage 10 years; another under tillage 5 years, then left in sod 5 years; the third quarter was in sod 10 years and the fourth in sod 5 years, then tilled 5 years.

The writer summarises the results as follow :

The average yield of the plot left in sod for ten years was 69.16 barrels per acre, that of the plot tilled 10 years 116.8 barrels per acre, making a difference in favour of tillage of 47.64 barrels per acre per annum. The fruit from the sod plots was more highly coloured than that from the tilled land and matured from one to three weeks earlier than the tilled fruit. The latter keeps from two to four weeks longer than the former and is also better in quality, being crisper, juicier and of better flavour. The uniformity of the trees under tillage was in striking contrast to that of the trees in sod, which lacked uniformity in every organ and function of which note could be taken. The grass had also a decided effect on the wood of the trees, as evidenced by the greater number of dead branches and the less plump and duller appearance of the sodded trees. The leaves of the tilled trees came out three or four days earlier and remained on the trees several days longer than on the sodded trees. Those on the tilled trees were a darker, richer green and more numerous, indicating greater vigour.

The effects of the change from sod to tillage were almost instantaneous. Both trees and foliage were favourably affected before mid-summer of the first year, and the crop, while below normal, consisted of apples as large in size as any in the orchard, the falling-off in yield being due to poor setting. The change from tillage to sod was quite as remarkable and as immediate, the average yield of the new sod plots being less than half that of the tilled plots. The use of nitrate of soda in the sod plots greatly increased the vigour of the trees and was a paying investment, yet for the 5-year period the yield was only slightly more than half as much as that of the tilled trees.

The very marked beneficial effect on sodded trees of placing adjacent ground under tillage shows that the sod should not only be removed round the trees but also for a considerable distance from them.

The changes in the soil due to the two systems concern chiefly the amount of humus and nitrogen. It was found that tillage and cover crops conserve humus and nitrogen better than the sod-mulch treatment.

The pasturing of pigs, sheep or cattle on sodded orchards does not overcome the bad effects of the grass.

The average cost per acre of growing and harvesting apples in sod was 857.73 and under tillage 883.18, making a difference of 831.75. Subtracting these figures from the gross return, leaves a balance of 874.31 for the sodded plots and 8140.67 for the tilled plots, or an increase of 866.36 in favour of tillage.—*Monthly Bulletin of Agricultural Intelligence and Plant Diseases*, July, 1915.

Dublin Wholesale Markets.

OWING to the inclemency of the weather during the month past, there was a decrease in the supply of fruit and vegetables, consequently prices have exceeded those of the previous month.

FRUIT.—Apples formed the principal feature in this section, good cooking sorts absorbing the interest of buyers, rough sorts difficult to sell at most irregular prices, small nicely packed lots are readily disposed of at good prices. A few small lots of pears are also in evidence, and are well compensating growers. Cross-channel produce, such as apples, grapes and pears, arrived in quantities; prices somewhat below the average, except for the latter, which figure high.

VEGETABLES.—Cabbages, although exceedingly cheap in the early part of the month, have increased considerably in price towards the close of the month. Cauliflowers.—Supply very limited, prices firm. Savoys were supplied in abundance, price not up to average. Celery has improved since last month, and nice lots of healthy stuff on sale, receiving good attention from buyers. Brussels sprouts are now supplied in quantity, demand good; also carrots, artichokes, and Swedes maintained stiff prices, being in keen request.

FLOWERS.—The supply of flowers was very meagre, and consisted chiefly of Chrysanthemums, Cross-channel consignments being far superior to home-grown. It was quite evident particular care had been taken in packing, as they maintained a fresh appearance despite long transit.

The following is a price list for the month:—

	FRUIT.	From		To.	
		s.	d.	s.	d.
Apples (Dessert)	per float	3	6	5	0
.. (Selected)	per dozen	1	0	2	0
.. (Cooking)	..	0	9	1	3
.. ..	per barrel	7	6	11	0
Pears (Firsts)	per dozen	5	6	8	6
Grapes	per lb.	0	8	1	3
VEGETABLES.					
Artichokes (Jer.)	per float	1	9	2	3
Cabbages—					
York	per load	15	0	22	0
Savoy	..	7	6	9	0
Cauliflowers	per basket	2	6	3	0
Swedes	per cwt.	1	7½	2	1½
Cucumbers	per dozen	1	6	2	3
Carrots	per bunch	1	0	1	5
Celery (White)	per dozen	1	6	2	9
Parsnips	per doz. bunches	1	0	1	3
..	per cwt.	3	6	1	0
B. Sprouts	per float	1	9	2	3
Scallions	per bunch	0	8	1	0
Onions	per float	2	6	3	0
..	per bag	12	6	11	0
Leeks	per bunch	0	4	0	5
Parsley	per float	0	6	0	10
Lettuce	per dozen	0	3	0	4
Turnips (O. Jelly)	per bunch	0	1	0	6
Thyme	per doz. bunches	2	6	6	0
Tomatoes	per lb.	0	5	0	6
FLOWERS.					
Chrysanthemums	per doz. blooms	1	0	1	9
.. (Seconds)	per doz. bunches	0	8	1	0
Roses	per dozen	0	9	1	3



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